

## 5.0 Transport and Access

### 5.1 Introduction

- 5.1.1 This chapter of the ES, is a replacement of the previous ES Chapter 5 submitted in 2021, and has been prepared by Ridge to identify the nature of significance of the potential effects in relation to transport and access to Hawkwell Village, part of the North West Bicester (NWB) allocation, "the Site" as a result of the Proposed Development and is supported by a replacement Transport Assessment (TA) and Travel Plan (TP).
- 5.1.2 Following discussions with National Highways (NH) and the Local Highway Authority (LHA), along with changes to the proposals as outlined in Chapter 2 and including the development mix (introduction of the potential for a private hospital, options for different size of food/convenience store to be provided) and changes to the future road network and distribution of vehicular traffic, further consideration of the environmental impact of the Proposed Development is warranted.
- 5.1.3 The transport and access ES chapter update will refer to the detailed TA, which is attached as an Appendix to this chapter of the ES.
- 5.1.4 In accordance with the Environmental Impact Assessment (EIA) Regulations (2017) the ES chapter has been carried out by competent experts, comprising Members of the Chartered Institute of Highways and Transportation, and is in accordance with guidance of the professional institution and the guidance document 'Environmental Assessment of Traffic and Movement' published by the Institute of Environmental Management and Assessment (IEMA) in 2023.
- 5.1.5 Ridge is a multi-disciplinary engineering consultancy with a team of specialist transport planners with over 50 years' experienced and is frequently called upon to provide expert evidence at Public and Local Plan Inquiries. Ridge has experience and expertise of the EIA process.

## **5.2 Assessment Methodology**

### ***Overview of Approach***

- 5.2.1 The aim of the assessment has been to identify, as far as reasonably possible, the nature of the transport changes within the area of the Proposed Development, to assess significance and to identify any appropriate mitigation measures. The assessment will include consideration of traffic and transport impacts during construction as well as impacts during the operation of the Proposed Development.
- 5.2.2 The study area of the transport-related elements of the ES will be determined in accordance with the recommendation of the 'Environmental Assessment of Traffic and Movement'. In this instance the study area is effectively defined by the Oxfordshire County Council Bicester Transport Model (BTM).
- 5.2.3 Typical daily and peak hour construction movements will be assessed with reference to a programme of development and infrastructure construction activities, and the likely trip generation associated with these movements. These additional construction movements will be assessed with reference to the Baseline movements.
- 5.2.4 The Post Development Completion effects will be assessed by reference to the Local Highway Authority's (OCC's) BTM, using the 2031 Do Something peak hour movements. For the purposes of assessment completion will be assumed to be in 2031.
- 5.2.5 Consideration will be given to the peak time impacts within the TA whilst the ES will consider the impact of daily traffic flows.
- 5.2.6 In determining the likely Post Development completion effects, the assessment has been undertaken using the BTM trip rates which presents a worst case scenario.

### ***Scoping and Response***

- 5.2.7 A Scoping request was submitted to Cherwell District Council (CDC), who consulted Oxfordshire County Council (OCC) on transport matters, in September 2021.
- 5.2.8 A summary of OCC's response that forms part of the District Council's issued Screening Opinion is provided as follows:
- For transport purposes, committed development to be included in the cumulative assessment will need to include permitted non-Local Plan development, which is not currently included in the Bicester Transport Model. This includes the Great Wolf leisure

resort at Chesterton. The impact of the proposed Oxfordshire Strategic Rail Freight Interchange and logistics proposals at nearby Baynards Green should also be taken into account. This, as well as whether there are any other projects that should be included, should be discussed further with OCC.

- Whilst National Highways seem to have agreed that the potential impacts on J9 and J10 of the M40 could be scoped out of the ES, OCC have advised that before this decision is taken, a proportionate impact assessment should be undertaken. National Highways will expect to consider, through the application, the impact of the development on the Strategic Road Network as it will be important to ensure that it can continue to operate safely and efficiently. It is requested that this matter form part of the discussions to agree the scoping of the Transport Assessment.
- Please note with respect to para 2.19 that the realignment of the A4095 has not commenced.
- OCC refer to the need for the assessment to take into account differences between the proposed location for accesses and those identified by the NW Bicester Masterplan.
- The proposal will need to include connections to the new cycle and pedestrian link already in place to allow connectivity with future development south of the railway. A link to the north will also need to be facilitated (towards application site 21/01630/OUT, over the watercourse).
- In addition to the documents referenced at paragraph 5.8, reference should also be made to LTN1/20 and consideration must also be given to the Bicester Local Cycling and Walking Improvement Plan.
- Reference is made to a 'North West Bicester Transport Model' the model that needs to be used is the Bicester Transport Model.
- Any allowances for innovation, homeworking and behavioural change will need to be made in line with relevant current guidance.
- At 5.25, reference to the IEMA Guidelines is made. Whilst these are the industry standard, they are dated and focus on pedestrian amenity. The amenity of other Non-Motorised Users should additionally be considered.
- The extent of the assessment referred to at paragraph 5.27 should be determined by proportionate impact analysis and agreed with OCC.

- The assessment will need to be undertaken in accordance with the requirements of the DfT Circular 02/2013 Strategic Road Network and the Delivery of Sustainable Development.
- The OCC Education Team have advised that the EIA should consider travel patterns from the development to local schools including during any period between occupations commencing and a new school opening on site. This may be relevant to both the transport and socio-economic topics.

### ***Consultations Undertaken***

- 5.2.9 A Transport Scoping Note was submitted to OCC in September 2021 setting out movement and public transport strategy, parking provision and a vehicle trip generation based on the Decide and Provide approach set out within the TRICS Guidance Note on the Practical Implementation of the Decide & Provide Approach (February 2021).
- 5.2.10 The previously submitted TA and TP have been reviewed by NH and the LHA and various technical notes (TNs) have been submitted and responded to by the highway authorities. Meetings (online and in person) to discuss issues have been undertaken with both highway authorities. The replacement TA appended here, includes the TNs submitted, for completeness.
- 5.2.11 Online meetings were held with Bicester Bicycle User Group (BBUG) for the transfer of information and ideas between the two parties.

### ***Surveys Undertaken***

- 5.2.12 Baseline and future year traffic flows have been extracted from the BTM. The committed development for each scenario was agreed with the LHA.

### ***Method for Assessing Baseline and Future Baseline Conditions***

#### ***Baseline***

- 5.2.13 Baseline conditions for the surrounding highway network have been established using the Bicester Transport Model (BTM) run by Tetra Tech (TT) on behalf of OCC.
- 5.2.14 Key road links in relation to the Application are shown in **Figure 5.2.1**.

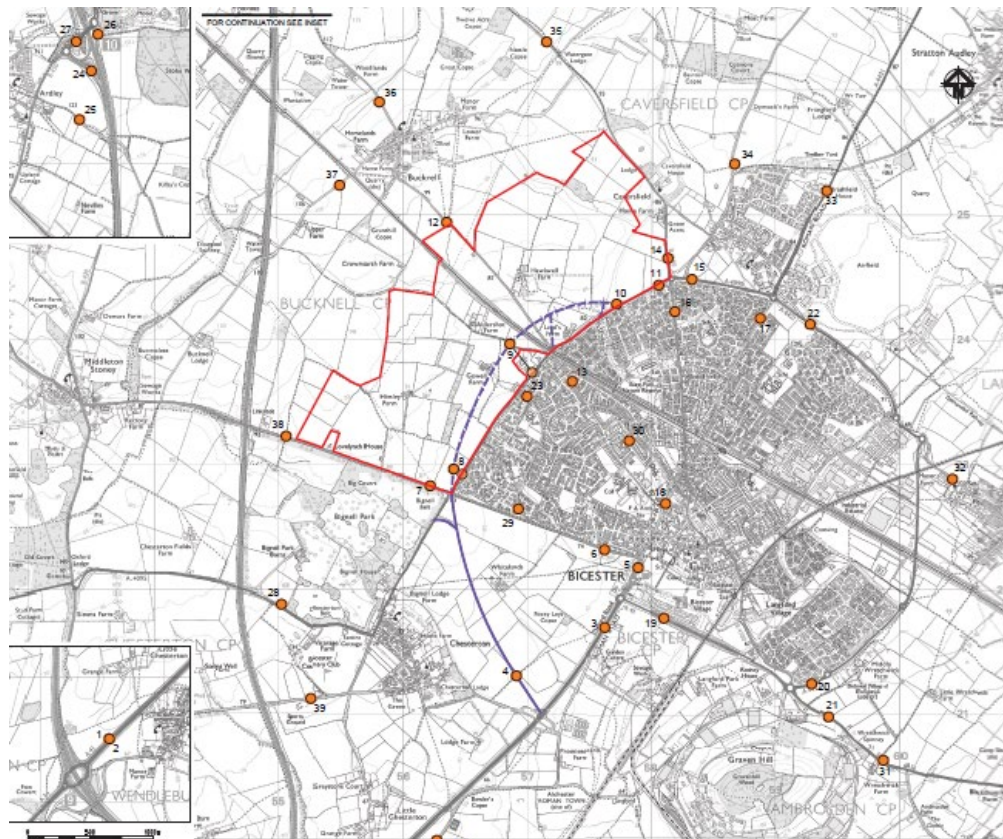


Figure 5.2.1: Key Road Links

- 5.2.15 The BTM was built using 2007 traffic data, and was completely overhauled and revalidated in 2012 and again in 2016 to have a base year of 2016, with a significant update in 2022. The use of the baseline model was set out and endorsed by OCC during the most recent scoping exercise.
- 5.2.16 The baseline traffic analysis uses the BTM flows to provide the evidence of 2031 traffic levels.

**Future Baseline**

- 5.2.17 A future year (Reference Case) was developed by Tetra Tech for 2031 using the BTM. The Reference Case included all committed and planned developments and represented the maximum growth of the town without NW Bicester along with committed highway improvement schemes. For the purposes of environmental assessment, this scenario is to be used as the Future Year Baseline against which the impacts of the Proposed Development and the Cumulative Development will be assessed as endorsed by OCC in the Scoping response.

### ***Method for Assessing Impacts and Magnitude and Significance of Effects***

#### *Assessment Methodology*

##### *Threshold Criteria*

- 5.2.18 The significance of potential traffic effects has been assessed adopting the principles developed from best practice. The effect of significance is derived from measuring the magnitude of change and the sensitivity of the receptors affected. Categories of sensitivity and magnitude are defined and assessed to determine the significance of the effect.

#### *Magnitude and Sensitivity*

##### *Magnitude*

- 5.2.19 In line with the IEMA guidelines, the following key traffic related environmental effects are considered relevant in this assessment:

1. Severance of communities;
2. Road vehicle driver and passenger delay;
3. Non-Motorised User Delay;
4. Non-Motorised User Amenity;
5. Road user and Non-Motorised User safety;
6. Fear and Intimidation on and by road users; and
7. Hazardous Large Loads.

- 5.2.20 The criteria used to determine the magnitude of each of the potentially significant traffic-related environmental effects described above is based on the advice provided within the IEMA guidelines, summarised below.

##### *Severance*

- 5.2.21 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The IEMA guidelines point to thresholds outlined in the Manual of Environmental Appraisal (MEA) that state that a 30% change in traffic flow is likely to produce a 'slight' change in severance, with 'moderate' and 'substantial' changes occurring at 60% and 90% respectively. However, it is noted that IEMA guidelines states that these figures "*have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any environmental assessment. The assessment of severance should pay full regard to specific local conditions, e.g. whether crossing facilities are provided or not, traffic signal settings, etc*".

5.2.22 In addition, IEMA guidelines also states that the "*measurement and prediction of severance is extremely difficult. The correlation between the extent of severance and the physical barrier of a road is not clear and there are no predicative formulae which give simple relationships between traffic factors and levels of severance*". Thus, the assessment of severance has been undertaken based on professional judgement taking into account quantitative factors (i.e. increase in traffic flow) and qualitative factors (surrounding pedestrian and traffic environment). Factors that need to be considered when assessing the degree of severance 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.

#### *Driver Delay*

5.2.23 Delay to drivers generally occur at junctions where opposing vehicle manoeuvres are undertaken with vehicles having to give or receive priority depending upon the type of junction arrangement. The IEMA guidelines indicate that the delays are only likely to be significant when the existing highway network is already running at or close to its theoretical design capacity. Although evidently even in a congested area a low level of traffic can still have large change in terms of magnitude.

5.2.24 This Chapter considers the operation of the highway network across the agreed study area with driver delay considered through analysis of the change in speed on each link. The appended TA provides further detail on junction capacity.

#### *Non-Motorised User (NMU) Delay*

5.2.25 The IEMA guidelines note that changes in the volume, composition and or speed of traffic may affect the ability of people to cross roads. Typically, increases in traffic levels result in increased non-motorised user (NMU) delay. Delays will also depend on the general level of NMU activity, visibility and general physical conditions of the development site. The guidelines do not set any thresholds, recommending instead that assessors use their judgement to determine the significance of the impact.

5.2.26 A study (Supplementary Report 356) published by the Transport and Road Research Laboratory (TRL) was referred to in the IEMA guidelines as providing a useful approximation for determining NMU delay. The TRL research concluded that mean pedestrian delay was found to be eight seconds at flows of 1,000 vehicles per hour and below 20 seconds at 2,000 vehicles per hour for various types of crossing condition. This research was reproduced in DMRB Volume 11 and sets out predictive mean pedestrian delay based on empirical data, taking into account traffic flow and a range of parameters such as crossing width and vehicle speeds.

- 5.2.27 A two-way flow of 1,400 vehicles per hour was adopted as a lower threshold for assessment (equating to a mean 10 second delay for a link with no pedestrian facilities) in the TRL report. Below this flow pedestrian delay is unlikely to be a significant factor. This is deemed a robust starting point for narrowing down the modelled routes within the study area and ensuring the routes selected exceeded the suggested threshold of analysis in DMRB Volume 11. It should be noted that for controlled forms of pedestrian crossing the pedestrian delays are less.

*Non-Motorised User Amenity*

- 5.2.28 NMU amenity relates to the increase in transport trips associated with the Proposed Development which could have a change to the perceived amenity through increased noise, pollution or congestion, which may detract from the existing environment. The IEMA guidelines suggest that a tentative threshold for judging the significance of changes in NMU amenity would be where traffic flow (or its lorry component) is halved or doubled. However, it is evident that the change in respect to NMU amenity can be subjective and therefore some professional judgement is required to assess this aspect.

*Road Safety*

- 5.2.29 Where a development is expected to change the current composition, volume and speed of the traffic as well as NMU activity along the adjoining highway network, a Personal Injury Collision (PIC) Study should be carried out in line with the "Safe System" approach as set out in the IEMA guidelines to assess the potential significance of accident risks. The Road Safety Audit (RSA) should:
- Identify the study area using historic crash data;
  - Undertake evidence led assessment of established baseline road safety levels where impact thresholds are exceeded for motorised or NMUs; and
  - Assess the impacts of additional development traffic for all users.
- 5.2.30 The IEMA guidelines do not include any definition in relation to the significance of road safety effects, suggesting that professional judgement will be needed to assess the implications of local circumstance, or factors which may increase or decrease the risk of accidents, in close consultation with the LHA.

*Fear and intimidation*

- 5.2.31 The scale of fear and intimidation experienced by NMUs is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths as well as factors such as the speed and size of vehicles.
- 5.2.32 There is no commonly agreed threshold by which to determine the significance of this effect. IEMA guidelines note previous work that has been undertaken which puts forward thresholds

that define the degree of hazard to pedestrians by average traffic flow, 18-hour heavy vehicle flow and average speed over an 18-hour day in miles/hour as shown in **Table 5.2.1**.

**Table 5.2.1: Fear and intimidation degree of hazard**

Average traffic flow over 18-hour day – all vehicles/hour 2-way (a)	Total 18-hour heavy vehicle flow (b)	Average vehicle speed (c)	Degree of hazard score (d)
+1,800	+3,000	>40	30
1,200 – 1,800	2,000 – 3,000	20 – 40	20
600 – 1,200	1,000 – 2,000	20 – 30	10
<600	<1,000	<20	0

5.2.33 The total score from all three elements is combined to provide a 'level' of fear and intimidation for all three elements. **Table 5.2.2** provides an example.

**Table 5.2.2: Example levels of fear and intimidation**

Level of fear and intimidation	Total Hazard score (a) + (b) + (c)
Extreme	71+
Great	41 – 70
Moderate	21 – 40
Small	0 – 20

5.2.34 The magnitude of impact is approximated with reference to the changes in the level of fear and intimidation from baseline conditions (**Table 5.2.3**).

**Table 5.2.3: Fear and intimidation magnitude of impact**

Magnitude of impact	Change in step/traffic flows (AADT) from baseline conditions
High	Two step changes in level
Medium	One step change in level but with <ul style="list-style-type: none"> <li>• &gt;400 veh increase in average 18hr AV two-way all vehicle flow; and/or</li> <li>• &gt;500 Heavy Vehicle (HV) increase in total 18hr HV flow</li> </ul>
Low	One step change in level but with <ul style="list-style-type: none"> <li>• &gt;400 veh increase in average 18hr AV two-way all vehicle flow; and/or</li> <li>• &gt;500 Heavy Vehicle (HV) increase in total 18hr HV flow</li> </ul>
Negligible	No change in step changes

5.2.35 However, these thresholds do not take account of the nearby environment in terms of foot/cycle provision and pedestrian/cyclist facilities. In addition, the thresholds only assess fear and intimidation based on total flows and therefore do not provide an indication of changes to fear and intimidation.

