

## 6 TRANSPORT AND ACCESS

### Introduction

- 6.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of transport and access, including the effects on pedestrians, cyclists and public transport users on the local highway network.
- 6.2 This chapter has been prepared by Velocity Transport Planning (see Appendix 1.2 Statement of Expertise).
- 6.3 This chapter describes the assessment methodology; the baseline conditions existing at the Site; the mitigation measures required to prevent, reduce or offset any significant effects; and the likely effects of the Development relating to transport and access.
- 6.4 A Transport Assessment (TA) has been submitted with the planning application and copy is included at Appendix 6.1 of the ES. This chapter has been prepared on the basis of the detailed assessment reported in the TA, and the reader is referred to the TA, where further information is required.

### Policy Context

#### National Planning Policy Framework<sup>i</sup>

- 6.5 The National Planning Policy Framework (NPPF, Department for Communities and Local Government, February 2019) sets out the Government's economic, environmental and social planning policies. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.
- 6.6 The NPPF recognises the importance that transport policies have in facilitating development but also in contributing to wider sustainability and health objectives. The NPPF identifies at paragraph 111, that: "*All developments that generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.*"

6.7 When considering development proposals, the NPPF states at paragraph 108, that: *"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) safe and suitable access to the site can be achieved for all users; and*
- c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."*

6.8 Paragraph 109 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."*

6.9 Paragraph 110 goes on to state: *"Within this context, applications for development should:*

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

6.10 The NPPF recognises that a key tool to facilitate the above will be the provision of a Travel Plan such that all developments which generate significant amounts of movement should be required to provide a Travel Plan. Accordingly, a Framework Residential Travel Plan has been prepared and submitted with the planning application as part of a suite of Transport Assessment documents.

#### [Planning Practice Guidance<sup>ii</sup>](#)

6.11 The Government has adopted the national Planning Practice Guidance (PPG) dated March 2014, which provides comprehensive guidance compatible with the NPPF, replacing much of the previous guidance including, in the case of transport, the Department for Transport's

Guidance on Transport Assessment<sup>iii</sup> (2007).

6.12 The PPG includes a section dedicated to "*why are Travel Plans, Transport Assessment and Statements important*", citing the following points:

- *"Encouraging sustainable travel;*
- *Lessening traffic generation and its detrimental impacts;*
- *Reducing carbon emissions and climate impacts;*
- *Creating accessible, connected, inclusive communities;*
- *Improving health outcomes and quality of life;*
- *Improving road safety; and*
- *Reducing the need for new development to increase existing road capacity or provide new roads."*

6.13 The guidance specifies that it is linked directly to the NPPF and explains that planning should actively manage patterns of growth in order to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are, or can be made, sustainable.

6.14 Under the section "*What key principles should be taken into account in preparing a Travel Plan, Transport Assessment or Statement?*", the guidance states that "Travel Plans, Transport Assessments and Statements should be:

- *Proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;*
- *Established at the earliest practicable possible stage of a development proposal;*
- *Tailored to particular local circumstances (other locally-determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and*
- *Brought forward through collaborative ongoing working between the local planning authority/Transport Authority, transport operators, Rail Network Operators, Highways Agency (now known as Highways England) where there may be implications for the Strategic Road Network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in positively supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities)."*

6.15 The guidance also sets out the ways in which these documents can be made to be as useful

and accessible as possible – by ensuring that any information or assumptions should be set out clearly and be publicly accessible.

#### Planning Policy Statement – Eco Towns<sup>iv</sup>

- 6.16 Planning Policy Statements (PPS) set out the national policies on different aspects of spatial planning in England before all, inclusive of the PPS on Eco-Towns, were superseded by the NPPF. It is noted that the Eco-Towns PPS provided the standards any eco-town had to adhere to before it was cancelled for all areas excluding north west Bicester on the 5<sup>th</sup> March 2015.
- 6.17 The PPS on Eco Towns supplements PPS1 which outlines the overarching planning policies on delivery of sustainable development through the planning system. It sets out the objectives for sustainable development in the form of large-scale development providing more homes while responding to the impact of climate change as well as a wide range of standards for the delivery of zero carbon development, homes, transport, jobs and other components of an Eco Town.
- 6.18 The objectives for planning set out in the PPS1 supplement are:
- *"To promote sustainable development by ensuring that eco-town achieve sustainability standards significantly above equivalent levels of development in existing towns and cities by setting out a range of challenging and stretching minimum standards for their development, in particular by:*
  - *providing a good quality of green spaces of the highest quality in close proximity to the natural environment;*
  - *offering opportunities for space within and around dwellings;*
  - *promoting healthy and sustainable environments through `Active Design 2` principles and healthy living choices;*
  - *enabling opportunities for infrastructure that makes best use of technologies in energy generation and conservation in ways that are not always practical or economic in other developments;*
  - *delivering a locally appropriate mix of housing type and tenure to meet the needs of all income groups and household size; and*
  - *taking advantage of significant economies of scale and increases in land value to deliver new technology and infrastructure such as for transport, energy and community facilities; and*
  - *To reduce the carbon footprint of development by ensuring that households and individuals in eco-towns are able to reduce their carbon footprint to a low level and*

*achieve a more sustainable way of living."*

- 6.19 The PPS1 supplement states that Eco Towns should develop unique characteristics by responding to the opportunities and challenges of their location and community aspirations and that all Eco Town proposals should meet the standards as set out in the PPS1 supplement or any standards in the development plan which are of a higher standard. The document identifies at Appendix A that the North West Bicester site allocation will be required to meet the Eco Town standards.
- 6.20 Policy ET11 – Transport in the PPS1 supplement identifies the standards for transport in an Eco Town. It states that *"Travel in eco-towns should support people's desire for mobility whilst achieving the goal of low carbon living. The town should be designed so that access to it and through it gives priority to options such as walking, cycling, public transport and other sustainable options, thereby reducing residents' reliance on private cars, including techniques such as filtered permeability. To achieve this, homes should be within ten minutes' walk of (a) frequent public transport and (b) neighbouring services. The provision of services within the eco-town may be co-located to reduce the need for individuals to travel by private car and encourage the efficient use of the transport options available."*
- 6.21 PPS1 states that Travel Plans are required to be included with any planning application with respect to Eco Town development and should demonstrate:
- *"How the town's design will enable at least 50 per cent of trips originating in eco-towns to be made by non-car means, with the potential for this to increase over time to at least 60 per cent;*
  - *Good design principles, drawing from Manual for Streets, Building for Life, and community travel planning principles;*
  - *How transport choice messages, infrastructure and services will be provided from 'day one' of residential occupation; and*
  - *How the carbon impact of transport in the eco-town will be monitored, as part of embedding a long-term low-carbon approach to travel within plans for community governance."*
- 6.22 PPS1 also states that where an Eco Town is close to an existing higher order settlement, in this case Bicester, planning applications should also demonstrate:
- *"Options for ensuring that key connections around the eco-town do not become congested as a result of the development, for example by extending some aspects of the travel plan*

