

9.0 TRAFFIC AND TRANSPORT

9.1 Introduction

- 9.1.1 This chapter of the ES assesses the likely environmental impacts that would be created by the changing transport conditions introduced by the Proposed Development.
- 9.1.2 The Proposed Development will increase traffic movements and change travel patterns on the local transport network. This includes both the volume of traffic (the number of arrival and departure trips) and the traffic composition (percentage of HGVs) during the construction and operational phases. In addition, the proposed alterations to the highway infrastructure, required to accommodate the additional development trips, will alter the conditions for existing road users. Therefore, the effect of these changes on pedestrians, cyclists, equestrians, and other road users requires assessment within this chapter.
- 9.1.3 The chapter describes the relevant policy documents; the assessment methodology including relevant guidance; the baseline conditions at the Assessment Site and surroundings; the likely significant environmental effects with regards to the impact of construction traffic in the construction phase, as well as the impacts of the development on non-motorised users (pedestrians, cyclists, and equestrians), and on vehicle travellers, in the operational phase; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. This chapter has been prepared by ADC Infrastructure Limited.
- 9.1.4 A Transport Assessment (TA) and Framework Travel Plan (FTP) have been prepared by ADC Infrastructure Ltd to support the planning application, and are included in **Appendix 9.1 and Appendix 9.2** respectively.
- 9.1.5 The TA identifies the existing traffic flows on the highway network surrounding the Application Site in the morning and evening highway network peak hour periods, without the Proposed Development in place. It calculates the forecast traffic flows in the future 2031 assessment year, without the Proposed Development in place but with a comprehensive set of committed and planned developments and infrastructure changes that are reasonably likely to have occurred by then. The TA then examines the traffic generation of the Proposed Development, the distribution and assignment of the development traffic, and the effect of the additional development traffic on the operation and safety of the surrounding highway network in the future 2031 assessment year.
- 9.1.6 The TA and FTP also examine the accessibility of the Application Site by walking, cycling and bus, and identify the likely modal split of person trips associated with the Proposed Development.
- 9.1.7 Finally, the TA addresses the impact of the Proposed Development vehicular and person trips on the surrounding transport infrastructure, and identifies improvements which, in combination with the FTP, would accommodate and mitigate the increased travel demand. As a result, the Proposed Development would include the following transport measures and improvements:

- appropriate on-site parking for bicycles, motorcycles, cars (including car sharers and disabled users), and HGVs
- appropriate footways, footpaths and cycleways throughout the Proposed Development to facilitate internal journeys
- pedestrian and cycle connections to the existing off-site networks, including routes to Rothley to the north, routes over the Great Central Railway to the west and over the A46 to the south
- diversion of the National Cycle Network route 6 from beside the A6 to run along the internal highway network including the High Street adjacent to the Broadnook Centre
- a bus strategy that supports the extension of Centrebus service 22 to loop within Broadnook and provide a minimum half-hourly service
- Travel Plan measures with targets to reduce single occupancy car travel, by promoting walking, cycling, bus travel and car sharing
- a new signal controlled roundabout on the A6 that would connect to a new roundabout on Loughborough Road that provides access to the Proposed Development
- off-site highway improvements, including:
- the introduction of a capacity enhancement scheme at the Rothley Crossroads (Hallfields Lane/Cossington Lane)
- a mitigation scheme at the A46/A6 Birstall Interchange
- improvements to the controllers and signal equipment at the A6 junctions south of the A46 at Birstall Meadow Road, Hallam Fields Road, and Greengate Lane.

9.1.8 The TA demonstrates that the existing and proposed highway infrastructure could satisfactorily accommodate the pedestrian, cyclist, public transport and vehicular movements associated with the Proposed Development. Much of the information gathered for the TA is used within this ES assessment.

9.1.9 Charnwood Borough Council, Leicestershire County Council, Leicester City Council, and Highways England were consulted as part of the TA process. As part of this consultation process the highway network peak hour vehicle trip generation of the Proposed Development, the distribution and assignment of light vehicle and HGV traffic, the assessment year traffic flows, and the study area for assessment, were agreed. Hence, much of this ES assessment is based on agreed contents from the TA.

9.2 Policy Context

9.2.1 Chapter 3 of this ES details the relevant Planning Policy. In addition, this transportation chapter takes into account the following national and local policy:

- National Planning Policy Framework (NPPF or “The Framework”) (July 2018)
- Department of Transport Circular 02/2013, The Strategic Road Network and the Delivery of Sustainable Development
- North West Leicestershire Local Plan Saved Policies (2006)
- Leicestershire Local Transport Plan (LTP3)

9.3 National Policy

National Planning Policy Framework

9.3.1 The NPPF states that there is a “*presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking*”.

9.3.2 Under the heading Considering development proposals, paras 108 and 109 state:
“In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:
a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
b) safe and suitable access to the site can be achieved for all users; and
c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.

Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”

9.3.3 It goes on to say (para 110):

“Within this context, applications for development should:
a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and
e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

9.3.4 The Proposed Development has been designed in accordance with the NPPF, and the TA and FTP demonstrate that the above objectives would be achieved.