5.2.36 Thus, as with severance, the assessment of fear and intimidation has been undertaken based on professional judgement taking into account quantitative factors (i.e. increase in traffic flow) and qualitative factors (surrounding NMU and traffic environment). This is in accordance with IEMA guidelines which states that there will be "*need for judgement to be exercised in determining the degree of fear and intimidation*".

*Hazardous Large Loads*

5.2.1 There are no hazardous loads associated with the Proposed Development so this section does not apply.

**Receptors and Receptor Sensitivity**

5.2.37 The 'Environmental Assessment of Traffic and Movement' recommends that particular groups, or locations, which may be sensitive to changes in traffic conditions are identified. The following groups and special interests should therefore be considered:

User Groups:

1. Non-Motorised Users;
2. Public Right of Way (PRoW) Users;
3. Motorises and Freight Vehicles;
4. Public Transport; and
5. Emergency Services.

Locations:

6. People at home;
7. People in work places;
8. Sensitive groups e.g. children, elderly and disabled;
9. Sensitive locations e.g. hospitals, schools, churches;
10. Open spaces, recreational sites, shopping areas;
11. Sites of ecological/nature conservation value;
12. Sites of tourist/visitor attraction;
13. Collision Cluster and Routes with Road Safety Concerns; and
14. Junctions and Highway Links (or over) Capacity.

5.2.38 Sensitive receptors, such as hospitals and schools, define sensitive areas. The sensitivity of receptors (in proximity to highway links) has been graded into High, Medium and Low categories in **Table 5.2.4**.

**Table 5.2.4: Receptor Sensitivity**

Importance / sensitivity of resource or receptor	Resource	Receptor
High	Traffic flows on highway network near schools, colleges, playgrounds, accident blackspots, retirement homes and roads without footways that are used by pedestrians.	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers.

<b>Importance / sensitivity of resource or receptor</b>	<b>Resource</b>	<b>Receptor</b>
Medium	Traffic flows at congested junctions and on highway network near doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks, recreation facilities.	Residents/workers travelling to and from work on foot and by vehicle, school children, leisure walkers, people visiting shops etc.
Low	Traffic flows: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision.	Residents of or workers travelling to these places.
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.	Residents/workers travelling by foot or by vehicle.

**Significance Criteria**

Significance of Effects

5.2.39 In accordance with the IEMA guidelines, the following rules have been used as a screening process to define the scale and extent of this assessment:

- Rule 1 - Include road links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%); and
- Rule 2 - Include any other specifically sensitive areas where traffic flows would increase by 10% or more.

5.2.40 Where the predicted increase in traffic flows is lower than the above thresholds, the IEMA guidelines suggest the significance of the effects can be stated as negligible and further detailed assessments are not warranted.

5.2.41 The calculation of significance has been undertaken by cross correlating the magnitude of change with the sensitivity of nearby receptors. This assessment has taken into account the geographical location of receptors in relation to the assessed highway network.

Assessment of Significance

5.2.42 Details of the subsequent calculation of the significance of an effect is shown in **Table 5.2.5**. In EIA terms a moderate to major transport effect is considered to be significant, whereas a minor to negligible effect is considered to be insignificant. Effects can be either adverse or beneficial and can be temporary or permanent.

**Table 5.2.5: Significance of Effect Categories**

MAGNITUDE	SENSITIVITY			
	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Minor
Moderate	Major	Moderate	Minor	Negligible
Small	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

### **5.3 Relevant Policy**

5.3.1 This impact assessment has been undertaken in accordance with current legislation, national and local plans and policies.

#### ***National Planning Policy Framework***

5.3.2 The revised NPPF was updated in December 2024 (with non-policy amendments in February 2025) and replaces the previous version of the NPPF. The document sets out the Government's planning policies for England and how these should be applied.

5.3.3 The NPPF states that the "purpose of the planning system is to contribute to the achievement of sustainable development", which itself is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs". The NPPF is based on a "presumption in favour of sustainable development", as detailed in paragraph 11.

5.3.4 Considering transport, the NPPF guides that transport issues should be considered at the earliest stage of development proposals. It is noted that "The planning system should actively manage patterns of growth", with significant development sited "in locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes".

5.3.5 Paragraph 115 of the NPPF states the following:

*"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;*
- c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
- d) 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."*

5.3.6 Crucially, paragraph 116 states that "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, taking into account all reasonable future scenarios".

***Planning Practice Guidance: Travel Plans, Transport Assessment and Statement in decision taking***

5.3.7 Published in 2014, the Government's Planning Practice Guidance 'Travel Plans, Transport Assessments and Statements in Decision-Taking' outlines the fundamental principles that form the basis of Travel Plans (TPs), TAs, and Transport Statements (TSs). The guidance states that producing these documents provides a means to assess, and mitigate, the negative transport impacts of development; in this way, sustainable development can be achieved.

5.3.8 The guidance sets out that whilst TPs promote the implementation of sustainable travel into the planning process, TAs and TSs assess the potential transport implications of developments and significantly whether the residual transport impacts of a proposed development are "severe".

***Other Guidance***

5.3.9 Guidelines on the Environmental Assessment of Traffic and Movements published by The Institute of Environmental Management and Assessment (IEMA) in 2023 – this chapter has been carried out in accordance with this guidance to assess the transport environmental impact of the Proposed Development.

5.3.10 The IEMA guidelines state:

*"The 2023 publication.... updates and replaces the 1993 Guidelines to meet current regulations processes, and latest guidance in environmental assessment, while retaining elements of the 1993 Guidelines that are still considered relevant."*

5.3.11 The IEMA Guidelines set out two rules that are used to establish whether an environmental assessment of traffic effects should be carried out:

- Rule 1 - Include road links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)
- Rule 2 - Include any other specifically sensitive areas where traffic flows will increase by 10% or more.

5.3.12 In this instance it is considered that as the Proposed Development forms part of North West Bicester allocation, and is adjacent to sensitive residential areas and communities, the 10% threshold should apply.

5.3.13 TRICS Guidance Note on the Practical Implementation of the Decide and Provide Approach (February 2021) - this approach is vision-led and seeks to provide a preferred future of reduced car dependence through providing a development path best suited to achieving it.

5.3.14 In contrast to the previous Predict & Provide (P&P) approach, which often delivered schemes based on unrealistic worst case traffic assumptions, the Decide and Provide (D&P) approach, develops schemes based on more realistic traffic assumptions, taking into account changes in general travel patterns through technological advances and changes in the perception relating to the esteem associated with car ownership and use.

5.3.15 The TRICS D&P Guidance Note emphasises that:

*"The D&P approach provides the opportunity for more positive and integrated transport and land use planning. It also provides the opportunity to meaningfully implement the modal hierarchy, giving greater centrality to the up-front consideration of walking and cycling, rather than a more cursory treatment as residual or less considered modes that has sometimes, historically, been the case.*

*It is important that, as transport professionals, we engage fully with this paradigm shift. We need to take decisions and make provisions that respond to the following key drivers including the following:*

- *The drive towards Net Zero climate change or greenhouse gas (GHG) emissions.*
- *Strategies to decarbonise the transport sector, being progressed in the UK's Transport Decarbonisation Plan.*
- *In terms of health and wellbeing, respond to the UK's obesity crisis (also further compounded by Covid-19) and further promote active travel provision."*

5.3.16 'Manual for Streets' (MfS), launched in March 2007, superseded 'Design Bulletin 32', first published in 1977 and its accompanying guide "Places, Streets and Movement" providing new advice for the design of residential streets in England and Wales. A further document "Manual for Streets 2: Wider Application of Principles" was subsequently published in October 2010. The document builds on the original philosophies and demonstrates how they can be extended to encompass the design of busier streets and non-trunk roads. It provides a flexible and pragmatic guidance to assist Local Planning and Highway Authorities in managing their urban highway network.

5.3.17 The overarching theme of MfS is to increase the quality of life through good design which creates people-orientated streets with a focus on the 'place function' of a street. It highlights the importance of interactions between all road users and states that:

*"Streets should not be designed just to accommodate the movement of motor vehicles. It is important that designers place a high priority on meeting the needs of pedestrians, cyclists and public transport users, so that growth in these modes of travel is encouraged"*

5.3.18 Manual for Streets aims to assist in the creation of zones for movement that:

- Help to build and strengthen the communities they serve;
- Meet the needs of all users, by embodying the principles of inclusive design;
- Form part of a well-connected network;
- Are attractive and have their own distinct identity;
- Are cost-effective to construct and maintain; and
- Are safe.

***Adopted Local Plan***

5.3.19 The Cherwell Local Plan 2011 – 2031 (adopted 2016) sets out how the district will grow and change up to 2031.

5.3.20 The underpinning vision is as follows:

*"By 2031, Cherwell District will be an area where all residents enjoy a good quality of life it will be more prosperous than it is today. Those who live and work here will be happier, healthier and feel safer."*

5.3.21 The document then outlines what needs to be done to ensure that the vision can be achieved, in relation to transport the following are relevant:

- *"We will develop a sustainable economy that is vibrant and diverse with good transport links and sound infrastructure, supported by excellent educational facilities. Our economy will grow to provide more diverse employment for our increasing population and reduce the need for our residents to travel outside the district for work."*
- *We will improve road, rail and public transport links and provide increased access to services and facilities to cater for the needs of the district. In particular, we will focus on measures aimed at managing road congestion, improving public transport and improving access to town centres and other shops and services."*

5.3.22 In Section B of the document, Policy SLE 4: Improved Transport and Connections provides details on what can be done to improve transport in the district:

*"The Council will support the implementation of the proposals in the movement strategies and the Local Transport Plan to deliver key connections, to support modal shift and to support more sustainable locations for employment and housing growth.*

*We will support key transport proposals including:*

- *Transport Improvements at Banbury, Bicester and at the Former RAF Upper Heyford in accordance with the County Council's Local Transport Plan and Movement Strategies*
- *Projects associated with East-West rail including new stations at Bicester Town and Water Eaton*
- *Rail freight associated development at Graven Hill, Bicester*
- *Improvements to M40 junctions.*

*Consultation on options for new link and relief roads at Bicester and Banbury will be undertaken through the Local Transport Plan (LTP) review process. Routes identified following strategic options appraisal work for LTP4 will be confirmed by the County Council and will be incorporated in Local Plan Part 2.*

*New development in the District will be required to provide financial and/or in-kind contributions to mitigate the transport impacts of development.*

*All development where reasonable to do so, should facilitate the use of sustainable modes of transport to make the fullest possible use of public transport, walking and cycling. Encouragement will be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. Development which is not suitable for the roads that serve the development, and which have a severe traffic impact will not be supported."*

5.3.23 The principal policy in relation to North West Bicester is Bicester1 which allocates a site of 390 hectares for a for a new zero carbon mixed use development including 6000 new homes at North West Bicester. Among the additional expectations set out in the policy are the following:

- At least 3,000 jobs (approximately 1,000 jobs on B use class land on the site) within the plan period
- Up to four primary schools and one secondary school;
- Forty percent green space, half of which will be public open space;
- Pedestrian and cycle routes;
- proposals to include appropriate crossings of the railway line to provide access and integration across the North West Bicester site. Changes and improvements to Howes Lane and Lords Lane to facilitate integration of new development with the town.
- Good accessibility to public transport services should be provided for, including the provision of a bus route through the site with buses stopping at the railway stations and at new bus stops on the site
- New links under the railway line and to the existing town;

- Local Centres to serve the new and existing communities; and
- Integration with existing communities."
- Contributions to improvements to the surrounding road networks, including mitigation measures for the local and strategic highway network,
- Measures to prevent vehicular traffic adversely affecting surrounding communities.

### **Emerging Local Plan**

#### The Cherwell Local Plan Review 2042

5.3.24 Cherwell District Council (CDC) is also preparing a new Local Plan. The consultation (Regulation 19) on the draft of the Cherwell Local Plan Review 2042 was held between 19th December 2024 and 25th February 2025. The Submission Local Plan was approved by CDC Executive on 1 July 2025 and by Full Council on 21 July 2025, and was submitted to the Secretary of State for Housing, Communities and Local Government for independent examination, on 31 July 2025. Officers prepared a Schedule of Proposed Changes and Minor Modifications which they consider would improve and update the draft plan in view of the representations received and updated evidence. These will be submitted for consideration by the Inspector at the examination and if appropriate may form the basis for future Main Modifications to the Submission Local Plan as recommended by the Inspector in order to make the plan sound and/or legally compliant. As such, at this time, only limited weight can be attributed to the emerging Local Plan as a material planning consideration.

### **North West Bicester Supplementary Planning Document**

5.3.25 North West Bicester Supplementary Planning Document (SPD) (2016) provides more detailed guidance for what will be provided at North West Bicester amplifying the policy as set out in Bicester1 in the Local Plan.

5.3.26 Section 3 of the SPD outlines North West Bicester Vision and objectives, it states that the vision:

*"for North West Bicester has been guided to a large extent by the Eco-towns Planning Policy Statement (PS)"*

5.3.27 Section 3 goes on to describe the overarching vision for North West Bicester:

*"In this SPD, the vision for North West Bicester is for a high-quality development, well integrated with the existing town, which provides homes, jobs and local services in an attractive landscape setting, conserves and enhances heritage assets including historic landscape features, increases biodiversity, and addresses the impact of climate change. It is based on the principles of*

*sustainable zero carbon development designed to meet the effects of future climate change including extreme weather events and reduced energy and water use."*

### **Oxfordshire Local Transport Plan**

5.3.28 Connecting Oxfordshire: Local Transport Plan 2015 to 2031 (LTP4) sets out the policy and strategy for developing the transport network in Oxfordshire up until 2031. LTP4 has been developed with input from a number of parties including district and city councils, businesses, MPs and public consultation.

5.3.29 Four main over-arching transport goals have been outlined within the document; these include:

- *"To support jobs and housing growth and economic vitality;*
- *To reduce transport emissions and meet our obligations to Government;*
- *To protect, and where possible enhance Oxfordshire's environment and improve quality of life; and*
- *To improve public health, air quality, safety and individual wellbeing."*

5.3.30 In order to reach these goals ten objectives for transport have been developed, these goals are as follows:

- *"Maintain and improve transport connections to support economic growth and vitality across the county*
- *Make most effective use of all available transport capacity through innovative management of the network*
- *Increase journey time reliability and minimise end-to-end public transport journey times on main routes*
- *Develop a high-quality, innovative and resilient integrated transport system that is attractive to customers and generates inward investment*
- *Minimise the need to travel*
- *Reduce the proportion of journeys made by private car by making the use of public transport walking and cycling more attractive*
- *Influence the location and layout of development to maximise the use and value of existing and planned sustainable transport investment*
- *Reduce per capita carbon emissions from transport in Oxfordshire in line with UK 'Government targets*
- *Mitigate and wherever possible enhance the impacts of transport on the local built, historic and natural environment*
- *Improve public health and wellbeing by increasing levels of walking and cycling, reducing transport emissions, reducing casualties and enabling inclusive access to jobs, education, training and services."*

## 5.4 Baseline conditions

### *Existing Baseline Conditions*

#### Highway Network

5.4.1 The key roads within the study area are described below:

#### *A4095*

5.4.2 The main points of vehicular access will be via the A4095 to the south of the site. The A4095 forms part of a ring road around Bicester and runs from the A4421 / Buckingham Road / A4095 Roundabout in the east to the Howes Lane / B4030 / Middleton Stoney Road Roundabout to the southwest. Importantly, this road will allow future residents of NWB to drive around Bicester when travelling outside of the town.

5.4.3 The A4095 is a single lane carriageway with a 50mph speed limit, however there are sections of the road where the speed limit reduces to 30-40mph where it is in close proximity to residential areas where pedestrians are likely to be present. The road varies in width from approximately 7.2m to 9.5m; the wider sections of the road are there to accommodate right turn lanes into minor roads. The road is generally well lit along the length that it spans and has footway/cycleways along various sections of the carriageway.

5.4.4 This road provides connection to a number of roads leading into and out of Bicester, these include: Buckingham Road, Skimmingdish Lane, A4421, B4100, Banbury Road, Bucknell Road, B4030, Shakespeare Drive, Middleton Stoney Road and Vendee Drive.

5.4.5 As set out in Section 4.3 of the TA, a section of the A4095 will be realigned to enable access to NWB and address the expected congestion at the existing Howes Lane / Lords Lane / Bucknell Road junctions, ensuring capacity would accommodate the housing and economic development in and around Bicester. This major piece of highway infrastructure is known as the Strategic Link Road (SLR).

5.4.6 Phase 1 of the SLR scheme, funded by Homes England and the Oxfordshire Housing and Growth Deal, has been completed and has delivered the rail underbridge to accommodate the realigned Howes Lane and a separate underpass which will provide a new route for pedestrians, cyclists and horse riders.

5.4.7 The SLR will deliver a 6.75m carriageway with a 2m footway + 2m uni-direction cycleway on both sides of the SLR to ensure compliance with the latest guidance set out in LTN1/20.