*beyond the immediate boundaries of the town; and*

- *Significantly more ambitious targets for modal share than the 50 per cent (increasing to 60 per cent over time) mentioned above and for the use of sustainable transport.”*

6.23 Eco Towns should be *“designed in a way that supports children walking or cycling to school safely and easily. There should be a maximum walking distance of 800m from homes to the nearest school for children aged under 11.”*

### Local Planning Policy

#### *Oxfordshire Local Transport Plan 4 2015-2031<sup>v</sup>*

6.24 The Oxfordshire Local Transport Plan (LTP4) `Connecting Oxfordshire` includes objectives and policies for improving transport in Oxfordshire to 2031. These objectives and policies look at, in addition to other issues, minimising the need to travel and encouraging active travel.

6.25 The focus of the LTP4 is to attract and support economic investment and growth, deliver transport infrastructure, tackle congestion and improve quality of life. In Connecting Oxfordshire Volume 1, it also sets out policy priorities for parts of Oxfordshire less affected by the Knowledge Spine (which includes Bicester); therefore, it provides a basis for securing transport improvements to support development across the whole of Oxfordshire.

6.26 LTP4 has been developed with 3 over-arching transport goals.

- **Goal 1** – *To support jobs and housing growth and economic vitality;*
- **Goal 2** – *To reduce emissions, enhance air quality and support the transition to a low carbon economy; and*
- **Goal 3** – *To protect and enhance Oxfordshire’s environment and improve quality of life.*

6.27 To achieve these transport goals, 10 objectives for transport have been developed:

- **Goal 1: Supporting Growth and economic vitality:**
  - *Maintain and improve transport connections to support economic growths 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; and*

- *Develop a high quality, innovative and resilient integrated transport system that is attractive to customers and generates inward investment.*
- **Goal 2:** *Reduce emissions, enhance air quality and support the transition to a low carbon economy:*
  - *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; and*
  - *reduce per capita carbon emissions from transport in Oxfordshire in line with UK government targets.*
- **Goal 3:** *Improving Quality of Life:*
  - *mitigate and wherever possible enhance the impact of transport on the local built, historic and natural environment; and*
  - *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."*

6.28 A number of policies in the LTP4 are important to Eco Town developments:

- **Policy 03** – *Oxfordshire County Council will support measures and innovation that make more efficient use of transport network capacity by reducing the proportion of single occupancy car journeys and encouraging a greater proportion of journeys to be made on foot, by bicycle, and/ or by public transport;*
- **Policy 19** – *Oxfordshire County Council will encourage the use of travel associated with healthy and active lifestyles;*
- **Policy 20** – *Oxfordshire County Council will carry out targeted safety improvements on walking and cycling routes to school, to encourage active travel and reduce pressure on school bus transport;*
- **Policy 22** – *Oxfordshire County Council will promote the use of low or zero emission transport, including electric vehicles and associated infrastructure where appropriate; and*
- **Policy 23** – *Oxfordshire County Council will work to reduce the emissions footprint of transport assets and operation where economically viable, taking into account energy consumption and the use of recycled materials.*

6.29 *Connecting Oxfordshire Volume 8 Part ii* outlines the key strategies for particular local areas within Oxfordshire. The Bicester Area Strategy outlines four key aims for Bicester with respect to the county:

- **BIC1** - *Improve access and connections between key employment and residential sites and the strategic transport system by:*
  - *Continuing to work with Highways England to improve connectivity to the strategic highway;*
  - *Investing a new motorway junction as part of the Garden Town work;*
  - *Reviewing key county road links out of Bicester, including those that cross the county boundary;*
  - *Investigating options for infrastructure improvements and bus priority;*
  - *Delivering effective peripheral routes around the town;*
  - *Investigating solutions to East- West Rail Phase 2 challenges; and*
  - *Supporting the proposal to secure a potential freight interchange at Graven Hill and working with the district and developers to achieve this.*
- **BIC2** – *We will work to reduce the proportion of journeys made by private car though implementing the Sustainable Transport Strategy by:*
  - *Significantly improving public transport connectivity with key areas of economic growth within Oxfordshire;*
  - *Improving Bicester’s bus services along key routes and providing improved public transport infrastructure;*
  - *Enhancing pedestrian, cycle and public transport links to the Bicester Village Station, Bicester North Station and key employment sites;*
  - *Implementing Bicester town centre highway modifications;*
  - *The Bicester Sustainable Transport Strategy has identified a number of new sections of urban pedestrian and cycle routes; and*
  - *Progressing a Wayfinding Project for Bicester with the aim of improving signage across the town.*
- **BIC3** – *We will increase people’s awareness of the travel choices available in Bicester, which should improve public health and wellbeing by:*
  - *Undertaking travel promotions and marketing measures;*
  - *Developing a coordinated parking strategy in partnership with Cherwell District Council;*
  - *Discourage undesirable routeing of traffic by developing a signage strategy;*
  - *Providing coordinated information and advance notice of construction closures and traffic related issues; and*
  - *Providing new approaches to transport through the North-West Bicester development site.*
- **BIC4** - *To mitigate the cumulative impact of development within Bicester and to implement the measures identified in the Bicester Area Transport Strategy Oxfordshire Council will:*

- *Secure strategic transport infrastructure contributions from all new development;*
- *Secure sustainable transport measures through all major new development. For large new or expanded housing development sites, the following principles for cycle provision apply:*
  - a) *Developers must demonstrate through master planning how their site has been planned to make cycling convenient and safe for cyclists travelling to, from, within and through the site;*
  - b) *Site road network and junctions must be constructed with cycling in mind, including providing space for cycling on main/ spine roads through the provisions of, as a minimum, advisory cycle lane;*
  - c) *We will ask developers to fund cyclability, so that the local user view is incorporated into new cycle facilities.*
- *Secure strategic public transport contributions for new or improved public transport services as well as bus stop infrastructure to supply sustainable development.*