Department for Transport Circular 02/2013

The Strategic Road Network and the Delivery of Sustainable Development

9.3.5 Highways England (HE) is responsible for operating, maintaining and improving the Strategic Road Network (SRN) in England on behalf of the Secretary of State for Transport. Circular 02/2013 sets out the way in which HE will engage with communities and the development industry to deliver sustainable development and, thus, economic growth whilst safeguarding the primary function and purpose of the SRN

9.3.6 The Circular records the same priorities and principles for SRN as the NPPF does on

a general basis. For example, in relation to plan-making the pattern and location of development should encourage the minimisation of trip generation and the use of sustainable modes of transport, whilst not compromising the fulfilment of the Primary Purpose of the SRN.

9.3.7 At paragraph 9 the Circular states:

“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”.

9.3.8 With respect to decision-making the Circular advises (para 21) that:

“Where development proposals are consistent with an adopted Local Plan, the Highways Agency (HA) does not anticipate the need for engagement in a full assessment process at the planning application stage. In such circumstances consideration 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”

9.3.9 In assessing development impact the Circular further advises that:

“The overall forecast demand should be compared to the ability of the existing network to accommodate traffic over a period of up to ten years after the date of registration of a planning application or the end of the relevant Local Plan period whichever is the greater;

HE expects promoters of development to put forward initiatives that manage down the traffic impact of proposals to support the promotion of sustainable transport and the development of accessible sites – which is particularly necessary where the potential impact is on sections of the strategic road network that could experience capacity problems in the short or medium term, and;

Where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity will not be appropriate.”

9.4 Local Policy

Charnwood Local Plan 2011-2018 Core Strategy

9.4.1 The Core Strategy for Charnwood was adopted by the Borough Council on 9 November 2015 and sets out to deliver high levels of new housing and employment provision. The development strategy is based on urban concentration with the priority location for growth being the Leicester Principal Urban Area. Around 40% of the Borough’s housing growth is concentrated here in two sustainable urban extensions – North East of Leicester and North of Birstall (the application site).

9.4.2 In endorsing the Borough Council’s strategy the Local Plan’s Examining Inspector

was very clear in terms of transportation advantages. In his final report he states:
“There are convincing arguments in favour of large planned extensions to the urban areas. Compared with a more dispersed approach involving a number of smaller extensions to the urban areas and Service Centres, they provide better opportunities for the co-ordinated delivery of social and community infrastructure. A larger scale development gives scope for employment and retail provision within the site itself. It is likely to be more self-contained in terms of travel patterns, assist in the provision of public transport and promote its use”.

9.4.3 The adopted Core Strategy takes up these advantages and the ability to deliver, inter alia, LTP3 outcomes:

“Sustainable urban extensions are planned extensions to the existing urban areas which are large enough developments to support new businesses, schools, shops, health care facilities, open space and leisure facilities. This gives the people who live in them the opportunity to meet their daily needs without needing to make journeys by car”. (4.25)

9.4.4 The Core Strategy also emphasises that the North of Birstall location on the edge of the Principal Urban Area:

“... has the potential to deliver a development that reflects the garden suburb principles underpinning the original concept behind Rothley Ridgeway just north of the site along the Great Central Railway. This location is well connected to the City with high frequency bus links, an existing Park and Ride and a national cycle route. It also provides an attractive location for both new homes and businesses which will support housing delivery and bring investment into our Borough. This location is also able to accommodate a sustainable urban extension which meets the day-to-day needs of its community with a good range of jobs, services and facilities”. (4.38)

9.4.5 Leicestershire County Council (LCC) has endorsed the emphasis on sustainable urban extensions in accommodating planned growth. In its formal supporting response to the Core Strategy process LCC stated, under Duty to Co-operate:

“The Highway Authority welcomes the close involvement that it has had with Charnwood Borough Council in the development of its strategy, the transportation evidence base that underpins it and the identification of infrastructure requirements.”

and under Housing and Employment Distribution:

“The County Highway’s view is that the approach to the housing and employment distribution adopted in the submission Core Strategy is the most appropriate in the circumstances.”

9.4.6 The concentration of the bulk of the Borough’s provision either on the edge of the Principal Urban Area (PUA) or in Loughborough and Shepshed provides the greatest opportunities to reduce the need to travel and/or to access facilities other than by car. Further, concentrating development in Sustainable Urban Extensions provides greater opportunities to secure the necessary scale of transport (and other) infrastructure required to mitigate the impacts of growth as compared to a more scattered distribution of development”

9.4.7 The adopted Core Strategy, at Chapter 8 “Access and Travel” establishes the generic policy approach to the priorities of providing transport choice and maximising walking, cycling and public transport “especially for shorter trips to work and school”.