*B4100*

- 5.4.8 This road runs from near Bicester Town Centre in the South to Adderbury in the northwest. A small section of this road to the southeast of the Site abuts the site boundary. This road also forms one of the main routes into Bicester from the north.
- 5.4.9 To the south, within the ring road, the B4100 is also known as the Banbury Road, it forms a roundabout with Queens Avenue and St John's Street near Bicester Town centre, this can be followed into the town centre or toward the A41. The majority of the B4100 within the ring road has a speed limit of 30mph and is well lit.
- 5.4.10 Approximately 1.2km north of the B4100 / Queens Avenue / St John's Street roundabout there is a speed limit change from 30mph to 40mph. A further 0.5km north of this point, the B4100 forms a new signalised crossroads junction (previously a roundabout) with the A4095 ring road and continues to the north.
- 5.4.11 North of the B4100/A4095 junction, the road leads towards rural Oxfordshire and continues as a 40mph road for approximately 1.6km. The road eventually reaches the A43 to form a roundabout (Baynards Green) and the A43 provides onward access to Junction 10 of the M40.

*Bainton Road*

- 5.4.12 Bainton Road is situated just north of the site and is on an east to west alignment. It is a connecting road between the B4100, and a crossroads junction formed by Bicester Road / Middleton Road / Bainton Road / Ardley Road. and is approximately 1.7km long. The road is a country lane with a width of approximately 5m. To the east, the speed limit is 60mph and to the west the road has a speed limit of 30mph as it approaches Bucknell.

*Shakespeare Drive*

- 5.4.13 Shakespeare Drive is a 30mph single carriageway road situated to the southwest of the site and is approximately 1.2km long; the road connects the A4095 and Middleton Stoney Road. The road is approximately 6.5m in width with footways on either side and is well lit.
- 5.4.14 To the north it forms a signalised junction with the A4095 / Howes Lane and to the south it forms the northern arm of the Shakespeare Drive / Middleton Stoney Road / Whitelands Way roundabout.

*Middleton Stoney Road*

- 5.4.15 Middleton Stoney Road runs on an east to west alignment and is approximately 1.6km long. The road is a single carriageway with a 30mph speed limit and is approximately 5.5m wide with on-road cycle lanes in both directions and a footway along the northern side of the carriageway.
- 5.4.16 To the east the road connects with Kings End and Oxford Road to form a three-arm roundabout and in the west the road connects with the B4030 and A4095 to form a four-arm roundabout.

*B4030*

- 5.4.17 The B4030 forms the southwestern section of the ring road which is also known as Vendee Drive. The road runs from the A41 / B4030 roundabout in the south to Enstone, outside of Bicester to the west.
- 5.4.18 Vendee Drive is approximately 1.9km long with a speed limit of 50mph and is approximately 7.3m in width. There is a footway/cycleway on the eastern side of the carriageway.
- 5.4.19 At the Vendee Drive / Middleton Stoney Road / Howes Lane / B4030 roundabout, the B4030 exits Bicester towards the west. The road follows similar characteristics as the Vendee Drive section, and approximately 3.1km west the road meets the B4030 to form a priority junction.

*A41*

- 5.4.20 The A41 has two alignments coming into Bicester, one from the southwest to northeast and one from the southeast to northwest.
- 5.4.21 To the southwest the A41 provides access to Junction 9 of the M40 and the A34. Travelling from the M40 toward Bicester, the road is a segregated dual carriageway and is subject to a 70mph speed limit that reduces to 50mph and then 40mph on the approach to Bicester.
- 5.4.22 Continuing towards Bicester, the A41 eventually turns into the Oxford Road and forms a roundabout with the Esso garage access, Oxford Road and the A41.
- 5.4.23 The eastern arm of the roundabout is where the A41 changes course and continues in a south-eastern direction, eventually reaching Aylesbury.

M40

- 5.4.24 The M40 is on a north to south alignment and passes to the west of Bicester. From the proposed site there are two points of access, these include; Junction 9 and Junction 10. Junction 9 is approximately 6km southwest of the site and is accessed by using the Bicester ring road and the A41, whereas Junction 10 is situated approximately 7.5km north of the site and is accessed by utilising the B4100 and A43.
- 5.4.25 The M40 runs from Birmingham to London and more locally provides access to Banbury and High Wycombe.

**2026 Baseline Traffic Flows**

- 5.4.26 Baseline flows for the peak hours on links across the study area were obtained from the BTM 2026 Base Year. This gives AM and PM peak hour flows for the existing road network and these have been factored to give 24 hour flows. The factors were derived from Automatic Traffic Count (ATC) data collected locally to NW Bicester for the NW Bicester Exemplar Development Transport Assessment. Separate factors were derived for the M40 using locally derived Highways Agency TRADS data. It should be noted that the factors have been rounded to two decimal places in the text thus there will be minor differences to the calculated flows from the use of the full factors. The flows are set out in **Table 5.4.1**.

**Table 5.4.1: Base Year 2026 Traffic Flows**

Link Ref	Link Description	AM Peak Hour	PM Peak Hour	24 Hour
1	A41 northbound, N of M40 J9	1486	1660	15641
2	A41 southbound, N of M40 J9	1458	1127	12852
3	A41 Oxford Rd, S of A41 junction	2878	2934	28896
4	Vendee Drive, W of A41 junction	1048	1274	11544
5	A41, N of Pingle Drive	2159	2334	22338
6	Middleton Stoney Rd, W of Kings End	989	1129	10530
7	Middleton Stoney Rd, W of Howes Lane	1060	1098	10543
8	Howes Lane, N of Middleton Stoney Rd	1420	1481	14423
9	Howes Lane, E of Shakespeare Drive	1360	1534	14388
10	Lords Lane, E of Bucknell Road	1481	1775	16917
11	Lords Lane, W of Banbury Road	1536	1846	16814
12	Bucknell Road, N of Lords Lane	507	414	4579

Link Ref	Link Description	AM Peak Hour	PM Peak Hour	24 Hour
13	Bucknell Road, S of Howes Lane	795	833	8231
14	Banbury Road, N of Lords Lane	1826	1502	16203
15	A4095 E of Banbury Road	2174	2333	22408
16	Banbury Road, S of A4095	631	545	5872
17	Buckingham Road, S of Skimmingdish Lane	817	701	7547
18	Queens Avenue, S of Bucknell Road	1633	1913	17629
19	A41 E of A41 Oxford Road	2333	2343	23248
20	A4421 Neunkirchen Way	1010	1112	10550
21	A41, E of London Road roundabout	1484	1580	15233
22	A4421, E of Skimmingdish Lane	1999	2110	20429
23	Shakespeare Drive, S of Howes Lane	94	105	989
24	M40 J10 northbound off slip road	1149	1547	13812
25	Ardley Road (E of B430)	494	432	4604
26	M40 J10 southbound on slip road (from A43)	1355	1220	13851
27	B430 M40 over bridge	2505	2499	24879
28	A4095 N of Chesterton	429	446	4350
29	Shakespeare Drive, E of Middleton	594	721	6538
30	The Approach, W of Bucknell Road	101	71	855
31	A41 East of Pioneer Road	2169	2179	21618
32	Bicester Road, E of A4421 junction	749	801	7706
33	A4421 N of Skimmingdish Lane	1683	1731	16974
34	Fringford Road, N of Caversfield	102	159	1298
35	B4100 Banbury Road, N of Bainton Road	1378	1277	13200
36	Ardley Road, N of Bucknell	494	432	4604
37	Middleton Road, W of Bucknell	154	56	1044
38	B4030 Middleton Stoney Road, NW of NWB	804	788	7915
39	Green Lane, W of Chesterton	259	400	3276
40	Wendlebury Road, E of M40	156	341	2471

**Personal Injury Collisions**

5.4.27 To assess the safety level of the adjoining highway network and thus identify any potential conflict points and highway safety issues, PIC data has been obtained from Oxfordshire County Council along the neighbouring highway network in the vicinity of the proposed site and for M40 junctions 9 and 10 for the most recently available 65 month period, between 1<sup>st</sup> January 2019 and 31<sup>st</sup> May 2024. The full reports are included within Appendix C of the appended TA.

Local Network

5.4.28 A large area surrounding Bicester has been selected to provide a robust accident data analysis, the network includes several junctions on the ring road to the north and northeast of the Bicester. The study area is shown in **Figure 5.4.1**, as well as the location of the reported incidents.

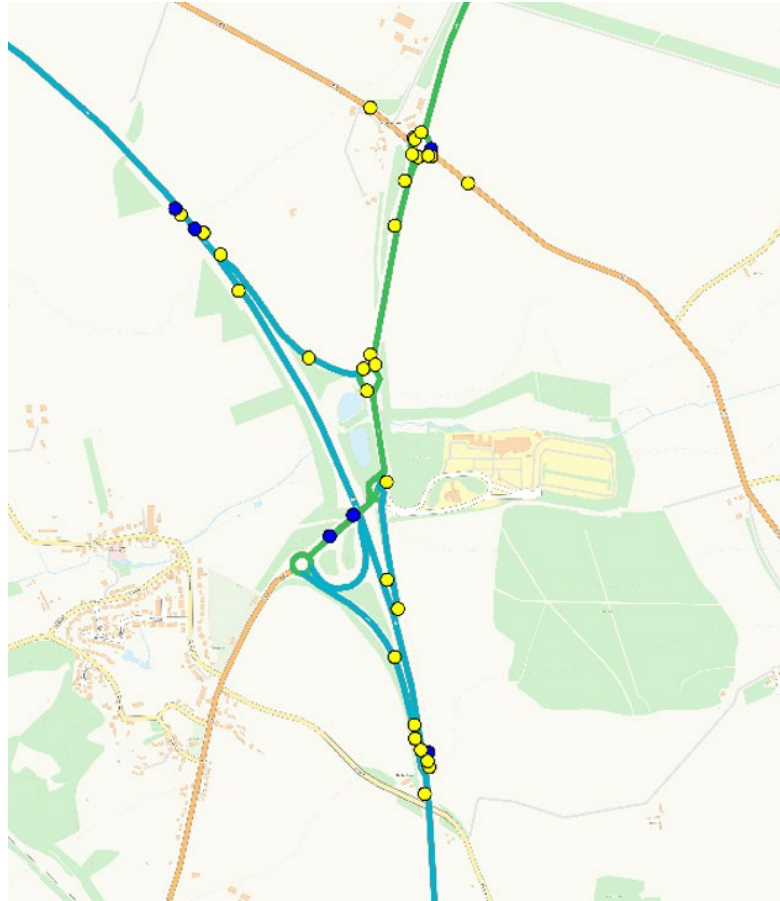


**Figure 5.4.1: Local Highway Network PIC Locations  
(Extract from OCC Plot)**

- 5.4.29 A total of 34 incidents were recorded within the study network for the last 65-month period giving rise to 11 serious and 33 slight injuries. This equates to, on average, 6.27 collisions per year. No fatal collisions were recorded.
- 5.4.30 Over the 65 months there were 8 collisions involving cyclists and 4 collisions involving pedestrians.
- 5.4.31 PICs for a large area of the local highway network in the vicinity of the development site has been assessed to ascertain whether there is a significant highway deficiency. The assessment undertaken indicates that levels of PICs are not excessively high given the length of highway investigated and the urban environment with multiple junctions. None of the factors recorded highway geometry / visibility as a reason for any of the collisions.
- 5.4.32 Further detailed analysis of local network collisions is provided at Section 6.3 of the appended TA.

*M40 Junction 10*

- 5.4.33 Analysis of the PICs over the same 65 month period has been undertaken for the three junctions that contribute to Junction 10 of the M40 and the Baynards Green roundabout. The locations of the recorded PICs are shown in **Figure 5.4.2**.

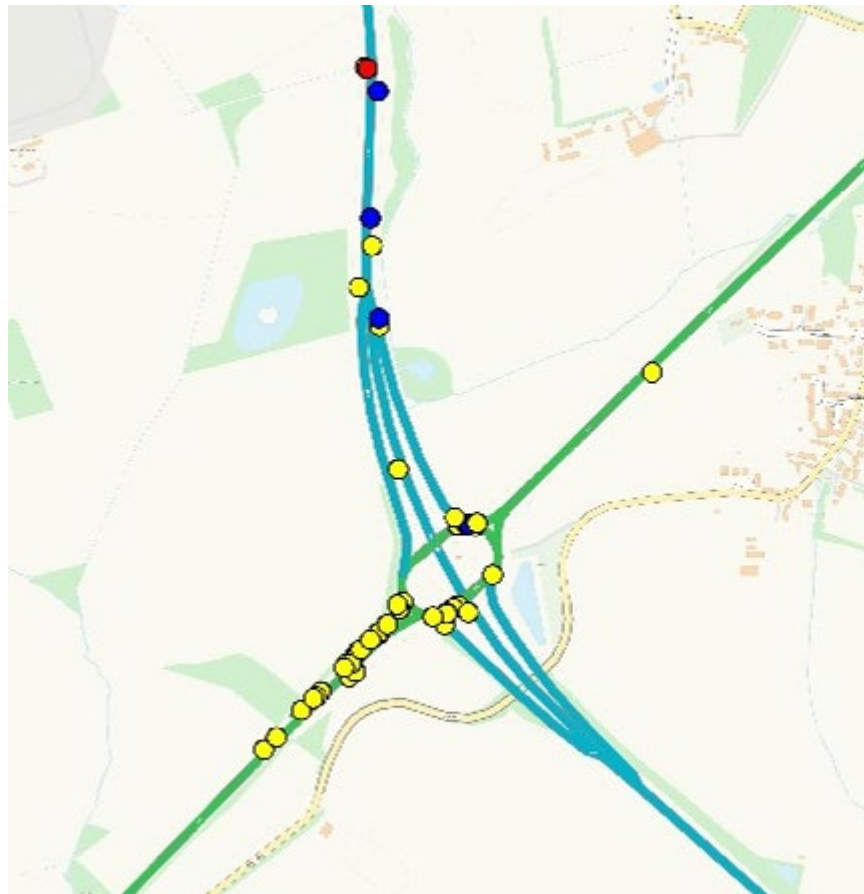


**Figure 5.4.2: M40 Junction 10 PIC Locations  
(Extract from OCC Plot)**

- 5.4.34 A total of 36 incidents were recorded within the study area for the latest 65 month period. Giving rise to 7 serious and 47 slight injuries. This equates to, on average, 6.6 collisions per year over the four junctions. No fatal collisions were recorded.
- 5.4.35 Over the 65 months there was 1 collision involving a pedestrian and no collisions involving cyclists.
- 5.4.36 The frequency of collisions and the severity of the injuries is not considered significant given the interchange nature of the study area, where significant speed changes occur and vehicle queuing is present. The number and distribution of incidents appear consistent with expectations for a network of this type. None of the factors recorded highway geometry / visibility as a reason for the collisions.
- 5.4.37 Further detailed analysis of Junction 10 collisions is provided at Section 6.4 of the appended TA.

M40 Junction 9

5.4.38 Analysis of the PICs over the same 65 month period has been undertaken for Junction 9 of the M40. The locations of the recorded PICs are shown in **Figure 5.4.3**.



**Figure 5.4.3: M40 Junction 9 PIC Locations  
(Extract from OCC Plot)**

5.4.39 A total of 47 incidents were recorded within the study area for the latest 65 month period. Giving rise to 1 fatal, 7 serious and 68 slight injuries. This equates to, on average, 8.6 collisions per year.

5.4.40 Over the 65 months there were no collisions involving pedestrians or cyclists.

5.4.41 The majority of the accidents on the A34 approach are rear shunt accidents where vehicles have failed to notice vehicles slowing or changing lanes on the approach to the roundabout. It would appear that the vehicles are moving at slow speeds resulting in slight injuries.

5.4.42 There are a number of severe and one fatal collision on the M40, north of the junction. The collisions mainly occur near to the slip roads entry/exit to the mainline where there are interactions between vehicles travelling at high speed or driver tiredness/ distraction.

5.4.43 None of the factors recorded highway geometry / visibility as a reason for any of the collisions.

Summary

5.4.44 Given the dispersed nature of these accidents, both in terms of geographical location and timescale, the Proposed Development does not include any geometric features that can be specifically linked to recorded collisions.

**Public Transport**

Bus

5.4.45 The Proposed Development is located in close proximity to the existing bus service that routes through Elmsbrook and as a result there is an opportunity to encourage the use of the existing bus services for day-to-day journeys to and from the Site.

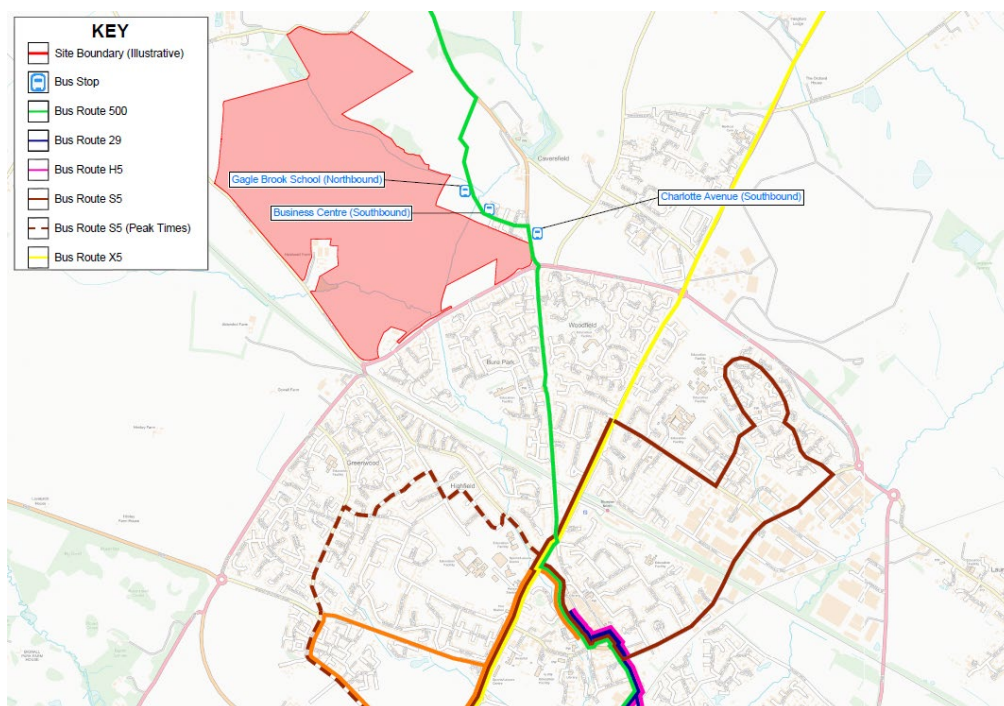
5.4.46 The closest existing bus stops to the Site are located along Charlotte Avenue and are referred to as 'Business Centre' and 'Gagle Brook School' These bus stops are situated in close proximity to the proposed eastern link (bus gate with footways) with Cranberry Avenue and therefore, are conveniently located for residents of the development.