#### *Cherwell Local Plan 2011-2031<sup>vi</sup>*

- 6.30 *The Cherwell Local Plan 2011-2031 Part 1 sets out how Cherwell will grow and change in the period up to 2031.*
- 6.31 Any development proposals as part of the Eco Town scheme should ensure the below:
- *A zero-carbon development as defined in the Eco Towns PPS and Eco Bicester One Shared Vision;*
  - *Delivery of a high quality local environment;*
  - *Climate Change adaption: Eco Town standards are met on water, flooding, green infrastructure and biodiversity;*
  - *Homes that achieve at least Level 5 of the Code of Sustainable Homes;*
  - *Employment: at least 3,000 jobs within the plan period (approximately 1,000 jobs on B use class land on the site within the plan period). An economic strategy will be required and there should be local sourcing of labour, including providing apprenticeships during construction;*
  - *Transport: at least 50% of trips originating from the development to be made by means of other than car;*
  - *promotions of healthy lifestyles;*
  - *Provision of local services and facilities;*
  - *Green Infrastructure and biodiversity: 40% of the total gross site area will be provided as*

*green space of which at least half will be public open space;*

- *Sustainable management of waste.*

6.32 Policy Bicester 1 also states that “*a masterplan for the North west Bicester site will be required to demonstrate how proposals will achieve the standards set out in the Eco Towns PPS and Eco Bicester One Shared Vision. Development will be considered on the basis of a masterplan for the whole development area, to ensure that development takes place in an integrate, coordinated and planned way, whilst recognising that phasing of development within the overall masterplan strategy will be required. It will integrate with and complement the function and urban form of Bicester and reinforce the role of Bicester town centre as the primary retail and service centre.*” Policy Bicester 1 ensures that the Eco Town scheme will be designed as an exemplar which incorporates best practice and provides a showcase for sustainable living.

6.33 The council will expect the North West Bicester Masterplan and applications for planning permission to meet the following requirements which relate to transport and movement:

- *Proposals should enable residents to easily reduce their carbon footprint to a low level and live low carbon lifestyles;*
- *Layout of development that enables a high degree of integration and connectivity between new and existing communities;*
- *A layout that maximises the potential for walkable neighbourhoods;*
- *New footpaths and cycleways should be provided that link with existing network, the wider urban area and community facilities with a legible hierarchy of routes to encourage sustainable modes of travel;*
- *A layout which makes provisions for and prioritises non-car modes and encourages a modal shift from car use to other forms of travel;*
- *Infrastructure to support sustainable modes of transport will be required including enhancement of footpath and cycle path connectivity with the town centre, employment and rail stations;*
- *Measures to ensure the integration of the development with be remainder of the town including measures to address movement across Howes Lane and Lords Lane;*
- *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;*
- *Contributions to improvements to the surrounding road networks, including mitigation measures for the local and strategic highway network, consistent with the requirement of the Eco-Town PPs to reduce reliance on the private car, and to achieve a high level of*

*accessibility to public transport services improvements to facilities for pedestrians and cyclists and the provision and implementation of a Travel plan to maximise connectivity with existing development;*

- *Provision of a Transport Assessment;*
- *Measures to prevent vehicular traffic adversely affecting surrounding communities;*
- *Significant green infrastructure provision, including new footpaths and cycleways, enhancing green modal accessibility beyond the site to the town centre and Bicester Village Railway station, and adjoining developments; and*
- *Public open space to form a well-connected network of green areas suitable for formal and informal recreation.*

6.34 All proposals for development across the Eco Town site will be required to meet the Eco Town development standards set out in Policy Bicester 1: North West Bicester Eco Town and make a degree of contribution towards transport mitigation measures.

*North West Bicester Supplementary Planning Document* <sup>vii</sup>

6.35 The North West Bicester Supplementary Planning Document (SPD) expands upon Policy Bicester 1 of the adopted Cherwell Local Plan 2011-2031. The SPD provides further detail to the policy and means of implementing the strategic allocation at North West Bicester.

6.36 The SPD sets out the minimum standards to be achieved by proposed development across the Eco Town. It is encouraged that developers exceed these standards where possible and will be expected to apply new higher standards that arise during the life of the document and reflect up to date best practice and design principles.

6.37 The key elements of the SPD that relate to transport are set out within Development Principle 6 – Transport, Movement and Access. These can be summarised as follows:

- *The development should have a robust urban structure, with a network of well-designed, connected spaces and routes that prioritise the movement of pedestrians, cyclists, and public transport;*
- *Principles of "walkable neighbourhoods" and "filtered permeability" have been applied in the Masterplanning to determine the mix of uses and connections to predominantly daily facilities within the new community;*
- *Development proposals must show an understanding of existing routes and provide a considered response that enhances existing access and connections and seeks to improve / remove barriers to movement on and off-site;*

- *It is essential that the accessibility of the overall development internally and externally is designed to a high standard with attractive, direct and overlooked routes. Such routes will be expected to be designed to adoptable standards;*
- *It is crucial proposed developments integrate fully with existing developments and communities in Bicester by making new connections, while improving existing ones; and*
- *The North West Bicester masterplan sets out a framework for movement and access within the site. It includes a street hierarchy and indicative layout of primary streets.*

6.38 It is recognised that the SPD supports the implementation of Policy Bicester 1 of the Cherwell Local Plan 2011-2031 Part 1 and will be a material consideration in determining planning applications on the North West Bicester site.

6.39 The SPD sets a number of development principles and requirements for the Eco Town.

6.40 Development Principle 6 – Transport, Movement & Access states that the following key considerations for movement should be addressed in planning applications:

- *Reducing car dependency;*
- *Prioritising walking and cycling;*
- *Generating activity and connectivity;*
- *Highways and transport improvements; and*
- *Bus priority and links and infrastructure including real time information (RTI).*

6.41 The SPD states that planning applications are required to illustrate the permeability of the wider North West Bicester masterplan, i.e. the allocated site.

6.42 A key consideration of the SPD is that all planning applications for development in the Eco Town should include a Travel Plan which demonstrates how the design of the development will enable at least 50% of all trips from the development to be made by non-car modes of travel with a potential increase to 60% by 2020. The SPD also states that all planning applications need to be supported by a Transport Assessment which addresses the guidance in the SPD.