9.4.8 Policies CS17 (Sustainable Travel) & 18 (The Local and Strategic Road Network) define the Borough Council's position:

"By 2028, we will seek to achieve a 6% shift from travel by private car to walking, cycling and public transport by:

- Requiring new major developments to provide walking, cycling and public transport access to key facilities and services;*
- Requiring new major developments to provide safe and well-lit streets and routes for walking and cycling that are integrated with the wider green infrastructure network;*
- Securing new and enhanced bus services from major developments and new bus stops where new development is more than 400 metres walk from an existing bus stop;*
- Securing contributions from our sustainable urban extensions towards improvements to public transport corridors into Leicester City and Loughborough in accordance with Policy CS19, CS20 and CS22; and*

We will do this by:

- Assessing the impact of major developments through Transport Assessments and Travel Plans; and*
- Working with our partners, including Leicestershire County Council and Leicester City Council, to secure funding for and delivery of sustainable transport improvements".*

"We will maximise the efficiency of the local and strategic network by 2028. We will do this by:

- Delivering sustainable travel improvements in accordance with Policy CS19;*
- Requiring our strategic developments to deliver an appropriate and comprehensive package of transport improvements in accordance with Policies CS19, CS20, CS21, CS22 and CS23; and*
- Requiring other network improvements as identified by appropriate Transport Assessments".*

9.4.9 Chapter 9 of the Core Strategy sets out the Borough Council's perspective on South Charnwood's Edge of Leicester:

"The southern part of Charnwood sits on the edge of Leicester and forms an integral part of the way the City functions and grows. The villages and towns on the edge of Leicester, including Birstall and Thurmaston, play a significant role in Leicester's economy. The people that live in these communities very often work in the city and also benefit from good access to, and support, the city's shops, services and leisure facilities..."

Our priority location for growth is within and adjoining the Leicester Principal Urban Area. We will provide for the majority of this growth in two sustainable urban extensions, providing homes and jobs with facilities and services, and an employment-focused Regeneration Corridor"

9.4.10 The prescribed location for the North of Birstall Direction of Growth is defined as:

"... adjacent to the Leicester Principal Urban Area at Birstall. This sustainable urban extension will be to the north of the A46, west of the A6, east of the Great Central Railway and to the south and west of the Broadnook Spinney - an area which "benefits from excellent connections with the City".

9.4.11 The Core Strategy's "Vision" for the proposal is to create a new garden suburb based

on earlier Charnwood heritage associated with the Great Central Railway. Moreover:

“It will have been comprehensively planned to offer an excellent quality of life for its community. The range of homes, jobs, community facilities and shops will meet the day-to-day needs of the people who live there. Community uses will provide a focus of civic pride”.

9.4.12 In turn this comprehensively planned proposal is expected to (Core Strategy Paras 9.46 – 9.57):

on homes;

“... make a significant contribution to meeting the housing needs by delivering approximately 1,345 homes by 2028 and the remaining homes beyond the plan period”.

for jobs;

“... include employment development so that people living within the development and nearby have the opportunity to live close to work as part of our plans to reduce commuting...”

We expect the sustainable urban extension to meet the employment needs of the new community in accordance with garden suburb principles. However given the area’s excellent connections and relationship with Leicester City there is also an opportunity for new jobs that contribute to our wider employment requirements... In total this direction of growth may deliver up to 15 hectares of general employment land as part of this sustainable extension.

We expect an appropriate mix of business uses, reflecting the needs of the local economy and maximising the opportunity to work locally. We want to ensure provision for new and developing business”.

in terms of shops and facilities;

“... benefit from access to a wide range of services and facilities including school, shops, new or expanded health facilities and community facilities such as a place of worship and a community centre. We expect new facilities to be delivered as part of the centre within the development. This will reduce the need to travel for the people who live in the new homes...”

on access and travel;

“we want the sustainable urban extension to connect new residents to employment, schools, shops, leisure facilities, open spaces and other community facilities both within the development and beyond. Whilst the sustainable urban extension will include a range of uses to meet day-to-day needs, it will also enjoy good connections with the City Centre, Watermead Regeneration Corridor, Charnwood Forest, Loughborough and Birstall District Centre where additional services and facilities are available.

We will expect the development to make the most of opportunities for high quality walking and cycling routes and high frequency bus services. We want the new development to be accessible and connect the community to services and facilities,

National Cycle Route 6 and the Park and Ride facility in Birstall.

Whilst we will maximise the opportunities to walk and cycle there will still be a need for new roads to service the new development, provide links to the wider road network, support high frequency bus services and to avoid adverse impacts on neighbouring communities.

This sustainable urban extension will be next to the A6 and A46 which are the main transport corridors connecting Leicester to Loughborough and the area to the M1 Motorway. We will work with our partners to understand the impact of more detailed development proposals on these corridors, the A46/A6 interchange and the wider network and develop a package of transport measures to support the development”.

9.4.13 Location-specific Core Strategy Policy CS20 therefore establishes the framework for the overall proposal and, with specific respect to “Transport” includes a section which reads:

“The sustainable urban extension will create a balanced community and a safe, high quality and accessible environment. We will do this by...