5.4.47 Bus stops on Charlotte Avenue encompass service 500.

5.4.48 A summary of the 500 service is provided in **Table 5.4.2**. This table presents the service, bus stop, route, approximate frequency and operating hours of the 500 service. In addition, **Figure 5.4.4** illustrates the route of this service in the vicinity of the Site and other service routes in Bicester where onward travel connections can be undertaken.

**Table 5.4.2: Summary of Existing Bus Services**

Service	Bus Stop	Route	Weekday	Saturday	Sunday
500	Banbury - Bicester	Hourly (06:55-18:29)	Hourly (08:04-18:29)	No Service	500
500	Bicester - Banbury	Hourly (07:25-19:10)	Hourly (08:45-19:10)	No Service	500



**Figure 5.4.4: Bus Services**

- 5.4.49 This service enables access to Banbury, the Bicester railway stations and Bicester town centre and connection with other bus services enabling access to Oxford and John Radcliffe Hospital.
- 5.4.50 It is evident from the above review that bus services in the vicinity of the Site provide regular connections to the towns in the surrounding area and also provide a link to Bicester railway stations and the other Bicester bus services for onward connection. As such, it is considered that the Proposed Development is well-positioned to tie into the existing bus network of Bicester and creates the opportunity for journeys to and from these destinations to be undertaken sustainably.

#### Rail

- 5.4.51 The Site is well situated in relation to Bicester North railway station, which lies broadly 2.3km approximately 10-minute cycle from the centre of the Site to the south. Approximately 3.4km or 15-minute cycle south of the Site lies Bicester Village railway station.
- 5.4.52 Furthermore, convenient connections to these stations can be obtained via the aforementioned 500 bus service.
- 5.4.53 Bicester North railway station is on the Chiltern Main Line and services are operated by Chiltern Railways. The station also offers sheltered, secure bicycling parking facilities by way of cycle

stands which are monitored by CCTV; there is capacity for 136 bicycles. As such, there is the opportunity for journeys to the station to be made by bicycle for onwards travel by rail.

5.4.54 **Table 5.4.3** sets out a summary of these services, including key destinations, approximate journey times and approximate frequencies on a typical weekday.

**Table 5.4.3: Summary of Train Services from Bicester North Railway Station**

Destination	Approximate Journey Time	Approximate Frequency
Banbury	15 minutes	1tph <sup>1</sup>
London Marylebone	60 minutes	2tph
Birmingham Moor Street	70 minutes	1tph

5.4.55 Bicester Village railway station is on the Oxford-Bedford Line and services are operated by Chiltern Railways. The station also offers sheltered, secure bicycling parking facilities by way of cycle stands which are monitored by CCTV; there is capacity for 182 bicycles. As such, there is the opportunity for journeys to the station to be made by bicycle for onwards travel by rail.

5.4.56 **Table 5.4.4** sets out a summary of these services, including key destinations, approximate journey times and approximate frequencies on a typical weekday.

**Table 5.4.4 Summary of Train Services from Bicester Village Railway Station**

Destination	Approximate Journey Time	Approximate Frequency
Oxford Parkway	10 minutes	2tph
London Marylebone	60 minutes	2tph

5.4.57 As such, it is considered that the services that call at Bicester North and Bicester Village Railway Stations provide the opportunity for travel by sustainable means to a number of destinations. These stations are accessible from the Site by sustainable modes, creating the opportunity for multi-modal travel and representing an alternative to the private car.

5.4.58 Testing and training is now underway on the East West Rail works between Bicester and Bletchley Milton Keynes with passenger services to start as soon as possible providing an

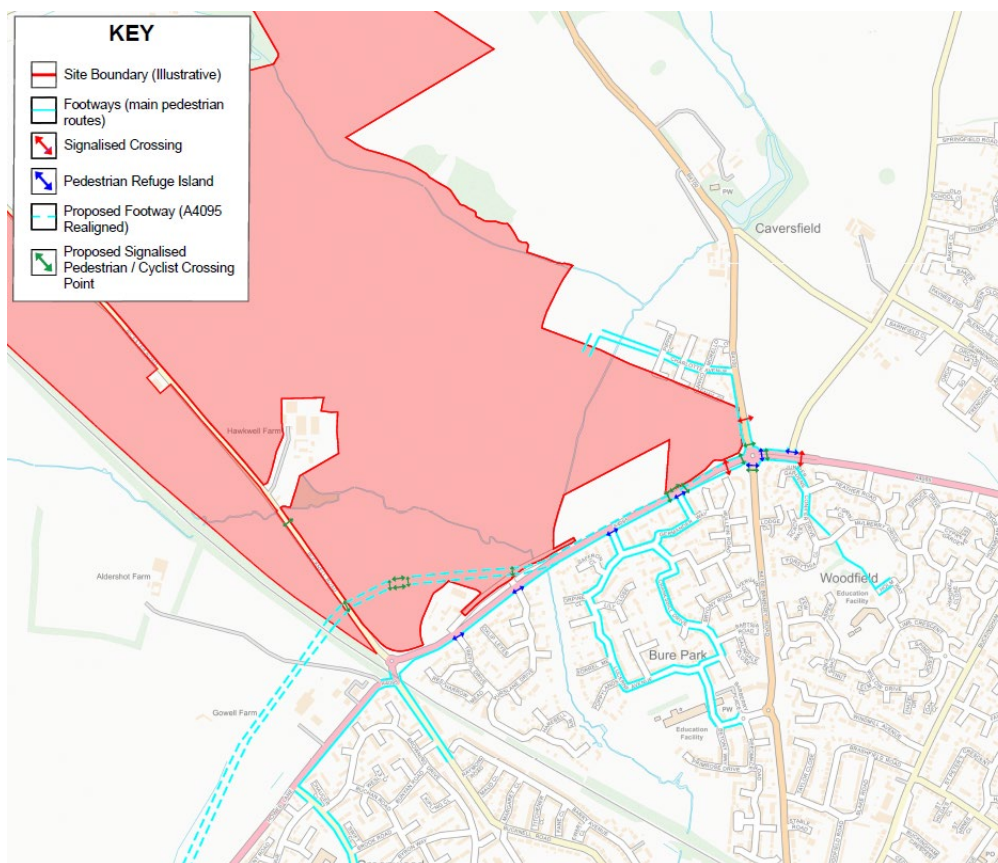
<sup>1</sup> Trains per hour

hourly Oxford to Bedford service and a half-hourly Oxford to Milton Keynes service and will see 5tph between Bicester Village and Oxford.

### ***Walking and Cycling***

#### *Walking*

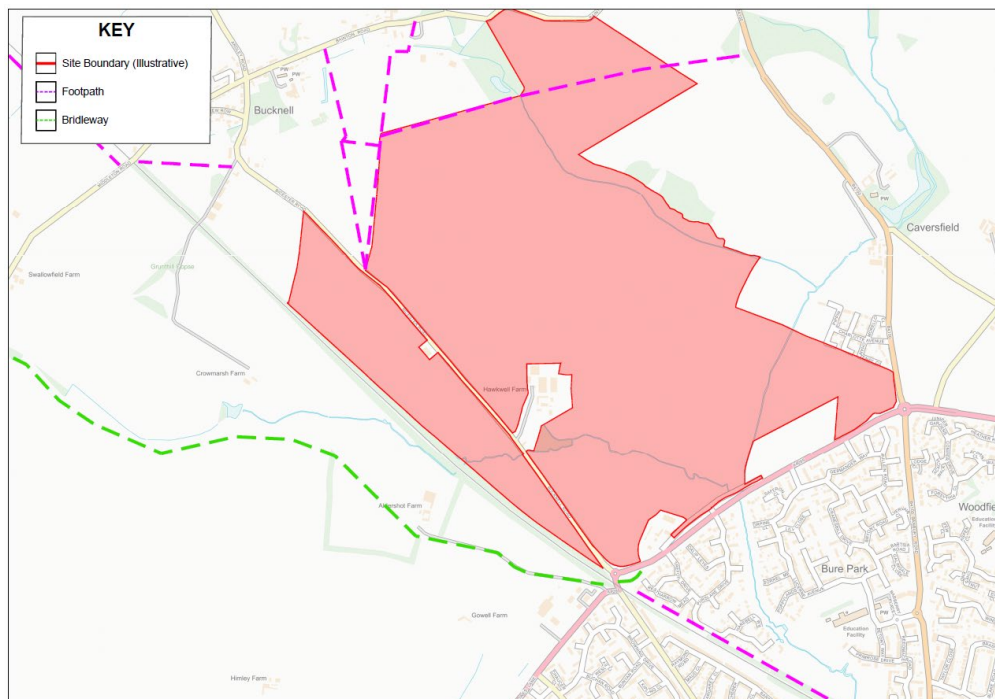
- 5.4.59 Walking is the primary mode of travel for local journeys and is widely recognised as the most sustainable form of travel (IHT, 2000). As such, walking forms an important part of sustainable growth, with the NPPF guiding that opportunities to promote walking are identified and maximised.
- 5.4.60 Therefore, by locating developments to minimise the need to travel, and to maximise the use of sustainable modes of transport, sustainable growth can be encouraged.
- 5.4.61 As set out above the location of the Site is conducive to the creation of a sustainable development, with a range of everyday facilities and services lying within 'reasonable' walking distance.
- 5.4.62 The site is linked to these facilities by way of the existing continuous network of footways and footpaths that run through Bicester which facilitate journeys to and from the site on foot. Generally, this network provides streetlights, footways/footpaths and pedestrian crossing facilities of a reasonable quality.
- 5.4.63 **Figure 5.4.5** shows a non-exhaustive plan of the existing pedestrian network. The plan shows the main footways and existing crossing points which future residents will utilise to get to the existing services and facilities. In addition to the existing footways, it shows the proposed footways either side of the carriageway of the realigned A4095 (SLR) which does not form part of this application, and the signalised crossing points at the A4095 / B4100 junction and at the site access points on the A4095. Additional crossing points on the A4095 are also proposed at Bucknell Road and between the two site accesses.



**Figure 5.4.5: Pedestrian Network**

- 5.4.64 It is thought that the predominant pedestrian movements are most likely to be within NWB to the future services and facilities it would offer. However, other predominant pedestrian movements would include movements to the south towards Bicester North railway and Bicester town centre.
- 5.4.65 To the north east of the Site lies a new estate (Elmsbrook) which the Proposed Development will connect to via Cranberry Avenue. The new estate has 2m footways either side of the primary roads and provides an active travel link to Gagle Brook primary school and the B4100.
- 5.4.66 The B4100 has a shared use footway/cycleway along the western side of the carriageway which continues in a southerly direction toward the A4095. On the approach to the recently signalised A4095/B4100 junction there is a Toucan crossing providing pedestrians / cyclists a safe and convenient opportunity to travel eastward along the A4095.
- 5.4.67 Travelling east of the A4095/B4100 junction, pedestrians/cyclists will cross Fringford Road via an uncontrolled raised table crossing facility with a central refuge which then provides access to a Toucan crossing across the A4095 carriageway. At this point, there is a shared use access point into the Woodford residential area which provides access to a convenience store.

- 5.4.68 To the west of the A4095/B4100 junction, there is a short section of footway along the northern side of the carriageway and pedestrian/cyclists are afforded a controlled crossing within the signalised junction which facilitates safe crossing of the A4095.
- 5.4.69 Continuing west along the southern side of the A4095, a segregated footway/cycleway is present which provides access to Germander Way and Lucerne Avenue and continues south to the Bure Park residential area that hosts a number of services and facilities. All minor roads along this section of the A4095 include dropped kerbs, tactile paving and pedestrian refuge islands.
- 5.4.70 Further west along the A4095, on the approach to the A4095 / Bucknell Road roundabout, only the footway continues underneath the 'skew' railway bridge and then continues south along Bucknell Road; the footway underneath the railway bridge is only 1.2m wide. Underneath the railway bridge there is an uncontrolled pedestrian crossing point with dropped kerbs and tactile paving which facilitates crossing towards Howes Lane and provides access to Kings Meadow Primary school.
- 5.4.71 On the A4095, west of the 'skew' railway bridge there is an uncontrolled pedestrian point with dropped kerbs and tactile paving that enables pedestrians to cross over to the southern side of Howes Lane and Bucknell Road.
- 5.4.1 As such, it is considered that there is a suitable existing pedestrian network that the site can utilise and tie into to access a range of existing services and facilities within northern Bicester. Furthermore, with the introduction of NWB there will be a whole new network of pedestrian connections introduced that will encourage walking as a primary mode of transport and improvements are proposed to the off-site network.
- 5.4.2 A network of PROW partially run through and surrounds the site; **Figure 5.4.6** shows the public footpaths within the area of the site.



**Figure 5.4.6: Public Rights of Way**

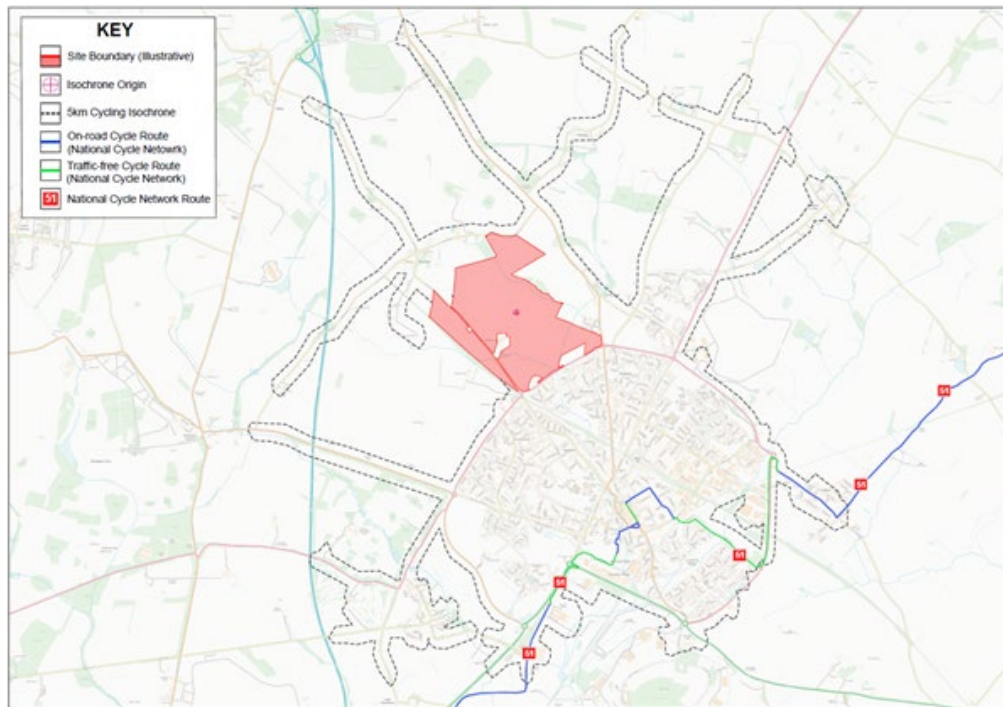
5.4.72 As shown, there is a series of PRow comprising footpaths and bridleways in Bicester. To the northwest of the site there is a PRow route which runs along the boundary of the site, linking Bicester Road with Bainton Road to the north. To the north of the site a footpath runs through the most northernly section of the site.

### Cycling

5.4.73 Cycling is recognised as one of the most sustainable forms of transport (CIHT's Planning for Cycling, 2015). In general, given the compact nature of Bicester, it is considered that cycling offers a real alternative to the private car for day-to-day journeys to and from the Site. Indeed, the entirety of Bicester lies within a 5km cycle of the site, with this distance widely recognised as a reasonable cycling distance. As such, the facilities, services and employment opportunities within Bicester lie within a reasonable cycling distance of the site.