### **Assessment Methodology**

6.43 This chapter assesses the significance of transport and access effects, if any, of the Development on key local receptors. The Development will generate vehicular traffic that will distribute across a large geographic area. However, any likely significant effects will be in the

local area to the Site.

- 6.44 The assessment of transport and access related impacts has been carried out in accordance with the Institute of Environmental Assessment '*Guidelines for the Environmental Assessment of Road Traffic*'.<sup>viii</sup>
- 6.45 As agreed with OCC through the scoping process, the current baseline condition year is 2016 and the baseline traffic flows are those that have been provided from the Bicester Transport Model (BTM). Whilst the BTM does include an interim year of 2026 and a future year of 2031, it does not currently include an up-to-date base year of 2021. As such, the 2016 baseline traffic flows are agreed to be the most sensible to reference for the purpose of the baseline assessment.
- 6.46 Traffic data for the following junctions has been provided:
- B4100/A43 Baynards Green Roundabout Junction;
  - B4100/A4095/Banbury Road/A4095 Roundabout Junction;
  - A4095/Buckingham Road/Skimmingdish Lane/A4421 Roundabout Junction;
  - A4095/Middleton Stoney Road/Vendee Drive/B4030 Roundabout Junction;
  - B4100/Braeburn Avenue Priority Junction – Site Access 1; and
  - B4100/Charlotte Avenue Priority Junction – Site Access 2.
- 6.47 The TA that supports the planning application describes the highway impact of the proposed development on the above junctions with particular focus on the two junctions of Braeburn Avenue and Charlotte Avenue with the B4100 Banbury Road.
- 6.48 Assessments of the pedestrian, cycle and public transport networks have been undertaken and are set out within Section 4 of the TA.
- 6.49 This Chapter focuses on a more localised study area to assess the environmental impact on transport and access where the significance is likely to be higher.
- 6.50 The study area for the ES has been identified using the "*Guidelines for the Environmental Assessment of Road Traffic*" where the following two broad rules-of-thumb are to be used to establish which highway links are to be assessed:
- **Rule 1** include highway links where the traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and

- **Rule 2** *include any other specifically sensitive areas where the traffic flows have increased by 10% or more.*

- 6.51 It is noted that the Guidelines acknowledge that accuracies greater than 10% in traffic forecasting are generally not achievable and that the day-to-day variation of traffic flow on particular roads can be +/- 10%. It is concluded in the Guidelines that on a basic level, a change in traffic of less than 10% will not create a discernible environmental effect.
- 6.52 Based on the above rules, the highway assessment area includes links and junctions that are subject to changes in daily traffic flow due to the Development's construction and operation.
- 6.53 The changes in traffic flows on the surrounding highway network have been assessed to determine the likely significant effects of the Development, which includes links and junctions of significant importance to the local road network in the vicinity of the Site, and as agreed with OCC through the scoping process. These are links and junctions that connect the Site to local destinations and the wider strategic road network (A43, A34 and M40 towards Oxford and Banbury), where changes in traffic flows are likely to occur as a result of the implementation of the Development.

### Surveys and Scenarios

- 6.54 This assessment has considered the likely significant effects during the operation and construction of the Development.
- 6.55 In order to establish the baseline traffic conditions and to enable junction impact analysis, traffic flow information was extracted from the BTM. As agreed with OCC, the BTM also provided traffic flows for the future year of 2031, which coincides with the end of the Local Plan period and ensures that the BTM includes all committed developments identified within the Local Plan and appropriate levels of background growth.
- 6.56 The list of developments and infrastructure improvements included within the BTM scenarios, is included at Appendix E of the TA, a copy of which supports the planning application.
- 6.57 As part of the scoping discussions with OCC, three assessment periods were identified and traffic data was provided from the BTM for these three assessments periods, as follows:
- 2016 Base Traffic Flows;
  - 2026 'Kingsmere' Reference Case; and

- 2031 'Do Minimum'.

6.58 With regards the traffic flows associated with the Development, trip rates and distribution profiles were agreed with OCC through the scoping process, which are in line with previously considered planning applications and as set out within the *North West Bicester Masterplan – Interim Access and Travel Strategy*<sup>x</sup>, which was prepared by Hyder and published in March 2014.

6.59 Furthermore, the purpose of assessing the potential impact associated with the Site, the following assessment scenarios were agreed with OCC and have been considered in this Chapter:

- 2016 Base Traffic Flows;
- 2031 'Do Minimum' – Without Development; and
- 2031 'Do Something' – With Development.

6.60 The traffic flows associated with the 2016 Base scenario have been provided directly from the BTM. The AM and PM Peak hour flows are presented on Traffic Flow Diagrams 1 and 2 contained at Appendix F of the TA.

6.61 The agreed distribution profile of traffic associated with the Development is presented on Traffic Flow Diagram 3 contained at Appendix F of the TA.

6.62 The traffic flows associated with the Development have been calculated using the agreed trip rates, distribution profile, and mode share targets identified within the appropriate Policy requirements. The AM and PM Peak hour flows are presented on Traffic Flow Diagrams 4 and 5 contained at Appendix F of the TA.

6.63 The traffic flows associated with the 2031 'Do Minimum' scenario have been provided directly from the BTM. These flows include the traffic associated with the cumulative schemes for the cumulative assessment, but exclude any traffic associated with the Development. The AM and PM Peak hour flows are presented on Traffic Flow Diagrams 6 and 7 contained at Appendix F of the TA.

6.64 The traffic flows associated with the 2031 'Do Minimum' plus the traffic flows associated with the Development for the AM and PM Peak hour flows are presented on Traffic Flow Diagrams 8 and 9 contained at Appendix F of the TA.

### Construction Effects

- 6.65 The construction methodology and phasing are set out in Chapter 5 of this ES. It is identified that construction traffic will access the western parcel of the Site from Braeburn Avenue via the existing junction with the B4100 Banbury Road and the eastern parcel will be accessed via a temporary junction that will be provided directly from the B4100 Banbury Road at a point at the northern corner of this smaller development parcel generally in the same location as an existing field gate.
- 6.66 The estimated daily construction traffic is set out in Table 5.2 of this ES and summarised as being 150 two-way Heavy Goods Vehicle (HGV) movements and 200 two-way car and light goods vehicle movements daily, a total of 350 two-way trips. The HGV movements will be dispersed across the working day outside of the AM and PM peak periods.
- 6.67 It is anticipated that contractors and staff will arrive and depart by private car and these vehicle trips are expected to be outside of the traditional AM and PM peak periods.
- 6.68 As the level of construction traffic is identified to be considerably lower than that proposed for the operational phase of the development, i.e. once the scheme has been completed and fully occupied, this Chapter focuses on the operational effects with reference to the construction phase, as appropriate.
- 6.69 As set out within Chapter 5 of this ES, the construction phase of the Development is anticipated to commence in early 2022 and span approximately five years.