Transport:

Requiring well connected street patterns and walkable neighbourhoods that provide high quality, safe and direct walking, cycling and public transport routes in accordance with Policy CS17;

Requiring a comprehensive package of transport improvements in accordance with Policies CS17 and CS18 and including;

new and improved cycling and walking routes, well related to the green infrastructure network, connecting to existing and new employment areas and centres, the Birstall Park and Ride, Watermead Country Park and Charnwood Forest;

bus service enhancements connecting the new community with local employment opportunities and Birstall, Leicester City Centre and Loughborough, as identified through a Transport Assessment;

a new roundabout on the A6, north of the A46 interchange;

appropriate access arrangements including a connection to the A6 and Rothley;

appropriate capacity improvements at the A46 interchange; and

other network improvements as identified by an appropriate Transport Assessment.

9.4.14 The Broadnook Garden Suburb proposals have been formulated firmly on the basis of the above Core Strategy policies and principles and, in turn, the traffic modelling work undertaken in support of this Transport Assessment addresses the policy-compliant proposals.

9.4.15 The Broadnook site is well-located and close to existing sustainable transport infrastructure which can be utilised and enhanced to achieve policy imperatives and

objectives. An independent Examination has confirmed the credentials of the proposals which accord well with all national and local transport policy priorities.

Leicestershire Local Transport Plan (LTP3)

9.4.16 Leicestershire's third Local Transport Plan (LTP3) is made up of a long-term transport strategy with a vision for transport to 2026, supported by a rolling three year Implementation Plan.

9.4.17 The long term vision for the transport system is for: *"Leicestershire to be recognised as a place that has, with the help of its residents and businesses, a first class transport system that enables economic and social travel in ways that improve people's health, safety and prosperity, as well as their environment and their quality of life."*

9.4.18 The LTP3 document sets out a number of goals for transport in the area:

- A transport system that supports a prosperous economy and provides successfully for population growth
- An efficient, resilient and sustainable transport system that is well managed and maintained
- A transport system that helps to reduce the carbon footprint of Leicestershire
- An accessible and integrated transport system that helps promote equality of opportunity for all our residents
- A transport system that improves the safety, health and security of our residents
- A transport system that helps to improve the quality of life for our residents and makes Leicestershire a more attractive place to live, work and visit

Discussion

9.4.19 The above sections outline the policy context against which the proposed development, the TA and this ES chapter should be considered. The main points of relevance are:

- The application and the proposed development are consistent with national planning policy. It is supported by a Transport Assessment and Framework Travel Plan, which promote the use of sustainable modes of travel, and propose measures to mitigate the impact of the development trips, in order to ensure that the cumulative impacts are not severe. The TA concludes that the requirements of NPPF can be satisfied.
- The application will directly support and is consistent with Charnwood Borough Council's Core.
- The application and the proposed development are consistent with local policy, as the application site is and can be made accessible by all modes of transport, including sustainable travel modes (walking, cycling and bus), and further measures will be provided to facilitate sustainable modes. This includes new footways, cycleways and pedestrian crossings.
- Furthermore, the internal layout of the development has been designed to allow vehicular access, and the off-site highway network will be amended as necessary to mitigate the impact of the additional vehicle movements and allow adequate access. This includes alterations to the local highway network junctions, notably at A46/A6 Birstall Interchange and at Rothley Crossroads.

9.5 Assessment Methodology and Significance Criteria

Assessment methodology

- 9.5.1 The assessment of the transport impacts of the proposed development has been undertaken in accordance with the agreed TA methodology.
- 9.5.2 The assessment work within this ES Chapter has been conducted based upon the following:
- Design Manual for Roads and Bridges (DMRB), Volume 11, Environmental Assessment
 - DMRB, Volume 5, Provision for Non-Motorised Users
 - Guidelines for the Environmental Assessment of Road Traffic, Institute of Environmental Assessment (IEA), 1993.

Significance criteria

- 9.5.3 The significance, or importance, of an environmental effect is relative to the sensitivity or quantity of a particular type of receptor. Therefore, receptors in this assessment are set out in accordance with their importance. The receptors for this ES range from high to low, and are categorised as International, National, Regional, County, Borough, or Local. **Table 9.1** below categorises the highway network in the vicinity of the Application Site to define the traffic and transport receptors in the area.

Table 9.1: Traffic and transport receptors

Receptor	Importance	Area
International	High	None
National	High	A46 mainline
Regional	Medium	A46/A6 Birstall Interchange, including slip roads
County	Medium	A6
Borough	Low	
Local	Low	Loughborough Road, Hallfields Lane, Cossington Lane, Birstall Meadow Road, Hallam Fields Road, and Greengate Lane

- 9.5.4 The predicted impact assessment on the local to international receptor scale can be neutral (negligible), positive, or negative. Positive impacts are beneficial/advantageous to a receptor, whilst negative impacts are detrimental/adverse.
- 9.5.5 The impacts range from low to high and are rated as negligible, minor, moderate, or major. The definition of the scale of impact is summarised in **Table 9.2** below.