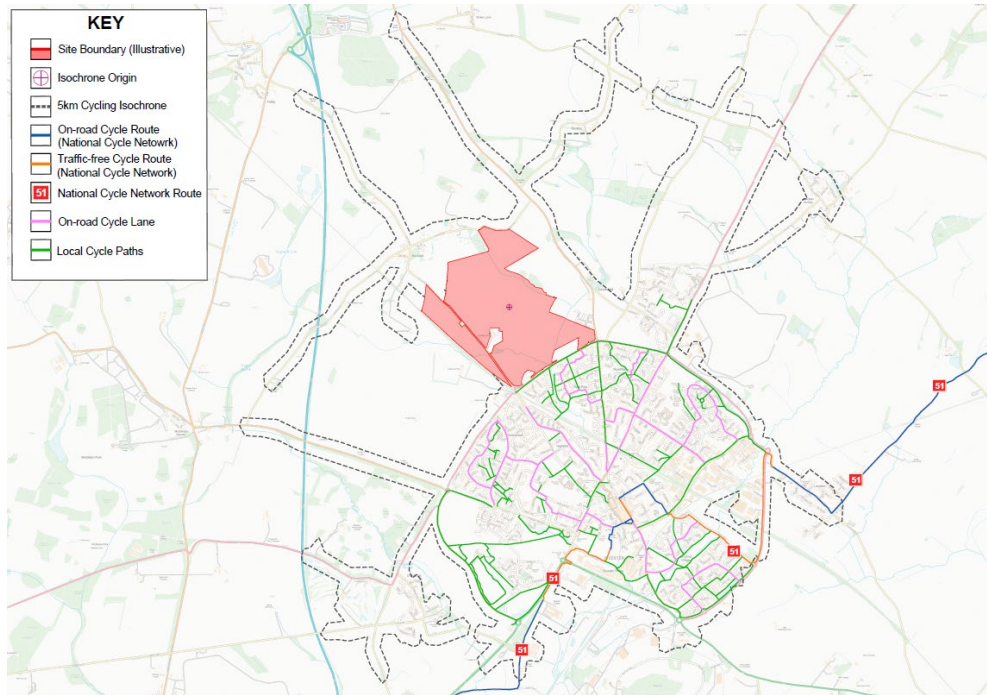
5.4.74 It is also noted that The Cooper School Secondary School is located approximately 2.5km to the south of the Site and therefore can be reached within a 'reasonable' cycling distance. As such, there is the opportunity for day-to-day journeys to this destination to be made sustainably.

5.4.75 **Figure 5.4.7** demonstrates the area surrounding the site which lies within a 5km cycle and shows the alignment of the National Cycle Network (NCN) Route 51.



**Figure 5.4.7: 5km Cycling Isochrone**

5.4.76 In addition to the NCN, there is a network of local cycle routes which are either on-road cycle lanes or shared use footway/cycleway routes, these routes have been extracted from the Bicester Local Cycling and Walking Infrastructure document and can be seen in **Figure 5.4.8**.



**Figure 5.4.8: Local Cycle Network**

5.4.77 These local routes provide additional cycle connections across Bicester which aids to provide continuous cycle routes to Bicester town centre and a range of services and facilities.

### ***Future Baseline Conditions***

#### Highway Network

5.4.78 A 2031 scenario (with SLR) and with only background traffic growth was assessed using the BTM.

5.4.79 It is predicted that there would be increases on the majority of links in traffic flow assessed in 2031 compared to the Base Year; however, due to the introduction of the SLR there are a number of links where there is a decrease in traffic flows. **Table 5.4.5** provides the predicted 2031 baseline traffic flows, with flows shown for the AM and PM peak hours and over a 24 hour period. The percentage increase/decrease in flow is shown.

**Table 5.4.5: 2031 Baseline Traffic Flows**

Link Ref	Link Description	2031 Baseline			Percentage Change of Traffic Flow compared to 2026 Baseline		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
1	A41 northbound, N of M40 J9	1201	1131	11595	-19%	-32%	-26%
2	A41 southbound, N of M40 J9	964	854	9041	-34%	-24%	-30%
3	A41 Oxford Rd, S of A41 junction	2917	3189	30358	1%	9%	5%
4	Vendee Drive, W of A41 junction	991	1077	10280	-5%	-15%	-11%
5	A41, N of Pingle Drive	2482	2617	25350	15%	12%	13%
6	Middleton Stoney Rd, W of Kings End	1486	1557	15129	50%	38%	44%
7	Middleton Stoney Rd, W of Howes Lane	1572	1730	16131	48%	58%	53%
8	Howes Lane, N of Middleton Stoney Rd	1242	1328	12777	-13%	-10%	-11%
9	Howes Lane, E of Shakespeare Drive	290	438	3620	-79%	-71%	-75%
10	Lords Lane, E of Bucknell Road	1331	1524	14837	-10%	-14%	-12%
11	Lords Lane, W of Banbury Road	1278	1526	13939	-17%	-17%	-17%
12	Bucknell Road, N of Lords Lane	24	24	241	-95%	-94%	-95%
13	Bucknell Road, S of Howes Lane	482	533	5136	-39%	-36%	-38%
14	Banbury Road, N of Lords Lane	1696	1333	14748	-7%	-11%	-9%
15	A4095 E of Banbury Road	2005	2245	21129	-8%	-4%	-6%
16	Banbury Road, S of A4095	746	601	6725	18%	10%	15%
17	Buckingham Road, S of Skimmingdish Lane	911	795	8484	12%	13%	12%
18	Queens Avenue, S of Bucknell Road	1816	2068	19311	11%	8%	10%

Link Ref	Link Description	2031 Baseline			Percentage Change of Traffic Flow compared to 2026 Baseline		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
19	A41 E of A41 Oxford Road	2614	2769	26763	12%	18%	15%
20	A4421 Neunkirchen Way	1108	1291	11929	10%	16%	13%
21	A41, E of London Road roundabout	1733	1883	17974	17%	19%	18%
22	A4421, E of Skimmingdish Lane	2336	2504	24062	17%	19%	18%
23	Shakespeare Drive, S of Howes Lane	87	161	1235	-7%	54%	25%
24	M40 J10 northbound off slip road	1328	1903	16554	16%	23%	20%
25	Ardley Road (E of B430)	552	373	4597	12%	-14%	0%
26	M40 J10 southbound on slip road (from A43)	1887	1559	18535	39%	28%	34%
27	B430 M40 over bridge	2559	2764	26462	2%	11%	6%
28	A4095 N of Chesterton	660	526	5895	54%	18%	36%
29	Shakespeare Drive, E of Middleton	852	927	8848	43%	29%	35%
30	The Approach, W of Bucknell Road	198	159	1778	96%	124%	108%
31	A41 East of Pioneer Road	2375	2390	23695	10%	10%	10%
32	Bicester Road, E of A4421 junction	747	786	7619	0%	-2%	-1%
33	A4421 N of Skimmingdish Lane	1966	1854	18992	17%	7%	12%
34	Fringford Road, N of Caversfield	209	111	1592	105%	-30%	23%
35	B4100 Banbury Road, N of Bainton Road	1402	1458	14217	2%	14%	8%
36	Ardley Road, N of Bucknell	552	373	4597	12%	-14%	0%
37	Middleton Road, W of Bucknell	255	382	3166	66%	582%	203%

Link Ref	Link Description	2031 Baseline			Percentage Change of Traffic Flow compared to 2026 Baseline		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
38	B4030 Middleton Stoney Road, NW of NWB	1201	1376	12813	49%	75%	62%
39	Green Lane, W of Chesterton	578	569	5704	123%	42%	74%
40	Wendlebury Road, E of M40	355	465	4076	128%	36%	65%

5.4.80 A further 2031 scenario (with the SLR and with committed development) was assessed using the BTM. This scenario is known as the 2031 Reference Case (RC).

5.4.81 **Table 4.5.6** compares the 2031 Reference Case traffic flows against the 2031 Baseline.

**Table 5.4.6: 2031 Reference Case Traffic Flows**

Link Ref	Link Description	2031 Future Baseline			Percentage Change of Traffic Flow compared to 2031 Baseline		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
1	A41 northbound, N of M40 J9	1236	1137	11798	3%	0%	2%
2	A41 southbound, N of M40 J9	981	878	9239	2%	3%	2%
3	A41 Oxford Rd, S of A41 junction	3054	3116	30675	5%	-2%	1%
4	Vendee Drive, W of A41 junction	1217	1039	11215	23%	-4%	9%
5	A41, N of Pingle Drive	2678	2902	27742	8%	11%	9%
6	Middleton Stoney Rd, W of Kings End	1481	1543	15035	0%	-1%	-1%
7	Middleton Stoney Rd, W of Howes Lane	1715	1897	17643	9%	10%	9%
8	Howes Lane, N of Middleton Stoney Rd	1176	1362	12619	-5%	3%	-1%
9	Howes Lane, E of Shakespeare Drive	1292	1466	13712	346%	235%	279%

Link Ref	Link Description	2031 Future Baseline			Percentage Change of Traffic Flow compared to 2031 Baseline		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
10	Lords Lane, E of Bucknell Road	1163	1280	12694	-13%	-16%	-14%
11	Lords Lane, W of Banbury Road	1212	1334	12659	-5%	-13%	-9%
12	Bucknell Road, N of Lords Lane	205	94	1487	748%	286%	517%
13	Bucknell Road, S of Howes Lane	82	134	1089	-83%	-75%	-79%
14	Banbury Road, N of Lords Lane	1929	1329	15861	14%	0%	8%
15	A4095 E of Banbury Road	2053	2055	20424	2%	-8%	-3%
16	Banbury Road, S of A4095	896	671	7823	20%	12%	16%
17	Buckingham Road, S of Skimmingdish Lane	979	807	8878	7%	1%	5%
18	Queens Avenue, S of Bucknell Road	2077	2160	21064	14%	4%	9%
19	A41 E of A41 Oxford Road	2881	2910	28791	10%	5%	8%
20	A4421 Neunkirchen Way	1236	1273	12474	12%	-1%	5%
21	A41, E of London Road roundabout	1920	1996	19467	11%	6%	8%
22	A4421, E of Skimmingdish Lane	2354	2471	23989	1%	-1%	0%
23	Shakespeare Drive, S of Howes Lane	171	170	1698	97%	5%	37%
24	M40 J10 northbound off slip road	1329	1874	16407	0%	-2%	-1%
25	Ardley Road (E of B430)	629	422	5226	14%	13%	14%
26	M40 J10 southbound on slip road (from A43)	1989	1564	19110	5%	0%	3%
27	B430 M40 over bridge	2642	2765	26884	3%	0%	2%
28	A4095 N of Chesterton	839	672	7514	27%	28%	27%

Link Ref	Link Description	2031 Future Baseline			Percentage Change of Traffic Flow compared to 2031 Baseline		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
29	Shakespeare Drive, E of Middleton	896	892	8891	5%	-4%	0%
30	The Approach, W of Bucknell Road	453	321	3850	128%	102%	117%
31	A41 East of Pioneer Road	2619	2611	26002	10%	9%	10%
32	Bicester Road, E of A4421 junction	856	833	8399	15%	6%	10%
33	A4421 N of Skimmingdish Lane	2037	1907	19611	4%	3%	3%
34	Fringford Road, N of Caversfield	333	283	3064	59%	154%	92%
35	B4100 Banbury Road, N of Bainton Road	1489	1497	14846	6%	3%	4%
36	Ardley Road, N of Bucknell	629	422	5226	14%	13%	14%
37	Middleton Road, W of Bucknell	282	364	3210	11%	-5%	1%
38	B4030 Middleton Stoney Road, NW of NWB	1360	1537	14404	13%	12%	12%
39	Green Lane, W of Chesterton	693	690	6875	20%	21%	21%
40	Wendlebury Road, E of M40	381	521	4486	7%	12%	10%

## 5.5 Potential Effects

### ***Construction Stage***

#### *Construction Traffic*

- 5.5.1 The construction phase of development is anticipated to commence in 2027/28 and build out over approximately a 15-year period (whilst the period to 2031 is used for the purposes of the traffic assessment).
- 5.5.2 The potential impacts during the construction phase are identified as:
- Potential impact on non motorised user (NMU) amenity and fear and intimidation due to the increase in vehicle flows and the change in flow composition i.e. an increase in large type vehicles.
  - Potential increase in NMU and driver delay due to the additional vehicles associated with the Proposed Development on the highway network together with possible temporary traffic management.
  - Potential reduction in public safety, particularly vulnerable road users, due to the introduction of large type vehicles travelling to and from the Site.
- 5.5.3 The related construction traffic will comprise two principal forms. Firstly, workforce-related traffic will comprise the arrival/departure of the workforce associated with the construction of the Proposed Development. Secondly, delivery-related traffic will comprise traffic associated with deliveries, plant movements, and material movements for export/import of materials.
- 5.5.4 Typically for a buildout of 100 dwellings per annum there would be an average daily workforce of 50 staff. The highest annum of housing construction is expected to deliver 240 units. Therefore, the highest number of average daily construction workers would be 120. This number of construction workers is not expected to generate the same number of vehicle trips as many workers travel together in vans or cars.
- 5.5.5 Typically, construction hours demand the workforce to arrive/depart outside of peak hours, and as such this element of construction traffic will have a minimal effect during peak hours. In addition, the total movements associated with the completed Proposed Development will be much higher than the number of workforce-related movements, and therefore these movements will present less onerous traffic conditions than those associated with the occupation of the Proposed Development.

- 5.5.6 Similar to above an estimate for HGV movements for 100 houses per annum is seven HGV deliveries equating to 14 daily HGV movements. For the delivery of 240 houses per annum the generation would be 34 HGV daily movements. Delivery to the Site will be minimal in terms of numbers of vehicles and will most likely be spread throughout the course of the day.
- 5.5.7 Looking at the 2026 BTM HGV flows on Lords Lane, where the greatest impact of HGVs is likely to occur, the model predicts 188 two-way HGV movements in the AM peak hour and 121 two-way HGV movements in the PM peak hour. On this basis the construction traffic associated with the construction phase of the Proposed Development will not have a significant impact.
- 5.5.8 Thus, in consideration of the above, it is considered that the change due to construction related movements will be negligible for all assessed criteria discussed above. The receptors in close proximity to the Site are of low to medium sensitivity, comprising mostly of farmland and residential units (i.e. both existing and proposed), and, whilst higher sensitivity receptors would be present elsewhere in the network, construction traffic, which would already be at low levels, would be further dispersed at these points. Thus, whilst there would be a direct effect in this instance, this would be minor adverse (i.e. not significant) and would also be temporary (i.e. over the medium term).

#### Other Environmental Effects

- 5.5.9 The other Environmental Effects including noise, vibration and air quality are addressed in other chapters of the ES.

#### **Post-completion stage**

- 5.5.10 The permanent traffic and transport operational impacts associated with the additional traffic flow generated by the development in 2031 have been assessed by firstly identifying those links expected to see an increase in traffic of more than 10% in either a peak hour or daily flow.

#### Traffic Generation and Assignment

- 5.5.11 The anticipated generation of the traffic from the Development was calculated using BTM trip rates. The BTM was then used to assign traffic to the highway network with the 2031 Reference Case (2031 Baseline + Committed) traffic.

5.5.12 These traffic flows were applied to link and junction flows to identify the percentage impact of the Proposed Development against the 2031 Reference Case. The percentage change on each link in the different time periods is then identified.

5.5.13 **Table 5.5.1** shows the predicted number of trips generated by the 2031 Reference Case + the Proposed Development and the difference in the traffic flow compared with the 2031 Reference Case. The percentage change on each link in the different time periods is then identified.