### Operational Effects

#### Sensitivity of Receptors

- 6.70 The significance of likely transport and access effects have been determined with criteria developed from best practice techniques. Table 6.1 sets out the scale of sensitivity that has been applied to receptors, identified as 'affected parties' at page 17 of the Guidelines and which are considered to be relevant to this assessment.

Table 6.1: Sensitivity of Receptors

Sensitivity	Description of Criteria (Receptors)
High	Educational Institutions (Gagle Brook Primary School), roads that have no footpaths and are likely to be used by pedestrians, accident blackspots

Moderate	Health care facilities, parks and recreational areas, retail areas, roads with narrow footpaths that may be used by pedestrians, areas of ecological or natural value, residential properties fronting the link
Low	Open spaces, tourist and visitor attractions, places of worship, residential properties set back from the link

6.71 In addition, it has been assumed that the residents of the adjacent Exemplar Scheme will have a high sensitivity to the increase in both construction and operational traffic.

### Magnitude of Change and Significance

6.72 To determine the magnitude of change experienced by the receptors and to determine the likely significance of the effects resulting from the Development, thresholds set out in the Guidelines have been used and interpreted using professional judgement.

6.73 Table 6.2 outlines the thresholds used to determine the magnitude of change. It is noted that 18-hour Annual Average Week Traffic (AAWT) flows are considered for the assessment.

**Table 6.2: Criteria for Magnitude of Change**

Impact	Magnitude of Impact/Threshold			
	Negligible	Low	Medium	High
Severance	Less than 30% change in 18-hr AAWT flows	Between 30% and 60% change in 18-hr AAWT flows	Between 60% and 90% change in 18-hr AAWT flows	More than 90% change in 18-hr AAWT flows
Driver Delay	Average vehicle delay changes of less than 30 seconds	Average vehicle delay changes between 30 seconds and 60 seconds	Average vehicle delay changes between 60 seconds and 90 seconds	Average vehicle delay changes of more than 90 seconds
Pedestrian/Cyclist Delay & Amenity	Link subject to a two-way flow of less than 1,400 vehicles per hour	Link subject to a two-way flow of between 1,400 and 3,500 vehicles per hour	Link subject to a two-way flow of between 3,500 and 5,600 vehicles per hour	Link subject to a two-way flow of more than 5,600 vehicles per hour
Fear & Intimidation	Average 18-hr traffic flow of less than 600 vehicles/hr; average 18-hr HGV flow of less than 1,000; or average 18-hr speeds of less than 10mph	Average 18-hr traffic flow of 600-1,200 vehicles/hr; average 18-hr HGV flow of 1,000-2,000; or average 18-hr speeds of 10-15mph	Average 18-hr traffic flow of 1,200-1,800 vehicles/hr; average 18-hr HGV flow of 2,000-3,000; or average 18-hr speeds of 15-20mph	Average 18-hr traffic flow of more than 1,800 vehicles/hr; average 18-hr HGV flow of more than 3,000; or average 18-hr speeds of more than 20mph
Accidents & Road Safety	Expected change in risk of less than 5% at the location of existing accident cluster	Expected change in risk of 5% to 10% at the location of existing accident cluster	Expected change in risk of 10% to 15% at the location of existing accident cluster	Expected change in risk of more than 15% at the location of existing accident cluster

6.74 Table 6.3 sets out the significance criteria and a description of these.

**Table 6.3: Significance Criteria**

Significance Criteria	Description of Criteria
Major Beneficial	A considerable positive effect to receptor which is of a scale that has more than local importance
Moderate Beneficial	A positive effect on the receptor in terms of extent, duration, or magnitude.
Minor Beneficial	A positive effect on the receptor that is small, localised, or short term.
Neutral/Not Significant	No perceivable impact
Minor Adverse	A negative effect on the receptor that is small, localised, or short term.
Moderate Adverse	A negative effect on the receptor in terms of extent, duration, or magnitude.
Major Adverse	A negative effect on the receptor that will have an impact on the wider area or that may be in breach of standards or legislation.

6.75 Table 6.4 sets out the degrees of significance considering the sensitivity of the receptor and the magnitude of change.

**Table 6.4: Magnitude of Change**

Magnitude of Change	Sensitivity of Receptor			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor to Moderate	Negligible
Low	Moderate	Minor to Moderate	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

6.76 Only effects that are identified as 'Major' or 'Moderate' have been deemed to be significant.

#### Scope of Assessment

6.77 The Guidelines identify that the main transport effects that could arise from the construction and operation of new developments relate to the following:

- Severance;
- Driver Delay;
- Pedestrian Delay & Amenity;
- Fear & Intimidation;
- Accidents & Road Safety;
- Dust & Dirt; and
- Hazardous Loads.

6.78 Within the above list there are two criteria that are not considered within this assessment. The 'Dust and Dirt' criterion is considered as part of the Air Quality Assessment undertaken

in Chapter 7 of this ES. In addition, 'Hazardous Loads' is not considered within this assessment as it is considered unlikely that the construction or operation of the Development will require transportation of hazardous loads.

### Study Area

6.79 The study area is set out in Table 6.5 which includes information on the receptors at each link and their sensitivity which then informs the sensitivity of the link.