Table 9.2: Definition of scale of impact

Scale of impact	Definition
Negligible	An effect that is considered not to be significant or to have no influence. This is applicable where there is a neutral impact which is neither positive nor negative.
Minor	An effect that may be a local issue, but is unlikely to be of importance in the overall decision making process. This effect would nevertheless be relevant in the detailed design of the project.
Moderate	An effect that will be important at local level upwards, but is unlikely to affect the overall decision making process.
Major	An effect that will be important at borough, county, or regional level. If adverse, this effect could have implications on the decision making process, depending upon the relative importance attached to the issue.

9.5.6 The significance of any impact within this assessment is calculated by combining the importance of the receptor (Table 9.1) with the scale of impact (Table 9.2), through a matrix table, as shown in **Table 9.3** below.

Table 9.3: Impact significance matrix

Sensitivity and type of receptor	Scale of impact			
	Major	Moderate	Minor	Negligible
High International and National	Major	Major	Moderate	Minor
Medium Regional and County	Major	Moderate	Minor	Minor
Low Borough and Local	Moderate	Minor	Minor	Negligible

9.5.7 In addition to the impact significance, this assessment also takes into account whether the environmental impacts are short, medium, or long term and, whether they are permanent or temporary.

9.5.8 To assess the environmental impact of the Proposed Development and its traffic, it is necessary within the following sections: to determine the existing and opening year traffic levels and characteristics; to determine the time periods and year for assessment; and to identify the geographical boundaries of assessment (i.e. the study area). Once this information is established, the predicted impacts are assessed, along with measures to mitigate any adverse effect.

9.6 Baseline Conditions

Site description and context

9.6.1 Details of the Application Site and the Proposed Development are given in Chapter 2 of this ES, including a description of the type, quantum and phasing of the development. The existing, committed and proposed pedestrian, cycle, public transport and highway infrastructure is described in detail in the TA.

Current baseline traffic flows

9.6.2 For this assessment, it is necessary to identify the existing traffic flows on the highway network surrounding the Application Site, i.e. the baseline conditions without the Proposed Development. Appendix B of the TA presented the results from LLITM for a 2016 base year, for the morning and evening peak hours.

Future year baseline traffic flows

9.6.3 In accordance with IEA guidelines, “the environmental assessment should be undertaken at the year of opening of the development or the first full year of its operation. For a phased development, it may be necessary to consider the first year of each phase”.

9.6.4 It is anticipated that construction will begin in 2020. The scale of the project means that it will take many years to complete. The traffic modelling work used an assessment year of 2031. This chapter of the ES therefore adopts a 2031 assessment scenario.

9.6.5 The traffic modelling work is reported in the TA. It was carried out using LLITM, which examines the highway network throughout the County. The model produced forecasts for the highway network peak hours as these are the time periods when traffic flows are at their greatest and spare capacity on the highway network is at its lowest. Hence these peak hours are assessed in the TA. The traffic generated by the development that would route to and from off-site locations is shown in **Table 9.4**. The vast majority of the generated traffic would be car journeys, with only modest amounts of HGVs. Hence rising and falling traffic volumes throughout the day generated by the development will coincide with existing traffic volumes on the highway network. The greatest environment impacts will therefore occur during the highway network peak hours.