**Table 5.5.1: 2031 Reference Case / Development Flows Comparison**

Link Ref	Link Description	2031 Reference Case + Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
1	A41 northbound, N of M40 J9	1224	1133	11716	-13	-4	-82	-1%	0%	-1%
2	A41 southbound, N of M40 J9	988	875	9262	8	-3	23	1%	0%	0%
3	A41 Oxford Rd, S of A41 junction	3065	3144	30867	11	28	192	0%	1%	1%
4	Vendee Drive, W of A41 junction	1222	1108	11587	5	70	372	0%	7%	3%
5	A41, N of Pingle Drive	2684	2898	27751	6	-4	9	0%	0%	0%
6	Middleton Stoney Rd, W of Kings End	1528	1518	15146	47	-25	111	3%	-2%	1%
7	Middleton Stoney Rd, W of Howes Lane	1710	1886	17567	-5	-11	-76	0%	-1%	0%
8	Howes Lane, N of Middleton Stoney Rd	1417	1552	14762	241	190	2143	21%	14%	17%

Link Ref	Link Description	2031 Reference Case + Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
9	Howes Lane, E of Shakespeare Drive	1549	1706	1618 2	257	239	2470	20%	16%	18%
10	Lords Lane, E of Bucknell Road	1311	1309	1361 3	149	28	919	13%	2%	7%
11	Lords Lane, W of Banbury Road	1524	1629	1567 5	312	295	3016	26%	22%	24%
12	Bucknell Road, N of Lords Lane	323	291	3053	117	198	1566	57%	211 %	105 %
13	Bucknell Road, S of Howes Lane	87	136	1130	6	2	40	7%	2%	4%
14	Banbury Road, N of Lords Lane	1990	1366	1634 1	62	37	480	3%	3%	3%
15	A4095 E of Banbury Road	2082	2193	2125 1	29	137	827	1%	7%	4%
16	Banbury Road, S of A4095	896	652	7726	0	-19	-97	0%	-3%	-1%
17	Buckingham Road, S of Skimmingdish Lane	978	807	8870	-1	0	-8	0%	0%	0%
18	Queens Avenue, S of Bucknell Road	2051	2131	2079 2	-26	-29	-272	-1%	-1%	-1%
19	A41 E of A41 Oxford Road	2887	2898	2876 1	6	-12	-30	0%	0%	0%
20	A4421 Neunkirchen Way	1228	1286	1250 4	-7	13	30	-1%	1%	0%
21	A41, E of London Road roundabout	1921	2003	1950 8	1	7	41	0%	0%	0%

Link Ref	Link Description	2031 Reference Case + Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
22	A4421, E of Skimmingdish Lane	2407	2624	25015	53	154	1027	2%	6%	4%
23	Shakespeare Drive, S of Howes Lane	175	190	1816	4	20	118	2%	12%	7%
24	M40 J10 northbound off slip road	1324	1878	16403	-5	4	-4	0%	0%	0%
25	Ardley Road (E of B430)	731	585	6546	102	163	1320	16%	39%	25%
26	M40 J10 southbound on slip road (from A43)	2002	1568	19208	14	4	98	1%	0%	1%
27	B430 M40 over bridge	2666	2848	27415	24	83	531	1%	3%	2%
28	A4095 N of Chesterton	881	625	7487	42	-47	-27	5%	-7%	0%
29	Shakespeare Drive, E of Middleton	895	912	8986	-1	20	95	0%	2%	1%
30	The Approach, W of Bucknell Road	471	338	4020	18	16	170	4%	5%	4%
31	A41 East of Pioneer Road	2627	2607	26026	8	-4	23	0%	0%	0%
32	Bicester Road, E of A4421 junction	860	842	8463	4	9	63	0%	1%	1%
33	A4421 N of Skimmingdish Lane	2070	1958	20026	33	50	415	2%	3%	2%
34	Fringford Road, N of Caversfield	299	218	2570	-34	-65	-493	-10%	-23%	-16%

Link Ref	Link Description	2031 Reference Case + Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
35	B4100 Banbury Road, N of Bainton Road	1497	1477	14789	8	-19	-57	1%	-1%	0%
36	Ardley Road, N of Bucknell	731	585	6546	102	163	1320	16%	39%	25%
37	Middleton Road, W of Bucknell	306	458	3798	24	94	588	9%	26%	18%
38	B4030 Middleton Stoney Road, NW of NWB	1347	1499	14155	-13	-38	-249	-1%	-2%	-2%
39	Green Lane, W of Chesterton	692	709	6962	-2	19	87	0%	3%	1%
40	Wendlebury Road, E of M40	387	522	4518	5	1	31	1%	0%	1%

5.5.14 **Table 5.5.1** highlights those links where a 10% or more increase in traffic is forecast with the Proposed Development compared to the Reference Case in 2031. The impact on the following links are therefore further considered:

- Howes Lane (North of Middleton Stoney Road)
- Howes Lane (East of Shakespeare Drive)
- Lords Lane (east of Bucknell Road)
- Lords Lane (West of Banbury Road)
- Bucknell Road (North of Lords Lane)
- Shakespeare Drive (South of Howes Lane)
- Ardley Road (E of B430)
- Ardley Road (North of Bucknell)
- Middleton Road (West of Bucknell)

Severance

5.5.15 **Table 5.5.2** identifies the likely impact on NMU severance for each of the identified links. Severance occurs when there is difficulty experienced in crossing a heavily trafficked road. The guidelines refer to the Department for Transport’s 'Manual of Environmental Appraisal', which

suggests that changes in traffic flow of 30%, 60%, and 90% would be likely to produce 'slight', 'moderate', and 'substantial' changes in severance, respectively.

**Table 5.5.2: Impact on Level of Severance**

Link Ref	Link Description	Percentage Change from 2031 Reference Case		Impact on level of NMU Severance	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
8	Howes Lane, N of Middleton Stoney Rd	21%	14%	Negligible	Negligible
9	Howes Lane, E of Shakespeare Drive	20%	16%	Negligible	Negligible
10	Lords Lane, E of Bucknell Road	13%	2%	Negligible	Negligible
11	Lords Lane, W of Banbury Road	26%	22%	Negligible	Negligible
12	Bucknell Road, N of Lords Lane	57%	211%	Moderate adverse	Major adverse
23	Shakespeare Drive, S of Howes Lane	2%	12%	Negligible	Negligible
25	Ardley Road (E of B430)	16%	39%	Negligible	Minor adverse
36	Ardley Road, N of Bucknell	16%	39%	Negligible	Minor adverse
37	Middleton Road, W of Bucknell	9%	26%	Negligible	Negligible

5.5.16 It can be seen that the increased traffic flow from the Proposed Development would be likely to impact on three of the links. Whilst the percentage increase in the traffic flow is high this is from a low base flow. There is currently no development alongside Bucknell Road and therefore, no crossing movements, whereas the Proposed Development will introduce development and crossing movements. Ardley Road (East of B430) is a rural road with a fairly low baseline traffic flow; there is no development on either side and crossing movements are not expected. Ardley Road (North of Bucknell) has a fairly low baseline traffic flow; this link indicates that there will be additional vehicles travelling through Bucknell where it is possible there will be a few crossing movements.

Driver Delay

5.5.17 In order to assess driver delay on the links identified for assessment, link speeds were used. Where there is a reduction in link speed with the Development compared to the Reference Case this gives an indication of increased driver delay.

5.5.18 Congested speeds by link (including junction delay) were provided from the BTM. **Table 5.5.3** shows the speed in the Reference Case 2031 and with the Development.

5.5.19 The links where speed in kilometres per hour reduces significantly with development are highlighted. This indicates that there would be an increase in driver delay on Middleton Stoney Road, Howes Lane, Lords Lane, Ardley Road and Shakespeare Drive.

5.5.20 With regard to the significance of the impacts, the following assessment by examining the level of change against the current speeds and using professional judgement is made:

- Middleton Stoney Road: minor adverse and not significant in both AM and PM Peaks;
- Howes Lane: north of Middleton Stoney Road, minor adverse and not significant in the AM Peak;
- Lords Lane: both east and west of Banbury Road, minor adverse and not significant;
- Shakespeare Drive: minor adverse and significant in the AM Peak;
- Ardley Road: both east and west of the B460, minor adverse and not significant in both AM and PM Peaks;

**Table 5.5.3: Impact on Level of Driver Delay**

Link Ref	Link Description		2031 Reference Case kph		With Hawkwell Village kph		Change in Speed kph	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
8	Howes Lane, N of Middleton Stoney Rd	NB	48	48	48	48	0	0
		SB	18	18	16	21	-2	3
9	Howes Lane, E of Shakespeare Drive	NB	28	28	28	30	0	2
		SB	45	45	45	45	0	0
10	Lords Lane, E of Bucknell Road	NB	28	28	28	26	0	-2
		SB	60	60	58	60	-2	0
11	Lords Lane, W of Banbury Road	EB	7	7	6	8	-1	1
		WB	68	68	68	68	0	0
12	Bucknell Road, N of Lords Lane	NB	31	31	31	31	0	0
		SB	32	32	32	32	0	0
23	Shakespeare Drive, S of Howes Lane	NB	6	4	5	4	-1	0
		SB	30	31	30	32	0	1
25	Ardley Road (E of B430)	NB	45	48	44	47	-1	-1
		SB	56	56	56	56	0	0
36	Ardley Road, N of Bucknell	NB	45	48	44	47	-1	-1
		SB	56	56	56	56	0	0

37	Middleton Road, W of Bucknell	NB	77	76	72	75	-5	-1
		SB	72	72	72	72	0	0

NMU Delay

5.5.21 The IEMA Guidelines suggest that pedestrian delay is experienced at a lower threshold when pedestrians experience a 10 second delay crossing a carriageway with no crossing facilities for a two-way flow of 1,400 vehicles per hour. The upper threshold amounts to a 40 second delay, also where no crossing facilities exist.

5.5.22 The likely impact of NMU delay based on the predicted traffic flows of the Proposed Development has been assessed. A commentary on each link is provided in **Table 5.5.4**.

**Table 5.5.4: Impact on Level of NMU Delay**

Link Ref	Link Description	2031 Reference Case + Development		Commentary
		AM Peak Hour	PM Peak Hour	
8	Howes Lane, N of Middleton Stoney Rd	1417	1552	The flow level is above the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be minor adverse.
9	Howes Lane, E of Shakespeare Drive	1549	1706	The flow level is above the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be minor adverse.
10	Lords Lane, E of Bucknell Road	1311	1309	The flow level is below the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be negligible.
11	Lords Lane, W of Banbury Road	1524	1629	The flow level is above the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be minor adverse.
12	Bucknell Road, N of Lords Lane	323	291	The flow level is well below the threshold volume of traffic. The

Link Ref	Link Description	2031 Reference Case + Development		Commentary
		AM Peak Hour	PM Peak Hour	
				impact would be negligible.
23	Shakespeare Drive, S of Howes Lane	175	190	The flow level is well below the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be negligible.
25	Ardley Road (E of B430)	731	585	The flow level is well below the threshold volume of traffic. The impact would be negligible.
36	Ardley Road, N of Bucknell	731	585	The flow level is well below the threshold volume of traffic. The impact would be negligible.
37	Middleton Road, W of Bucknell	306	458	The flow level is well below the threshold volume of traffic. The impact would be negligible.

NMU Amenity

5.5.23 **Table 5.5.5** sets out each link and identifies where there would be a likely impact on NMU amenity based on the predicted increase in traffic flows with the Proposed Development flows. The pedestrian amenity threshold, as set out in the IEMA Guidelines to assess the significance of change, is where the traffic flow is doubled.

5.5.24 It can be seen that of the links assessed there would be likely to be an adverse impact on NMU amenity on Bucknell Road (North of Lords Lane); this road is currently subject to 60mph flanked by fields and there are very little active travel movements. The Proposed Development will introduce development on both sides of the road and mitigation will need to be considered.

**Table 5.5.5: Impact on Level of NMU Amenity**

Link Ref	Link Description	2031 with Development Flows		Percentage change from 2031 Reference Case		Impact on Level of NMU Amenity	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
8	Howes Lane, N of Middleton Stoney Rd	1417	1552	21%	14%	Negligible	Negligible
9	Howes Lane, E of Shakespeare Drive	1549	1706	20%	16%	Negligible	Negligible
10	Lords Lane, E of Bucknell Road	1311	1309	13%	2%	Negligible	Negligible
11	Lords Lane, W of Banbury Road	1524	1629	26%	22%	Negligible	Negligible
12	Bucknell Road, N of Lords Lane	323	291	57%	211%	Negligible	Major adverse
23	Shakespeare Drive, S of Howes Lane	175	190	2%	12%	Negligible	Negligible
25	Ardley Road (E of B430)	731	585	16%	39%	Negligible	Negligible
36	Ardley Road, N of Bucknell	731	585	16%	39%	Negligible	Negligible
37	Middleton Road, W of Bucknell	306	458	9%	26%	Negligible	Negligible

*Fear and Intimidation*

5.5.25 Fear and intimidation can be established through a combination of traffic flow, speed and composition. The criteria from the IEMA Guidelines for assessing this have been set out in **Tables 5.2.1, 5.2.2 and 5.2.3**. The impact of fear and intimidation for the identified road links is summarised in **Table 5.5.6**.

**Table 5.5.6: Impact on Fear and Intimidation**

Link Ref	Link Description	2031 Reference Case Flows		2031 with Dev Flows		Speed Limit	Score		Impact
		18 Hr AHT	18hr HGV	18 Hr AHT	18hr HGV		2031 RC	2031 + Dev	
8	Howes Lane, N of Middleton Stoney Rd	735	760	860	889	50mph	40	40	Negligible
9	Howes Lane, E of Shakespeare Drive	799	926	942	1093	40mph	40	40	Negligible
10	Lords Lane, E of Bucknell Road	707	584	759	626	45mph	40	40	Minor Adverse
11	Lords Lane, W of Banbury Road	737	609	913	753	50mph	40	40	Negligible
12	Bucknell Road, N of Lords Lane	87	100	178	206	60mph	30	30	Scores Negligible However, the development will introduce active travel movement and therefore this has been assessed as major adverse.
23	Shakespeare Drive, S of Howes Lane	99	85	106	91	30mph	20	20	Negligible
25	Ardley Road (E of B430)	304	353	381	442	60mph	30	30	Negligible
36	Ardley Road, N of Bucknell	304	353	381	442	60mph	30	30	Negligible
37	Middleton Road, W of Bucknell	187	217	221	256	60mph	30	30	Negligible

Accidents and Safety

- 5.5.26 The increase in traffic flows generated by the Proposed Development may increase the potential for collisions on the highway network. Areas of existing collisions can be assessed to identify whether mitigation measures are required to improve facilities for vulnerable road users.
- 5.5.27 An analysis of personal injury accidents has been undertaken for the past five years. The study area for the accident analysis did not include all the links being assessed in detail. As such a

precautionary approach has been taken with this small number of links, assuming there may be a significant impact.

**Table 5.5.7: Impact on Accidents and Safety**

Link Ref	Link Description	Existing Accident Issues	Assessment of Impact
8	Howes Lane, N of Middleton Stoney Rd	No collisions	The SLR will amend the road network and vehicle movements will be removed on this link. The SLR will introduce a toucan crossing. Moderate beneficial.
9	Howes Lane, E of Shakespeare Drive	One slight collision	The SLR will introduce a toucan crossing on Howes Lane and the signalised junctions on the SLR will provide red light phases for active travel movements. Moderate beneficial
10	Lords Lane, E of Bucknell Road	Two slight and four serious collisions	The SLR will introduce a toucan crossing on Lords Lane and the signalised junctions on the SLR will provide red light phases for active travel movements. Minor beneficial
11	Lords Lane, W of Banbury Road	Two serious collisions	The recent upgrade of the Banbury Road junction to signals provides additional benefits to active travel users and the provision of signalised junctions on the SLR which will provide red light phases for active travel movements. Minor beneficial
12	Bucknell Road, N of Lords Lane	No collisions	The Proposed Development will introduce active travel movements on this 60mph speed limit road. Major adverse.
23	Shakespeare Drive, S of Howes Lane	No collisions	Negligible
35	Ardley Road (E of B430)	One slight collision	Minor adverse
36	Ardley Road, N of Bucknell	No collisions	Minor adverse
37	Middleton Road, W of Bucknell	Not included in the assessment	Minor adverse

Impact on Public Rights of Way

5.5.28 In addition to the impact on links where an increase in traffic flows generated by the Proposed Development of more than 10% is identified, the impact on the PRow network has been considered. Within the Proposed Development there are no PROWs directly impacted. New footpath connections would be provided to the Bure stream area and under the railway to the western side, for example, which would have a beneficial impact on the network.

Summary

5.5.29 **Table 5.5.8** summarises the assessment of each of the links against each of the factors. This is on the basis that no mitigation has been taken into account in the assessment.

**Table 5.5.8: Impact Summary Table**

Link Ref	Link Description	NMU Severance	NMU Amenity	Driver Delay	NMU Delay	Fear and Intimidation	Accident and Safety
8	Howes Lane, N of Middleton Stoney Rd	Negligible	Negligible	Minor Adverse	Minor adverse	Negligible	Moderate Beneficial
9	Howes Lane, E of Shakespeare Drive	Negligible	Negligible	Negligible	Minor adverse	Negligible	Moderate Beneficial
10	Lords Lane, E of Bucknell Road	Negligible	Negligible	Minor Adverse	Negligible	Minor adverse	Minor Beneficial
11	Lords Lane, W of Banbury Road	Negligible	Negligible	Minor adverse	Minor adverse	Negligible	Minor Beneficial
12	Bucknell Road, N of Lords Lane	Major adverse	Major adverse	Negligible	Negligible	Major adverse	Major Adverse
23	Shakespeare Drive, S of Howes Lane	Negligible	Negligible	Minor Adverse	Negligible	Negligible	Negligible
25	Ardley Road (E of B430)	Minor adverse	Negligible	Minor Adverse	Negligible	Negligible	Minor Adverse
36	Ardley Road, N of Bucknell	Minor adverse	Negligible	Minor Adverse	Negligible	Negligible	Minor Adverse
37	Middleton Road, W of Bucknell	Negligible	Negligible	Minor Adverse	Negligible	Negligible	Minor Adverse

5.5.30 The other Environmental Effects including noise, vibration and air quality are addressed in other chapters of the ES.

## 5.6 Mitigation Measures

### **Construction stage**

- 5.6.1 As a large proportion of the construction traffic is anticipated to be heavy goods vehicles it is essential that residential areas are avoided during the course of construction by heavy goods vehicle drivers associated with the proposals. It is therefore considered appropriate to have a lorry routing agreement to ensure drivers use the peripheral road/ A4095 and would be prohibited from passing through the centre of Bicester unless they are transporting locally sourced materials/goods. A lorry movement plan would be included within the Construction Environmental Management Plan (CEMP).
- 5.6.2 It is anticipated that over the life of the construction period, virtually all construction traffic for the Development would use the A41/Vendee Drive from the M40 Junction 9 and the A4421 around the eastern side of Bicester.
- 5.6.3 Possible disruption would be minimised by ensuring working times are outside of peak periods, convoy systems are in place to group vehicle movements, movements are restricted away from schools start and closing times and temporary facilities are designed to minimise disruption to traffic.
- 5.6.4 It would be ensured that regular wheel cleaning / dirt control would be undertaken at key stages of the construction to minimise spillage on the road surface. Arrangements for regular road maintenance and cleaning, e.g. road sweeping in the vicinity of the site access points as necessary would be included within the Construction Environmental Management Plan.
- 5.6.5 Temporary road signs and traffic management control would be provided where necessary to ensure construction vehicles have a clear route to and from the Site and do not affect the safety of other road users.
- 5.6.6 A convoy system and banks man would be used where vehicle movements need assistance to reduce the potential effect on the safety of road users and potential traffic management control.