**Table 6.5: Link Sensitivity**

Link ID	Link Name	Sensitivity of Receptor				Link Sensitivity
		High	Medium	Low	Negligible	
1	B4100 North of Baynards Green				Agricultural Land	Negligible
2	A43 east of Baynards Green				Agricultural Land	Negligible
3	A43 west of Baynards Green				Agricultural Land	Negligible
4	B4100 south of Baynards Green				Agricultural Land	Negligible
5	B4100 north of Banbury Road			Residential	Agricultural Land	Low
6	A4095 west of Banbury Road			Residential	Agricultural Land	Low
7	Banbury Road south of A4095		Retail	Residential/ Employment		Medium
8	A4095 east of Banbury Road			Residential	Agricultural Land	Low
9	A4421			Residential/ Employment	Agricultural Land	Low
10	Buckingham Road			Residential		Low
11	A4095 east of Buckingham Road			Residential/ Employment	Agricultural Land	Low
12	A4095 Howes Lane			Residential/ Employment	Agricultural Land	Low
13	B4030			Residential/ Employment	Agricultural Land	Low
14	Vendee Drive			Residential	Agricultural Land	Low
15	Middleton Stoney Road			Residential	Agricultural Land	Low
16	Braeburn Avenue		Residential fronting link	Open Space		Medium
17	Charlotte Avenue	School	Residential fronting link	Open Space, Employment		High

## Limitations and Assumptions

- 6.80 All future forecasts include some degree of uncertainty. This is particularly relevant at the current time due to the pandemic, which has resulted in unprecedented disruption to how people work and travel and the extent to which people will change their behaviour, in particular when it comes to how and when they travel. There is also the extent of uptake/continuation of working from home which remains to be seen.
- 6.81 The traffic flows, which have been provided from the BTM, do not account for the current pandemic, which is therefore considered to be a limitation. However, as the level of traffic on the local highway network during this unprecedented time is expected to be significantly lower due to the pandemic, it is assumed that the traffic flows from the BTM are robust.
- 6.82 The baseline traffic flows and future forecasted traffic flows, have been supplied from the BTM. The future forecasted traffic flows are for the year 2031, which coincides with the end of the Local Plan period and includes all development that is expected to have come forward by the end of the Local Plan period. This is confirmed in the uncertainty logs set out within Appendix E of the TA, which supports the planning application.
- 6.83 The assessment of transport and access effects in this Chapter is based on the TA. The assumptions and technical deficiencies used in the preparation of the TA are set out within the report, which is submitted with the planning application.

## Baseline Conditions

### Introduction

- 6.84 Due to the travel restrictions that have been in place intermittently from March 2020, it is not considered appropriate to undertake traffic surveys to establish the baseline traffic flows. Furthermore, as there is a significant number of allocated sites identified within the Local Plan, and specifically in and around Bicester, it is expected that traffic levels will generally increase during the build out of the allocated sites until the end of the Local Plan period, identified as being 2031.
- 6.85 However, the latest version of the BTM includes a base year of 2016, which was prepared following collection of updated traffic flow data and consideration of the permitted developments that were being constructed and occupied at the time.
- 6.86 The baseline for future year assessment has been discussed with the highway authorities and

it has been agreed that whilst there is an interim year of 2026, which is available from the BTM, the potential impact of the traffic flows associated with the Development should be assessed against the future forecasted year of 2031, which coincides with the end of the Local Plan period.

- 6.87 The data provided from the BTM includes a 2031 'Do Minimum' scenario, which includes all the identified development within the Local Plan and identified infrastructure improvements to accommodate the growth within the area to the end of the Local Plan period (as identified within the housing trajectory set out within the 2017 Annual Monitoring Report<sup>x</sup> produced by Cherwell District Council), with the exception of the traffic flows associated with the Development.

### Existing Road Network

- 6.88 The permitted Exemplar Scheme lies to the south east and north east of the Site, which separates the two development parcels. The larger development parcel is located to the west and the smaller parcel to the east. Further details of the Site are set out within Chapter 3.
- 6.89 The Exemplar Scheme is accessed to the south east from the B4100 via Charlotte Avenue at an existing priority controlled junction. As the whole of the Exemplar Scheme is within a 20mph zone, the speed limit along Charlotte Avenue is restricted to 20mph. Traffic calming features in the form of raised tables are occasionally located along Charlotte Avenue, which includes adequate footway provision on both sides of the carriageway.
- 6.90 To the north, the Exemplar Scheme is accessed from the B4100 via Braeburn Avenue, which is also a 20mph road with adequate footway provision on either side of the carriageway.
- 6.91 An existing bus gate separates Phases 1 & 2 of the Exemplar Scheme from Phases 3 & 4. This bus gate is defined by a narrowing of the carriageway to 4.0m for a distance of approximately 65.0m and currently only accommodates a footway along the eastern side of the bus only link. It is noted that cyclists are encouraged to use this bus gate and are permitted to share the carriageway with buses. The bus gate is proposed to be enforced by camera, subject to the adoption of the Estate Road.
- 6.92 At the time of preparing this application, none of the roads, footpaths, or routes through the Exemplar Scheme are currently part of the adopted highway network.
- 6.93 The B4100 Banbury Road runs to the east of the Site between the A43 to the north and the roundabout junction with the A4095 to the south, where the B4100 continues toward Bicester town centre and joins with Buckingham Road, Field Street and North Street via a 5-arm

roundabout.

- 6.94 The northern section (north of the roundabout junction with the A4095) is predominantly rural in nature and is subject to a speed limit of 40mph until just to the south of its junction with Bainton Road (to the north of the existing junction of Braeburn Avenue with the B4100 Banbury Road) where the national speed limit is introduced.
- 6.95 There are a number of junctions along this stretch of the B4100 Banbury Road providing direct access to private houses, the Home Farm mixed use development, and Aunt Ems Lane by way of a priority junction located to the north of the Home Farm development.
- 6.96 The southern section of Banbury Road from the roundabout towards Bicester town centre, is more urban in nature with the presence of footways and traffic calming features. This section of Banbury Road is subject to a speed limit of 40mph, which changes to 30mph on the approach to the town centre.
- 6.97 The A4095 Lord's Lane is a single carriageway (in each direction from the roundabout junction) that currently acts as a by-pass route between the A4095/Buckingham Road/Skimmingdish Lane/A4421 roundabout junction to the east and the A4095/Middleton Stoney Road/Vendee Drive/B4030 roundabout junction to the west. The road is subject to a 50mph speed limit, street lighting is provided, and a separated pedestrian/cycle route is provided on the southern side.