Table 9.4: External traffic generation

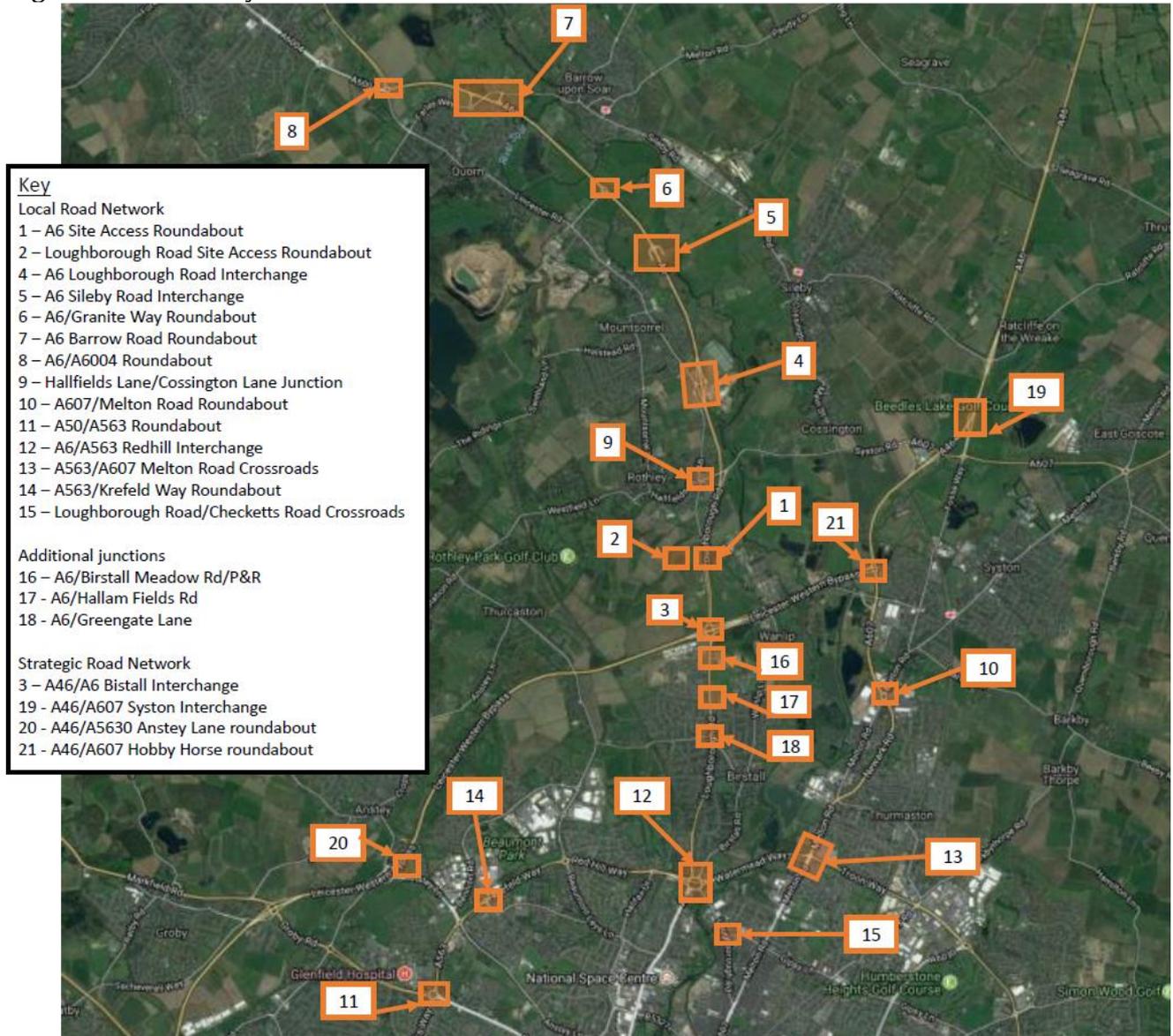
traffic generation full development	AM peak hour (0800-0900hrs)			PM peak hour (1700-1800hrs)		
	arrive	depart	2way	arrive	depart	2way
cars	698	1,067	1,765	1,020	452	1,472
HGVs	19	8	27	5	16	21
total	717	1,075	1,792	1,025	468	1,493

9.7 Likely Significant Effects

Identification of Effects

- 9.7.1 To determine the environmental effects of the change in traffic flows, a study area must be defined. In accordance with IEA guidelines there are two broad rules of thumb that should be used as a screening process to limit the scale and extent of the assessment. These are as follows:
- Rule One* include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)
- Rule Two* include any other specifically sensitive areas where traffic flows have increased by more than 10% or more".
- 9.7.2 The site is adjacent to both the A46 and A6, major roads designed to carry significant volumes of traffic. The TA identifies that the majority of development traffic (both light vehicles and HGVs) will route via the A6 and A46 and, accordingly, the site is not deemed to be in a sensitive area. Therefore, the 30% threshold given in Rule One is applied within this assessment.
- 9.7.3 There is no suggestion that a 30% increase in traffic will necessarily correspond with a detrimental impact on the operation or safety of a road or junction or have any moderate to substantial adverse environmental impacts. This is because the capacity of the road or junction is directly related to the geometry and layout, and the existing traffic flows. Nevertheless, the 30% increase is used as useful point of reference to define the study area for more detailed assessment.
- 9.7.4 The TA adopted a much more stringent criteria for determining where traffic impacts might have an adverse impact. An initial sift determined an Area of Influence where roads would experience a traffic increase of greater than 5% and 25 vehicles. That area was refined to produce a study area for the TA, shown in **Figure 9.1**.

Figure 9.1 TA study area



9.7.5 Within the TA study area, 2031 traffic forecasts were extracted both without and with the development. Analysing each junction in turn, it was determined that there would not be adverse impacts at most of the junctions. The junctions where mitigation was provided were as follows:

- Junction 1 – A6 Site Access Roundabout
- Junction 2 – Loughborough Road Site Access Roundabout
- Junction 9 Rothley Crossroads (Hallfields Lane/Cossington Lane)
- Junction 3 – A46/A6 Birstall Interchange
- Junction 16 – A6/Birstall Meadow Road/P&R
- Junction 17 – A6/Hallam Fields Road
- Junction 18 – A6/Greengate Lane

9.7.6 Taking that list of junctions, **Table 9.5** shows the change in traffic resulting from the Proposed Development. Traffic volumes would increase by a maximum of 12%. Generally, the percentage of HGVs declines, because the volume of light vehicles increases but the number of HGVs remains the same. That is the advantage of a large

scale development situated beside a major road on the edge of a major city, rather than, say, a rural location accessed by a minor road near a village.