**Table 5.6.1: Construction Mitigation Measures**

<b>Item No</b>	<b>Mitigation Measure</b>	<b>Monitoring Arrangements (where relevant)</b>
1	Construction Environmental Management Plan including a Construction Traffic Management Plan	<b>PLANNING CONDITION</b>

***Post-completion stage***

- 5.6.7 The assessment of impacts has identified that there would be a number of major adverse impacts on Bucknell Road (North of Lords Lane) due to the introduction of development and associated active travel movements.
- 5.6.8 The proposed mitigation for Bucknell Road includes the introduction of a 20 mph speed limit with associated traffic calming measures and infrastructure for active travel including paths and crossing facilities on Bucknell Road.
- 5.6.9 The Proposed Development will provide other mitigation measures to increase safety and remove vehicle trips from the highway network. The mitigation measures associated with the Proposed Development are shown in **Table 5.6.2**.
- 5.6.10 Before the SLR can be delivered, but to enable the delivery of a quantum of dwellings, various designs of interim / minor mitigation /interim signal highways scheme have been explored with OCC to mitigate the early phases of the development which in turn will assist with funding of the SLR. The updated TA sets out these options and explores their effects in relation to capacity and delay on the network. It proposes the construction of an interim signalised mitigation scheme to an existing highway junction can support delivery of up to 1,250 dwellings at Hawkwell Village (2,000 dwellings in total including at Land West of Howes Lane (A2D proposal)) along with substantial active travel measures. Following the delivery of the SLR the remaining dwellings can come forward.

**Table 5.6.2: Post Completion Stage Mitigation Measures**

<b>Item No</b>	<b>Mitigation Measure</b>	<b>Monitoring Arrangements (where relevant)</b>
1	Travel Plans	<b>PLANNING CONDITION / S106</b>
2	Mobility Hubs	<b>PLANNING CONDITION / S106</b>
3	Public Transport Infrastructure	<b>PLANNING CONDITION / S106</b>
4	Public Transport Contribution / Services	<b>S106</b>
5	Interim Signalised Scheme at the Bucknell Road / Howes Lane / Lords Lane junctions	<b>PLANNING CONDITION</b>
6	Network of internal active travel routes and connections with existing / future neighbourhoods	<b>PLANNING CONDITION</b>
7	Off-site primary desire active travel routes improvements - construction / contribution including the upgrade of the route alongside the railway between Lords Lane and Banbury Road	<b>S278/S106</b>
8	PRoW contribution	<b>S106</b>
9	Off-site highway mitigation including a 20mph speed limit on Bucknell Road supported by a traffic calming scheme	<b>S278/S106</b>
10	20mph speed limit on development roads	<b>S38/S106</b>
11	Electric Vehicle charging infrastructure	<b>BUILDING REGULATIONS</b>

5.6.11 A crucial means of mitigating traffic impacts will be to achieve modal share and containment of trip targets, and this will also help the NW Bicester vision to be achieved. The strategy for sustainable travel measures is fully detailed in the Framework Travel Plan but includes a mobility hub, employment space, support for a car club, electric vehicle charging points,

promotion of electric vehicles, cycling and walking and support as well as a management and monitoring structure to give confidence that targets can be achieved.

## 5.7 Residual Effects

### *Construction stage*

5.7.1 The assessment of impacts associated with the construction phase of the Development has identified that there are likely to be minor adverse impacts for residents and businesses relating to the increase in construction vehicles on the local highway network. Potential delays to journey times for NMUs and drivers may be experienced due to the volume of traffic and the potential need to introduce temporary traffic management controls on route to the development site. The safety of road users may also be affected by the increase of large type construction vehicles. A Construction Environmental Management Plan (CEMP) would be produced to mitigate these impacts, effectively routing construction vehicles away from sensitive residential areas where possible.

### *Post-completion stage*

5.7.2 With the implementation of measures as identified above the residual effects would be further reduced.

### *Summary of effects*

5.7.3 This section has presented and assessed the likely traffic and transport impacts likely to arise as a result of the Proposed Development. The relevant regulatory and policy framework has been summarised and the methodology used to set out current and future baselines.

5.7.4 The traffic flow for the base case year of 2026 and the predicted 2031 Future Baseline / Reference Case (without development) have been identified using the BTM for the highway network.

5.7.5 The traffic flows with the Development have been generated and then been compared to the 2031 Reference Case. Links have been identified where the percentage increase in traffic is more than 10%. The impact on these links in terms of NMU severance, amenity, delay and fear and intimidation together with driver delay and accidents and safety have been assessed.

5.7.6 Following the assessment of impacts, further mitigation has been considered to address those areas where impacts are significant (i.e. a moderate or major adverse impact). No major adverse impacts are considered likely following mitigation as shown in **Table 5.7.1**.

**Table 5.7.1: Summary of effects**

Potential effect	Significance (pre-mitigation)	Mitigation measure	Significance of residual effect
<b>Construction stage</b>			
Severance	<b>Long term temporary Minor Adverse</b>	Construction Environmental Management Plan	<b>Long term temporary Minor Adverse</b>
Driver Delay			
NMU Delay			
NMU Amenity			
Accidents and Safety			
Fear and Intimidation			
<b>Interim Stage</b>			
Severance	<b>Long term temporary Moderate / Major Adverse</b>	Active travel crossing points	<b>Long Term temporary Minor / Moderate Beneficial</b>
Driver Delay		Travel Plan	<b>Long term temporary Minor Adverse</b>
NMU Delay		Active travel crossing points	<b>Long Term temporary Minor / Moderate Beneficial</b>
NMU Amenity		Active travel crossing points, widened and additional active travel routes	
Accidents and Safety		Active travel crossing points, widened and additional active travel routes	
Fear and Intimidation		Active travel crossing points, widened and additional active travel routes	
<b>Post-completion stage</b>			
Severance	<b>Permanent Negligible / Minor Adverse / Major Adverse</b>	Active travel crossing points	<b>Permanent Negligible / Minor Adverse</b>
Driver Delay	<b>Permanent Negligible / Minor Adverse</b>	Travel Plan, mobility hub, off-site highway works	<b>Permanent Negligible / Minor Adverse</b>
NMU Delay	<b>Permanent Negligible / Minor Adverse</b>	Active travel crossing points	<b>Permanent Negligible / Minor Adverse</b>

NMU Amenity	<b>Permanent Negligible / Major Adverse</b>	Speed reduction schemes / active travel infrastructure including crossing points	<b>Permanent Negligible / Minor Adverse</b>
Accidents and Safety	<b>Permanent Negligible / Minor Adverse / Major Adverse / Minor Beneficial / Moderate Beneficial</b>	Speed reduction schemes / active travel crossing points	<b>Permanent Negligible / Minor Adverse / Minor Beneficial / Moderate Beneficial</b>
Fear and Intimidation	<b>Permanent Negligible / Minor Adverse / Major Adverse</b>	Speed reduction schemes / active travel infrastructure including crossing points	<b>Permanent Negligible / Minor Adverse</b>

## 5.8 Cumulative Effects

- 5.8.1 This section undertakes an assessment of the impact of Hawkwell Village and Land West of Howes Lane using the BTM trip rates.

### *The Construction Effect of the Cumulative Development*

- 5.8.2 It is understood that the construction programme of the committed and proposed developments would be undertaken at different stages over the next 10-15 years. Although the construction phase of some of these developments might overlap, it is considered unlikely the peak periods of construction traffic would coincide.
- 5.8.3 Nevertheless, each development would have a Construction Traffic Management Plan (CTMP) in place to minimise the impact of the associated construction traffic with details in terms of operating hours, haulage routing, size of the fleets and number of vehicle movements to be agreed in advance with the LHA. These measures would include the diversion of traffic away from residential routes where feasible, the timed arrival and departure of traffic from the site to avoid associated peak periods, appropriate management on-site such as wheel washing facilities, use of traffic marshals for vehicles where appropriate, and provision of behavioural measures to encourage construction staff to travel to the site via sustainable modes of transport where feasible.
- 5.8.4 Therefore, the cumulative traffic impact from the demolition and construction activities to existing receptors are not considered to be significant and will not be considered further in the EIA.

### *The Operational Effect of the Cumulative Development*

- 5.8.5 **Table 5.8.1** shows the predicted number of trips generated by the 2031 Reference Case + the Proposed Development + Land West of Howes Lane and the difference in the traffic flow compared with the 2031 Reference Case. The percentage change on each link in the different time periods is then identified.

**Table 5.8.1: 2031 Reference Case / Cumulative Flows Comparison**

Link Ref	Link Description	2031 Reference Case + Cumulative Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
1	A41 northbound, N of M40 J9	1230	1135	11757	-7	-2	-41	-1%	0%	0%
2	A41 southbound, N of M40 J9	986	877	9262	6	-1	23	1%	0%	0%
3	A41 Oxford Rd, S of A41 junction	3078	3160	31015	24	44	340	1%	1%	1%
4	Vendee Drive, W of A41 junction	1259	1138	11918	42	100	703	3%	10%	6%
5	A41, N of Pingle Drive	2733	2915	28081	56	13	340	2%	0%	1%
6	Middleton Stoney Rd, W of Kings End	1572	1545	15494	91	2	459	6%	0%	3%
7	Middleton Stoney Rd, W of Howes Lane	1711	1885	17564	-4	-12	-79	0%	-1%	0%
8	Howes Lane, N of Middleton Stoney Rd	1653	1635	16350	477	273	3730	41%	20%	30%
9	Howes Lane, E of	104	141	1216	-1188	-1326	-12496	-92%	-90%	-91%

Link Ref	Link Description	2031 Reference Case + Cumulative Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
	Shakespeare Drive									
10	Lords Lane, E of Bucknell Road	1392	1380	14401	229	100	1707	20%	8%	13%
11	Lords Lane, W of Banbury Road	1592	1671	16223	379	337	3564	31%	25%	28%
12	Bucknell Road, N of Lords Lane	352	309	3286	147	215	1799	71%	230%	121%
13	Bucknell Road, S of Howes Lane	176	167	1732	94	33	642	115%	25%	59%
14	Banbury Road, N of Lords Lane	2004	1385	16499	76	56	639	4%	4%	4%
15	A4095 E of Banbury Road	2111	2218	21522	58	162	1098	3%	8%	5%
16	Banbury Road, S of A4095	886	657	7705	-10	-14	-118	-1%	-2%	-2%
17	Buckingham Road, S of Skimmingdish Lane	969	810	8847	-10	4	-30	-1%	0%	0%
18	Queens Avenue, S	2053	2124	20768	-24	-36	-296	-1%	-2%	-1%

Link Ref	Link Description	2031 Reference Case + Cumulative Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
	of Bucknell Road									
19	A41 E of A41 Oxford Road	2884	2911	28810	3	1	19	0%	0%	0%
20	A4421 Neunkirchen Way	1220	1280	12432	-16	7	-42	-1%	1%	0%
21	A41, E of London Road roundabout	1928	2013	19597	8	18	131	0%	1%	1%
22	A4421, E of Skimmingdish Lane	2422	2644	25187	68	173	1198	3%	7%	5%
23	Shakespeare Drive, S of Howes Lane	188	203	1943	17	32	245	10%	19%	14%
24	M40 J10 northbound off slip road	1324	1889	16461	-4	15	54	0%	1%	0%
25	Ardley Road (E of B430)	758	611	6805	129	189	1580	20%	45%	30%
26	M40 J10 southbound on slip road (from A43)	2012	1569	19265	24	5	155	1%	0%	1%
27	B430 M40 over bridge	2673	2862	27516	31	97	632	1%	3%	2%
28	A4095 N of Chesterton	909	634	7676	70	-38	162	8%	-6%	2%

Link Ref	Link Description	2031 Reference Case + Cumulative Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
29	Shakespeare Drive, E of Middleton	885	951	9130	-11	59	239	-1%	7%	3%
30	The Approach, W of Bucknell Road	463	369	4135	9	48	285	2%	15%	7%
31	A41 East of Pioneer Road	2629	2614	26070	11	3	67	0%	0%	0%
32	Bicester Road, E of A4421 junction	858	842	8450	1	9	50	0%	1%	1%
33	A4421 N of Skimmingdish Lane	2086	1968	20156	48	61	545	2%	3%	3%
34	Fringford Road, N of Caversfield	295	211	2516	-38	-72	-548	-11%	-25%	-18%
35	B4100 Banbury Road, N of Bainton Road	1531	1493	15035	42	-4	189	3%	0%	1%
36	Ardley Road, N of Bucknell	758	611	6805	129	189	1580	20%	45%	30%
37	Middleton Road, W of Bucknell	324	473	3963	42	109	752	15%	30%	23%

Link Ref	Link Description	2031 Reference Case + Cumulative Development			Change in Traffic Flows			Percentage Change of Traffic Flow compared to 2031 Reference Case		
		AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour	AM Peak Hour	PM Peak Hour	24 Hour
38	B4030 Middleton Stoney Road, NW of NWB	1379	1506	14342	19	-31	-62	1%	-2%	0%
39	Green Lane, W of Chesterton	720	702	7069	26	13	194	4%	2%	3%
40	Wendlebury Road, E of M40	387	528	4549	6	7	63	2%	1%	1%

5.8.6 **Table 5.8.1** highlights those links where a 10% or more increase in traffic is forecast from the Cumulative Development compared to the Reference Case in 2031. The impact on the following links will therefore be further considered:

- Howes Lane (North of Middleton Stoney Road)
- Lords Lane (East of Bucknell Road)
- Lords Lane (West of Banbury Road)
- Bucknell Road (North of Lords Lane)
- Bucknell Road (South of Howes Lane)
- Shakespeare Drive (South of Howes Lane)
- Ardley Road (E of B430)
- The Approach (West of Bucknell Road)
- Ardley Road (North of Bucknell)
- Middleton Road (West of Bucknell)

Severance

5.8.7 **Table 5.8.2** identifies the likely impact on NMU severance for each of the selected links. Severance occurs when there is difficulty experienced in crossing a heavily trafficked road. The guidelines refer to the Department for Transport’s 'Manual of Environmental Appraisal', which suggests that changes in traffic flow of 30%, 60%, and 90% would be likely to produce 'slight', 'moderate', and 'substantial' changes in severance, respectively.

**Table 5.8.2: Impact on Level of NMU Cumulative Severance**

Link Ref	Link Description	Percentage Change from 2031 Reference Case		Impact on level of NMU Severance	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
8	Howes Lane, N of Middleton Stoney Rd	41%	20%	Minor adverse	Negligible
10	Lords Lane, E of Bucknell Road	20%	8%	Negligible	Negligible
11	Lords Lane, W of Banbury Road	31%	25%	Minor adverse	Negligible
12	Bucknell Road, N of Lords Lane	71%	230%	Moderate adverse	Major adverse
13	Bucknell Road, S of Howes Lane	59%	59%	Minor / Moderate adverse	Minor / Moderate adverse
23	Shakespeare Drive, S of Howes Lane	10%	19%	Negligible	Negligible
25	Ardley Road (E of B430)	20%	45%	Negligible	Minor adverse
36	Ardley Road, N of Bucknell	20%	45%	Negligible	Minor adverse
37	Middleton Road, W of Bucknell	15%	30%	Negligible	Minor adverse

5.8.8 It can be seen that the increased traffic flow from the Cumulative Development would be likely to impact on seven of the links. Whilst the percentage increase in the traffic flow is high this is from a low base flow. The Howes Lane link shows the change in flows from traffic using Howes Lane to using the SLR and records a minor adverse impact. Lords Lane is in close proximity to the Cumulative Development and will see a minor adverse impact. Whilst there is currently no development alongside Bucknell Road (north of Howes Lane) and therefore, no crossing movements, the Proposed Development will introduce development and both developments will introduce crossing movements. There is a minor / moderate adverse impact on Bucknell Road (south of Howes Lane). Ardley Road (East of B430) is a rural road with a fairly low baseline traffic flow; there is no development on either side and crossing movements are not expected. Ardley Road (North of Bucknell) has a fairly low baseline traffic flow; this link indicates that there will be additional vehicle travelling through Bucknell where it is possible there will be a few crossing movements. Middleton Road is a rural road with dwellings at its eastern end where it is possible there will be a few crossing movements.

NMU Delay

5.8.9 The IEMA Guidelines suggest that pedestrian delay is experienced at a lower threshold when pedestrians experience a 10 second delay crossing a carriageway with no crossing facilities for a two-way flow of 1,400 vehicles per hour. The upper threshold amounts to a 40 second delay, also where no crossing facilities exist.

5.8.10 The likely impact of NMU delay based on the predicted traffic flows of the Cumulative Development has been assessed. A commentary on each link is provided in **Table 5.8.3**.

**Table 5.8.3: Impact on Level of Cumulative NMU Delay**

Link Ref	Link Description	2031 Reference Case + Development		Commentary
		AM Peak Hour	PM Peak Hour	
8	Howes Lane, N of Middleton Stoney Rd	1653	1635	The flow level is above the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be minor adverse.
10	Lords Lane, E of Bucknell Road	1392	1380	The flow level is at the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be negligible.
11	Lords Lane, W of Banbury Road	1592	1671	The flow level is above the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be minor adverse.
12	Bucknell Road, N of Lords Lane	352	309	The flow level is well below the threshold volume of traffic. The impact would be negligible.
13	Bucknell Road, S of Howes Lane	176	167	The flow level is well below the threshold volume of traffic. The impact would be negligible.
23	Shakespeare Drive, S of Howes Lane	188	203	The flow level is well below the threshold volume of traffic. A new toucan crossing is to be provided as part of the SLR. The impact would be negligible.