#### Existing Pedestrian and Cycle Facilities

- 6.98 Access by foot and by bicycle is currently provided through the existing Exemplar Scheme via the Estate Road. There is adequate footway provision throughout the Exemplar Scheme with minimum widths of 2.0m provided on either side of the Estate Road carriageway, with informal uncontrolled pedestrian crossing points with dropped kerbs and tactile paving located at regular intervals. This established network of footways through the Exemplar Scheme provides access to the Gagle Brook Primary School, nearby facilities and amenities, and local bus stops.
- 6.99 Outside of the Exemplar Scheme, a shared footway/cycleway is provided alongside the northbound carriageway of the B4100 Banbury Road which provides access on foot and by cycle toward Bicester town centre.
- 6.100 A signalised crossing is provided on the B4100 Banbury Road to the south of the southern site access junction to enable pedestrians and cyclists to cross the carriageway and head eastwards to another shared footway/cycleway alongside the A4095 which is separated from

the carriageway by a grass verge. A segregated shared footway/cycleway adjacent to the western side of the B4100 Banbury Road continues south towards Bicester town centre and links the Exemplar Scheme with Bicester North Railway Station. From this point, further pedestrian and cycle connections are provided to Bicester town centre.

- 6.101 The Exemplar Scheme offers strong sustainable connections in the local area with easy movement by bicycle including shared vehicle/bicycle lanes. As the internal road network within the Exemplar Site is subject to a 20mph zone, it is considered that these local roads are conducive to encouraging on-carriageway cycling.
- 6.102 National Cycle Route 51, which provides long distance connections between towns, connects Bicester with Oxford. Local Cycle Routes provide connections between Bicester and Bicester Village station.
- 6.103 The adjacent Exemplar Scheme provides comprehensive infrastructure required to promote walking and cycling within the area, such as wide footways, traffic calming measures on Charlotte Avenue and Braeburn Avenue, and cycle parking at all community facilities, including the primary school. Brompton bike storage and Sheffield stands are provided on Charlotte Avenue in close proximity to the current Sales & Marketing Suite near the entrance to the Exemplar Scheme.

#### Public Transport Network

- 6.104 The E1 bus service passes through the Exemplar Scheme, entering via the Braeburn Avenue junction with the B4100 Banbury Road, passing along the Estate Road effectively separating the western and eastern parcels, and exiting via the Charlotte Avenue junction with the B4100 Banbury Road. There are a number of existing bus stops located within the Exemplar Scheme.
- 6.105 To the north of the Exemplar Scheme, a bus stop is located on Braeburn Avenue approximately 130m south of the junction with the B4100 Banbury Road. This existing bus stop includes an area of hard standing for waiting passengers and a solar-powered electronic timetable. The location of this bus stop ensures that the majority of both parcels of the Site are within a 400m distance of a bus stop, with the exception of the westernmost edge of the Western Parcel and the southernmost edge of the Eastern Parcel.
- 6.106 A further bus stop is located on Charlotte Avenue directly outside the Gagle Brook Primary School. This existing bus stop includes a shelter and a Sheffield stand for cycle parking. The location of this bus stop ensures that the southernmost edge of the Eastern Parcel of the Site is within a 400m distance of a bus stop.

6.107 Bicester has access to two rail stations, Bicester North and Bicester Village station. Bicester North station is located approximately 2km to the southeast of the Site and Bicester Village station is situated approximately 3.1km southeast of the Site. There are regular services throughout the day to a range of destinations. Central London can be reached within a 60-minute train ride from Bicester North with a frequency of four trains per hour. Employment, recreation and shopping opportunities within Oxford are available within a 30-minutes rail journey from Bicester Village station

#### Future Baseline

6.108 The future baseline 18-hour AAWT flows used for this assessment are the 2031 scenarios as set out above. The 2031 'Do Minimum' total vehicle and HGV 18-hour AAWT flows are set out in Table 6.6 for each of the identified links, which includes details of the forecast percentage change in flows when compared with the 2016 baseline.

**Table 6.6: 2031 Base Flows and Percentage Change**

LINK	18-Hour AAWT						
	2016 Baseline			2031 Base (Do Minimum)			% Change (Total Vehicles)
	Total Vehicles	HGV	%HGV	Total Vehicles	HGV	%HGV	
<b>1</b>	6,310	144	2.3%	5,925	88	1.5%	-6.1%
<b>2</b>	29,323	3,006	10.3%	40,348	3,349	8.3%	37.6%
<b>3</b>	27,378	3,082	11.3%	39,053	3,395	8.7%	42.6%
<b>4</b>	10,504	2,003	19.1%	16,288	2,022	12.4%	55.1%
<b>5</b>	9,973	472	4.7%	18,960	527	2.8%	90.1%
<b>6</b>	11,836	195	1.6%	11,642	641	5.5%	-1.6%
<b>7</b>	4,398	34	0.8%	9,060	34	0.4%	106.0%
<b>8</b>	17,044	720	4.2%	21,844	1,076	4.9%	28.2%
<b>9</b>	15,206	683	4.5%	20,349	1,132	5.6%	33.8%
<b>10</b>	6,779	189	2.8%	7,414	213	2.9%	9.4%
<b>11</b>	15,532	861	5.5%	22,568	897	4.0%	45.3%
<b>12</b>	9,620	221	2.3%	10,745	597	5.6%	11.7%
<b>13</b>	4,383	307	7.0%	13,377	377	2.8%	205.2%
<b>14</b>	10,561	282	2.7%	14,828	650	4.4%	40.4%
<b>15</b>	4,449	170	3.8%	12,957	265	2.0%	191.2%
<b>16</b>	0	0	0.0%	1,465	0	0.0%	0.0%
<b>17</b>	703	34	4.8%	4,446	51	1.1%	532.5%

6.109 It is noted that flows for the 2016 baseline of link 16 (Braeburn Avenue) have not been provided as it was not constructed at the time that the 2016 base year was development as part of the latest BTM.

6.110 Table 6.6 demonstrates significant changes in flows along most links within the study area in the 15-year period.

#### Personal Injury Accidents

- 6.111 Personal Injury Accident (PIA) data has been obtained from OCC for the most-recent three-year period in the vicinity of the Site. A total of 31 accidents were recorded in the study area, 25 resulted in slight injury, 5 in serious injury, and one was recorded as being fatal.
- 6.112 A detailed assessment of the PIA data is set out within the TA, a copy of which is submitted with the planning application.