Table 9.4: Percentage change in total traffic two-way flows and HGVs as a result of the Proposed Development

	2016 Base		2031 Base		2031 Base+Devel		2031 increase by Devel	
	total	HGV%	total	HGV%	total	HGV%	total	HGV%
A6 north of A46	49844	4.8%	52616	4.2%	58971	4.0%	12%	-6%
A46 west of A6	66538	8.1%	83886	7.4%	84614	7.1%	1%	-4%
A46 east of A6	65960	8.0%	73972	6.6%	75435	6.0%	2%	-9%
A6 south of A46	31260	3.3%	32951	3.1%	34705	3.0%	5%	-3%
Loughborough Road	5927	3.0%	6526	2.7%	6122	2.9%	-6%	7%
Cossington Lane	13203	2.0%	14707	0.8%	13673	0.9%	-7%	8%
Hallfields Lane	11056	3.3%	11747	2.0%	12713	1.8%	8%	-8%

9.8 Study area

9.8.1 Given the figures in the table above, and the 30% rule of thumb, there would not be an environmentally sensitive increase in traffic on the off-site highway network. The further consideration of environmental impacts has therefore been limited to the site access roundabouts on Loughborough Road and the A6. This forms the study area.

9.9 Prediction of Effect Magnitude and significance

9.9.1 The potential environmental effects associated with the transport implications of the development fall under three general headings:

- a) disruption due to construction
- b) impacts on pedestrians, cyclists, equestrians and the community (termed pedestrians and others) with regards to:
 - journey length and local travel patterns;
 - amenity; and
 - severance.
- c) impacts on vehicle travellers:
 - view from the road; and
 - driver stress.

Disruption due to construction

9.9.2 The need for the external transfer of bulk materials associated with the construction of the Broadnook project will be largely avoided since the undulating nature of the site is such that the materials generated by plateauing can be reused within it in areas that need to be filled. This means that in the early stages at least, construction traffic

associated with preparing the site for development will not be significant and its effect will be negligible.

- 9.9.3 Out-with the initial ground preparation phase, the majority of the construction traffic will involve vehicles associated with the construction of the buildings and houses. Whilst some degree of material importation will be associated with the construction of the internal roads, this is likely to be minor in nature when compared with that of the main built development. For this reason, it is possible that construction traffic will be intermittent over a period of time (depending on whether building construction is underway or not) with only a negligible effect being experienced outside of these periods.
- 9.9.4 For the buildings and houses themselves, all materials will arrive by road. Delivery vehicles will be routed via the A46 (and thence the A6) to avoid effects on local residential areas. During a typical year, there would be up to 500 Heavy Goods Vehicles (HGV) per day (or 50 arrivals an hour) during the busiest construction period, although this rate is likely to be a peak rather than an average. There could be up to 400 construction staff and road builders employed building the development itself. Compared to the traffic volumes generated once the development is complete, shown in Table 9.4 to be up to 1,792 vehicles in a peak hour, this would be inconsequential.
- 9.9.5 In addition to the completed development flows, the Site Access Roundabout needs to accommodate construction traffic and it is likely that there will be a Highways Construction Depot to the east of the A6. This would be a temporary feature and only be in existence for approximately three years following the commencement of construction.
- 9.9.6 Overall, the construction phase of the development would have a **long term, temporary adverse** impact of **minor significance** within the study area.

Impacts on pedestrians, cyclists, equestrians and the community

- 9.9.7 The number of off-site pedestrians, cyclists and public transport users that would be generated by the Proposed Development was determined in the TA. It was concluded that 4.8% of the total trips generated by the Proposed Development would be pedestrians, 3.5% would be cyclists, and 7.8% would be by bus. The Proposed Development would therefore generate the following maximum number of peak hour two-way person trips on the local transport infrastructure:
- 104 pedestrians
 - 75 cyclists
 - 167 bus users

Journey length and local travel patterns

- 9.9.8 Journey length includes both the distance travelled, and time taken, for pedestrians and others. The time taken is a combination of moving time, whether walking or riding, and time spent waiting, for example to cross a road.
- 9.9.9 With regards to the study area, there will be excellent provisions for all highway users built in to the development from day one. Existing users will have their existing provisions in addition to the new provisions. There are footways along the A6 and on

Loughborough Road to Rothley. Thus, journey length and travel patterns will be unchanged. The existing pedestrians and cyclists using those routes is small. There might be some disruption to those footways during construction of the new access junctions, but provisions will need to be made to ensure continuous links.

- 9.9.10 Overall, on balance it is concluded that the Proposed Development would have a **permanent impact of negligible significance** on pedestrian and cycle journey length and local travel patterns within the study area.

Amenity

- 9.9.11 Amenity is defined in the DMRB as the relative pleasantness of a journey for pedestrians and others. This is mainly influenced by the volume and composition of traffic on an adjacent link. Other key contributory factors are the standard and width of footways/cycleways, the street furniture provided, planting and landscaping. IEA guidance describes changes of up to 30% as slight, up to 60% as moderate and up to 90% as substantial.

- 9.9.12 Traffic volumes at the access junctions will increase by up to 12%, which will not be felt by pedestrians and cyclists on the adjacent networks. Once the development is complete, routes through the development will be provided that are pleasant, much less trafficked, within a garden suburb setting, and passing places of interest such as the Broadnook Centre.

- 9.9.13 The Proposed Development would have a **long term, beneficial impact of minor significance** on the amenity of the surrounding area.