25	Ardley Road (E of B430)	758	611	The flow level is well below the threshold volume of traffic. The impact would be negligible.
36	Ardley Road, N of Bucknell	758	611	The flow level is well below the threshold volume of traffic. The impact would be negligible.
37	Middleton Road, W of Bucknell	324	473	The flow level is well below the threshold volume of traffic. The impact would be negligible.

NMU Amenity

5.8.11 **Table 5.8.4** sets out each link and identifies where there would be a likely impact on NMU amenity based on the predicted increase in traffic flows with the Cumulative Development flows. The pedestrian amenity threshold, as set out in the IEMA Guidelines to assess the significance of change, is where the traffic flow is doubled.

5.8.12 It can be seen that of the links assessed there would be likely to be an adverse impact on NMU amenity on Bucknell Road (north of Howes Lane) and Bucknell Road (South of Lords Lane); Bucknell Road (north of Howes Lane) is currently subject to 60mph flanked by fields and there are very little active travel movements. The Proposed Development will introduce development on both sides of the road and mitigation will need to be considered.

**Table 5.8.4: Impact on Level of NMU Amenity**

Link Ref	Link Description	2031 with Development Flows		Percentage change from 2031 Reference Case		Impact on Level of NMU Amenity	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
8	Howes Lane, N of Middleton Stoney Rd	1653	1635	41%	20%	Negligible	Negligible
10	Lords Lane, E of Bucknell Road	1392	1380	20%	8%	Negligible	Negligible
11	Lords Lane, W of Banbury Road	1592	1671	31%	25%	Negligible	Negligible
12	Bucknell Road, N of Lords Lane	352	309	71%	230%	Negligible	Major adverse
13	Bucknell Road (S of Howes Lane)	176	167	115%	25%	Minor adverse	Negligible

23	Shakespeare Drive, S of Howes Lane	188	203	10%	19%	Negligible	Negligible
25	Ardley Road (E of B430)	758	611	20%	45%	Negligible	Negligible
36	Ardley Road, N of Bucknell	758	611	20%	45%	Negligible	Negligible
37	Middleton Road, W of Bucknell	324	473	15%	30%	Negligible	Negligible

Fear and Intimidation

5.8.13 Fear and intimidation can be established through a combination of traffic flow, speed and composition. The criteria from the IEMA Guidelines for assessing this have been set out in Tables 5.2.1, 5.2.2 and 5.2.3. The impact of fear and intimidation for the identified road links is summarised in **Table 5.8.5**.

**Table 5.8.5: Impact on Fear and Intimidation**

Link Ref	Link Description	2031 Reference Case Flows		2031 with Dev Flows		Speed Limit	Score		Impact
		18 Hr AHT	18hr HGV	18 Hr AHT	18hr HGV		2031 RC	2031 + Cumae	
8	Howes Lane, N of Middleton Stoney Rd	735	760	952	985	50mph	40	40	Negligible
10	Lords Lane, E of Bucknell Road	707	584	803	662	45mph	40	40	Negligible
11	Lords Lane, W of Banbury Road	737	609	945	780	50mph	40	40	Negligible
12	Bucknell Road, N of Lords Lane	87	100	191	222	60mph	30	30	Scores Negligible. However, the development will introduce active travel movement and therefore this has been assessed as major adverse.
13	Bucknell Road, S of Howes Lane	62	64	99	102	40mph	0	0	Negligible
23	Shakespeare Drive, S of Howes Lane	99	85	113	98	30mph	20	20	Negligible

Link Ref	Link Description	2031 Reference Case Flows		2031 with Dev Flows		Speed Limit	Score		Impact
		18 Hr AHT	18hr HGV	18 Hr AHT	18hr HGV		2031 RC	2031 + Cumae	
25	Ardley Road (E of B430)	304	353	396	460	60mph	30	30	Negligible
36	Ardley Road, N of Bucknell	304	353	396	460	60mph	30	30	Negligible
37	Middleton Road, W of Bucknell	187	217	231	268	60mph	30	30	Negligible

Accidents and Safety

- 5.8.14 The increase in traffic flows generated by the Cumulative Development may increase the potential for collisions on the highway network. Areas of existing collisions can be assessed to identify whether mitigation measures are required to improve facilities for vulnerable road users.
- 5.8.15 An analysis of personal injury accidents has been undertaken for the past five years. The study area for the accident analysis did not include all of the links being assessed in detail. As such a precautionary approach has been taken with this small number of links, assuming there may be a significant impact.

**Table 5.8.6: Impact on Accidents and Safety**

Link Ref	Link Description	Existing Accident Issues	Assessment of Impact
8	Howes Lane, N of Middleton Stoney Rd	No collisions	The SLR will amend the road network and vehicle movements will be removed on this link. The SLR will introduce a toucan crossing. Moderate beneficial.
10	Lords Lane, E of Bucknell Road	Two slight and four serious collisions	The SLR will introduce a toucan crossing on Lords Lane and the signalised junctions on the SLR will provide red light phases for active travel movements. Minor beneficial
11	Lords Lane, W of Banbury Road	Two serious collisions	The recent upgrade of the Banbury Road junction to signals provides additional benefits to active travel

Link Ref	Link Description	Existing Accident Issues	Assessment of Impact
			users and the provision of signalised junctions on the SLR which will provide red light phases for active travel movements. Minor beneficial
12	Bucknell Road, N of Lords Lane	No collisions	The Proposed Development will introduce active travel movements on this 60mph speed limit road. Major adverse.
13	Bucknell Road, S of Lords Lane	No collisions	Negligible
23	Shakespeare Drive, S of Howes Lane	No collisions	Negligible
35	Ardley Road (E of B430)	One slight collision	Minor adverse
36	Ardley Road, N of Bucknell	No collisions	Minor adverse
37	Middleton Road, W of Bucknell	Not included in the assessment	Minor adverse

Impact on Public Rights of Way

- 5.8.16 In addition to the impact on links where an increase in traffic flows generated by the Development of more than 10% is identified, the impact on the public rights of way network has been considered. Within the Proposed Development there are no PROWs directly impacted. New footpath connections would be provided to the Bure stream area and under the railway to the western side, for example, which would have a beneficial impact on the network.
- 5.8.17 The SLR would cross the Bicester Bridleway 129/9/20 (via Land West of Howes Lane) which is a key strategic walking, cycling and equestrian route. There could be severance caused by the new road/building construction. It is proposed that a controlled crossing of the new road for walkers, cyclists and equestrians is provided to minimise any severance impacts of the Proposed Development.
- 5.8.18 Bicester Bridleway 129/9/20 routes through the Land West of Howes Lane development and the developer will be required to mitigate any significant impacts.

Summary

5.8.19 **Table 5.8.7** summarises the assessment of each of the links against each of the factors. This is on the basis that no mitigation has been taken into account in the assessment.

**Table 5.8.7: Summary of Impact of Cumulative Development**

Link Ref	Link Description	Severance	NMU Amenity	NMU Delay	Fear and Intimidation	Accident and Safety
8	Howes Lane, N of Middleton Stoney Rd	Minor adverse	Negligible	Minor adverse	Negligible	Moderate Beneficial
10	Lords Lane, E of Bucknell Road	Negligible	Negligible	Negligible	Negligible	Minor Beneficial
11	Lords Lane, W of Banbury Road	Minor adverse	Negligible	Minor adverse	Negligible	Minor Beneficial
12	Bucknell Road, N of Lords Lane	Major adverse	Major adverse	Negligible	Major adverse	Major Adverse
13	Bucknell Road, S of Lords Lane	Minor / moderate adverse	Minor adverse	Negligible	Negligible	Negligible
23	Shakespeare Drive, S of Howes Lane	Negligible	Negligible	Negligible	Negligible	Negligible
25	Ardley Road (E of B430)	Minor adverse	Negligible	Negligible	Negligible	Minor Adverse
36	Ardley Road, N of Bucknell	Minor adverse	Negligible	Negligible	Negligible	Minor Adverse
37	Middleton Road, W of Bucknell	Minor adverse	Negligible	Negligible	Negligible	Minor Adverse

5.8.20 The other Environmental Effects including noise, vibration and air quality are addressed in other chapters of the ES.

**Mitigation**

Construction

5.8.21 No additional measures, other than the inherent CTMP, are considered necessary to mitigate the effects of the construction phase of the Proposed Development.

Operational

- 5.8.22 The assessment of impacts has identified that there would be a number of major adverse impacts on Bucknell Road (North of Lords Lane) due to the introduction of development and associated active travel movements.
- 5.8.23 The proposed mitigation for Bucknell Road includes the introduction of a 20 mph speed limit with associated traffic calming measures and infrastructure for active travel including paths and crossing facilities on Bucknell Road.
- 5.8.24 The cumulative development will provide other mitigation measures to increase safety and remove vehicle trips from the highway network. The mitigation measures associated with the Cumulative Development are shown in **Table 5.7.9**.
- 5.8.25 Before the SLR can be delivered, but to enable the delivery of a quantum of dwellings, various designs of interim / minor mitigation /interim signal highways scheme have been explored with OCC to mitigate the early phases of the development which in turn will assist with funding of the SLR. The updated TA sets out these options and explores their effects in relation to capacity and delay on the network. It proposes the construction of an interim signalised mitigation scheme to an existing highway junction can support delivery of up to 1,250 dwellings at Hawkwell Village (2,000 dwellings in total including at Land West of Howes Lane (A2D proposal)) along with substantial active travel measures. Following the delivery of the SLR the remaining dwellings can come forward.

**Table 5.8.9: Post Completion Stage Mitigation Measures**

<b>Item No</b>	<b>Mitigation Measure</b>	<b>Monitoring Arrangements (where relevant)</b>
1	Travel Plans	<b>PLANNING CONDITION / S106</b>
2	Mobility Hubs	<b>PLANNING CONDITION / S106</b>
3	Public Transport Infrastructure	<b>PLANNING CONDITION / S106</b>
4	Public Transport Contribution / Services	<b>S106</b>

<b>Item No</b>	<b>Mitigation Measure</b>	<b>Monitoring Arrangements (where relevant)</b>
5	Interim Signalised Scheme at the Bucknell Road / Howes Lane / Lords Lane junctions	<b>PLANNING CONDITION</b>
6	Network of internal active travel routes and connections with existing / future neighbourhoods	<b>PLANNING CONDITION</b>
7	Off-site primary desire active travel routes improvements - construction / contribution	<b>S278/S106</b>
8	PRoW contribution	<b>S106</b>
9	Off-site highway mitigation	<b>S278/S106</b>
9	20mph speed limit on development roads	<b>S38/S106</b>
10	Electric Vehicle charging infrastructure	<b>BUILDING REGULATIONS</b>

**Residual Effects**

Construction stage

5.8.26 After the inherent mitigation of the CTMPs the construction phase of the Cumulative Development is expected to have a temporary negligible effect (not significant) on severance, driver delay, NMU amenity, accidents and safety and fear and intimidation.

Post-completion stage

5.8.27 With the implementation of measures as identified above the residual effects would be further reduced.

Summary of cumulative effects

5.8.28 This section has presented and assessed the traffic and transport impacts likely to arise as a result of the Cumulative Development. The relevant regulatory and policy framework has been summarised and the methodology used to set out current and future baselines.

5.8.29 The traffic flows with the Cumulative Development have been generated and then been compared to the 2031 Reference Case. Links have been identified where the percentage increase in traffic is more than 10%. The impact on these links in terms of NMU severance, amenity, delay and fear and intimidation together with driver delay and accidents and safety have been assessed.

5.8.30 Following the assessment of impacts, further mitigation has been considered to address those areas where impacts are significant (i.e. a moderate or major adverse impact). No major adverse impacts are considered likely following mitigation as shown in **Table 5.8.10**.

**Table 5.8.10: Summary of effects**

Potential effect	Significance (pre-mitigation)	Mitigation measure	Significance of residual effect
<b>Construction stage</b>			
Severance	<b>Long term temporary Minor Adverse</b>	Construction Traffic Management Plan	<b>Long term temporary Minor Adverse</b>
Driver Delay			
NMU Delay			
NMU Amenity			

Accidents and Safety			
Fear and Intimidation			
<b>Interim Stage</b>			
Severance	<b>Long term temporary Moderate / Major Adverse</b>	Active travel crossing points	<b>Long Term temporary Minor / Moderate Beneficial</b>
Driver Delay		Travel Plan	<b>Long term temporary Minor Adverse</b>
NMU Delay		Active travel crossing points	<b>Long Term temporary Minor / Moderate Beneficial</b>
NMU Amenity		Active travel crossing points, widened and additional active travel routes	
Accidents and Safety		Active travel crossing points, widened and additional active travel routes	
Fear and Intimidation		Active travel crossing points, widened and additional active travel routes	
<b>Post-completion stage</b>			
Severance	<b>Permanent Negligible / Minor Adverse / Major Adverse</b>	Active travel crossing points	<b>Permanent Negligible / Minor Adverse</b>
NMU Delay	<b>Permanent Negligible / Minor Adverse</b>	Active travel crossing points	<b>Permanent Negligible / Minor Adverse</b>
NMU Amenity	<b>Permanent Negligible / Major Adverse</b>	Speed reduction schemes / active travel infrastructure including crossing points	<b>Permanent Negligible / Minor Adverse</b>
Accidents and Safety	<b>Permanent Negligible / Minor Adverse / Major Adverse / Minor Beneficial / Moderate Beneficial</b>	Speed reduction schemes / active travel crossing points	<b>Permanent Negligible / Minor Adverse / Minor Beneficial / Moderate Beneficial</b>
Fear and Intimidation	<b>Permanent Negligible / Minor Adverse /</b>	Speed reduction schemes / active travel infrastructure including crossing points	<b>Permanent Negligible / Minor Adverse</b>

	<b>Major Adverse</b>		
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5.8.31 The summary table above indicates the effect of the Cumulative Development will be negligible/minor adverse for the majority of links (not significant).

**Summary Statement Of Effects**

5.8.32 This Chapter of the ES has presented and assessed the traffic and transport impacts likely to arise as a result of the Proposed Development and the Cumulative Development. The relevant regulatory and policy framework has been summarised and the methodology used to set out current and future baselines.

5.8.33 The traffic flow for the base case year of 2026 and the predicted 2031 Future Baseline / Reference Case (without development) have been identified using the BTM for the highway network.

5.8.34 Minor adverse construction impacts have been identified and include the effect on residents and businesses due to the increased traffic flows consisting of a high proportion of heavy goods vehicles. Mitigation measures would be put in place to reduce the severity of the impacts such as producing a Construction Traffic Management Plan which would identify lorry routes away from residential roads and schools and ensure operations are during off-peak periods.

5.8.35 The traffic flows with the Development and with the cumulative Development have been generated and then been compared to the Future Baseline / Reference Case 2031. Links have been identified where the percentage increase in traffic is more than 10%. The impact on these links in terms of NMU severance, amenity, delay and fear and intimidation together with driver delay and accidents and safety have been assessed.

5.8.36 Following the assessment of impacts, further mitigation has been considered to address those areas where impacts are significant (i.e. a moderate or major adverse impact). No major adverse impacts are considered likely following mitigation.

**Table 5.8.11: Assessment of Significance of Residual Effects**

Possible Effect	Duration	Significance Major/Moderate/ Minor/Negligible Beneficial Adverse	International/ National/Regional/ Local	Mitigation	Residual Effect
<b>Proposed Development</b>					
<b>Construction</b>					
Severance	Temporary		Local	CEMP	Minor Adverse
Driver Delay					
NMU Delay					
NMU Amenity					
Accidents and Safety					
Fear and Intimidation					
<b>Operational Development</b>					
Severance	Permanent	Negligible / Minor Adverse / Major Adverse	Local	Crossing points, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
Driver Delay		Negligible / Minor Adverse		Travel Plan, Mobility Hub, SLR	Negligible / Minor Adverse
NMU Delay		Negligible / Minor Adverse		Crossing points, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
NMU Amenity		Negligible / Major Adverse		Speed reduction measures, crossing points, widening of footways/footpaths, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
Accidents and Safety		Negligible / Minor Adverse / Major Adverse / Minor Beneficial / Moderate Beneficial		Speed reduction measures, crossing points, widening of footways / footpaths, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse / Minor Beneficial / Moderate Beneficial

Fear and Intimidation		Negligible / Minor Adverse / Major Adverse		Speed reduction measures, crossing pints, widening of footways / footpaths, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
<b>Cumulative Development</b>					
<b>Construction</b>					
Severance	Temporary		Local	CEMP	Minor Adverse
Driver Delay					
NMU Delay					
NMU Amenity					
Accidents and Safety					
Fear and Intimidation					
<b>Operational Development</b>					
Severance	Permanent	Negligible / Minor Adverse / Major Adverse	Local	Crossing points, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
NMU Delay		Negligible / Minor Adverse		Crossing points, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
NMU Amenity		Negligible / Minor Adverse / Major Adverse		Speed reduction measures, crossing points, widening of footways/footpaths, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse
Accidents and Safety		Negligible / Minor Adverse / Major Adverse / Minor Beneficial / Moderate Beneficial		Speed reduction measures, crossing points, widening of footways / footpaths, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse / Minor Beneficial / Moderate Beneficial
Fear and Intimidation		Negligible / Minor Adverse / Major Adverse		Speed reduction measures, crossing pints, widening of footways / footpaths, Interim Mitigation Signalisation Scheme	Negligible / Minor Adverse