Severance

- 9.9.14 Severance is defined as the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows. As noted in the IEA guidelines: *“factors which need to be given attention in determining whether severance is likely to be an important issue include road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route”*.

- 9.9.15 The IEA guidelines go on to state that: *“an assessment of severance should aim to estimate the current severance caused by traffic and related factors, and the extent to which additional traffic will exacerbate this problem”*.

- 9.9.16 Severance can be described as slight, moderate or severe. In accordance with the DMRB, an AADT flow of below 8,000 vehicles is described as slight, whilst a flow of between 8,000 and 16,000 is described as moderate severance. The threshold between moderate and severe severance is an AADT flow of 16,000 vehicles or more.

- 9.9.17 The A6 already severs area west of the road from areas to the east, although there are few destinations on the eastern side. That will not change. However, the introduction of the site access junctions will introduce a severance between north-south journeys along the A6. The amount of new traffic coming in and out of the site access arm would fall in to the moderate category. The severance is overcome by a number of good

quality signal controlled and priority controlled pedestrian crossings that are built in to the access design.

- 9.9.18 Community severance is also defined as: “the demolition of a community facility or loss of land used by members of the public”.
- 9.9.19 The majority of the Application Site is privately owned, and is therefore not used by members of the public. There are no public footpaths that would be affected, rather new routes would be introduced.
- 9.9.20 The Proposed Development would have a **long term, permanent** impact of **moderate significance** on severance within the study area.

9.10 Impacts on vehicle travellers

View from the road

- 9.10.1 View from the road is defined as the extent to which travellers, including drivers, are exposed to the different types of scenery through which a route passes.
- 9.10.2 The view from the road would be significantly enhanced by the development. There would be points of interest and the garden suburb come with a comprehensive landscaping scheme where well managed trees and vegetation will be introduced. The site access roundabout has been purposefully enlarged to accommodate trees.
- 9.10.3 The Proposed Development would have a **long term, permanent** impact of **beneficial significance** on the view from the roads within the study area.

Driver stress

- 9.10.4 Driver stress is defined as the adverse mental and physiological effects experienced by a driver traversing through a road network. Factors influencing the level of stress include: road layout and geometry; surface riding characteristics; junction frequency; and the speed and flow per lane. There are three main components of driver stress: frustration; fear of potential accidents; and uncertainty of the route being followed. Driver stress is categorised as low, moderate, or high in DMRB Volume 11 Section 3 Part 9.
- 9.10.5 Frustration is caused by a driver’s inability to drive at a speed consistent with his or her own wishes in relation to the general standard of the road. The introduction of a new junction on the A6 will cause a delay where there currently isn’t one. However, the junction has been designed with plenty of spare capacity so the delay will be minimised.
- 9.10.6 With regard to driver fear, this is typically caused by traffic travelling at speeds in excess of those that a driver feels comfortable with, and by the presence of large number of HGVs. Vehicle speeds within the study area are limited by the speed limits imposed, the nature of the highway network (with traffic signals and junctions), and the volume of traffic. Speeds will reduce with the introduction of a new junction.

- 9.10.7 HGVs account for a low proportion of the development traffic and the percentage of the total would slightly decrease.
- 9.10.8 Overall, as a result of the Proposed Development, the level of stress experienced by drivers would be low, with a slight increase in driver frustration and a slight benefit in driver fear.
- 9.10.9 In summary, the Proposed Development would not materially alter the existing conditions and hence would have a **long term, permanent impact** of **minor** significance on driver stress.

9.11 Cumulative Effects

- 9.11.1 The traffic flow forecasts were produced by LLITM. They take account of all committed and planned development in the area likely to be built out by the 2031 assessment year. The figures are therefore derived from a cumulative assessment.

9.12 Mitigation Measures

- 9.12.1 The environmental impacts of the Proposed Development are confined to the site access junctions only. The measures that would be delivered to mitigate the traffic impacts are described in considerable detail in the TA. This ES Chapter finds impacts of minor significance caused by construction traffic, severance, and driver stress. The impact of construction traffic would be temporary and would be controlled through the inclusion of conditions requiring a construction traffic management plan. Severance is overcome by a comprehensive set of pedestrian and cycle crossings on all arms of the site access junctions. Driver stress results from the introduction of a new junction, but is minimised by ensuring that the junction would operate with plenty of spare capacity to minimise delay and frustration. No further mitigation measures are required.

9.13 Residual Effects

- 9.13.1 Once the development is in place there would be no significant adverse effects, with any adverse residual impacts reduced to negligible significance.
- 9.13.2 The changes to the local rights of way network, and the proposed additional pedestrian access to the site are likely to generate some benefits locally.

9.14 Summary

- 9.14.1 The environmental effects of the changing transport conditions as a result of the Proposed Development have been examined and are summarised in **Table 12.12**. The cumulative effect of nearby committed development was also taken into account. Appropriate mitigation has been included and the Proposed Development will not have any significant effects on the receptors within the study area. The residual adverse environmental effects would be limited to those of negligible significance.