### Likely Significant Effects

- 6.113 The following assessments have been undertaken in line with the Guidance criteria outlined at the beginning of this Chapter. This includes impacts associated with those identified at paragraph 6.77 of this Chapter, which include Severance, Driver Delay, Pedestrian Delay & Amenity, Fear & Intimidation, and Accidents & Road Safety. The assessments have been undertaken for the construction phase and the operational phase when the Development is expected to be fully occupied in 2031.
- 6.114 The traffic associated with the construction phase has been assessed against a baseline year of 2016 which has been supplied from the BTM.
- 6.115 The operational scenario compares the 2031 'Do Minimum' scenario, which includes background traffic and cumulative developments, with the 2031 'Do Something' scenario, which includes the traffic associated with the 'Do Minimum' scenario plus traffic proposed for the Development on the key links identified in Table 6.5 above.

### Construction Phase

- 6.116 Enabling works will be necessary before construction begins. Construction of the Development is anticipated to take approximately five years and will be split into phases, the details of which will be agreed as part of the reserved matters submission.
- 6.117 Construction vehicles will utilise the existing Braeburn Avenue priority junction with the B4100 Banbury Road to access the Western Parcel. No access for construction vehicles will be available from the Charlotte Avenue junction with the B4100 Banbury Road.
- 6.118 In order to access the Eastern Parcel for the purposes of construction, a new priority junction is to be provided at the northern corner of the Eastern Parcel at a point where an existing field gate is located, for the period of construction only. As such, this new priority junction with the B4100 Banbury Road will only be in place for a limited period.

6.119 As per the construction of the permitted Exemplar Scheme, and the Vehicle Routing agreement that was set out within the permitted Construction Traffic Management Plan (CTMP) that supported the permitted development, construction traffic will access the Site via the same routes, which are identified as follows:

- From the North, North West and Midlands (M40 Junction 10, A43, B4100);
- From the North East (M1 Junction 13, A421, A43, B4100);
- From the East (A41, A4421, A4095, B4100); and
- From the South/South West (M40 Junction 9, A41, A4421, A4095, B4100).

6.120 Vehicles will not be permitted to route along Howes Lane, Lords Lane and Middleton Stoney Road during construction.

6.121 The predicted 18-hour AAWT operational traffic flows associated with the Site are in the order of 2,230 daily movements (as identified at Links 16 and 17). As such, the average daily traffic flows associated with the construction of the Development, at 350 two-way movements, are typically much less than the traffic predicted to be generated during the operational phase.

6.122 Based on the character and nature of the construction vehicle routes set out above, which are not particularly sensitive to construction road traffic, no likely significant effects in terms of road traffic are anticipated as a result of the enabling and construction works.

6.123 It is acknowledged that as the Site is not expected to generate many HGV movements at Braeburn Avenue (Link 16) in the future, the construction phase will have a moderate adverse temporary effect in relation to Severance, Driver Delay, Pedestrian Delay & Amenity, Fear & Intimidation, and Accidents & Road Safety at Braeburn Avenue.

### Operational Phase

6.124 The total person trips associated with the Development have been forecast using agreed trip rates, and agreed distribution profile, and a mode share profile that was originally set out within the *North West Bicester Masterplan – Interim Access & Travel Strategy* (prepared by Hyder Consulting in March 2014). The full details of these are included within the TA that supports the planning application.

6.125 The potential effects of the Development when it is completed have been determined by comparing the 2031 Base 'Do Minimum' with the 2031 Base 'Do Something' scenarios, which includes all the predicted traffic flows expected on the surrounding highway network,

including those associated with the Development.

6.126 The primary assessments have been undertaken on a daily basis (18-hour AAWT) since this reflects the impacts on Severance, Driver Delay, Pedestrian Delay & Amenity, Fear & Intimidation, and Accidents & Safety. However, the highway network weekday morning and evening peak hours have also been assessed since these are relevant in terms of pedestrian and cycle delay, reflecting when the demand for travel will be greatest.

### Severance

6.127 The measurement and prediction of severance is difficult, but relevant factors include road width, traffic flow, vehicle speed, the presence of crossing facilities, and the number of movements across the affected route.

6.128 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. It is advised that these broad indicators should be used with care and regard paid to specific local conditions.

6.129 A quantitative assessment of the links identified within Table 6.5 has been undertaken by comparing the percentage change in total vehicle and HGV flows between the 2031 baseline and the forecast trip generation, and applying the rules set out within the Guidelines. Table 6.7 sets out the Development impact on each link.

**Table 6.7 Severance – Development Impact**

LINK	18-Hr AAWT						
	2031 Base (Do Minimum)			2031 Base (Do Something)			% Change (Total Vehicles)
	Total Vehicles	HGV	%HGV	Total Vehicles	HGV	%HGV	
<b>1</b>	5,925	88	1.5%	6,003	88	1.5%	1.3%
<b>2</b>	40,348	3,349	8.3%	40,478	3,349	8.3%	0.3%
<b>3</b>	39,053	3,395	8.7%	39,178	3,395	8.7%	0.3%
<b>4</b>	16,288	2,022	12.4%	16,595	2,022	12.2%	1.9%
<b>5</b>	18,960	527	2.8%	20,620	527	2.6%	8.8%
<b>6</b>	11,642	641	5.5%	12,480	641	5.1%	7.2%
<b>7</b>	9,060	34	0.4%	9,257	34	0.4%	2.2%
<b>8</b>	21,844	1,076	4.9%	22,307	1,076	4.8%	2.1%
<b>9</b>	20,349	1,132	5.6%	20,544	1,132	5.5%	1.0%
<b>10</b>	7,414	213	2.9%	7,414	213	2.9%	0.0%
<b>11</b>	22,568	897	4.0%	22,836	897	3.9%	1.2%
<b>12</b>	10,745	597	5.6%	11,583	597	5.2%	7.8%
<b>13</b>	13,377	377	2.8%	13,570	377	2.8%	1.4%
<b>14</b>	14,828	650	4.4%	15,654	650	4.2%	5.6%
<b>15</b>	12,957	265	2.0%	13,069	265	2.0%	0.9%
<b>16</b>	1,465	0	0.0%	2,695	0	0.0%	83.9%
<b>17</b>	4,446	51	1.1%	5,184	51	1.0%	16.6%

6.130 Table 6.7 demonstrates that only Link 16 – Braeburn Avenue, will experience a **moderate adverse** effect in terms of severance as a result of the Development. The remaining links will experience a **negligible adverse** effect.

### Driver Delay

6.131 The Guidelines set out the locations where delays can occur to non-development traffic as a result of a new development coming forward. These locations include site access junctions, the highway link passing the Development, and other key junctions along the highway, as well as minor roads in the vicinity which may experience a reduction in traffic gaps.

6.132 The delay experienced by drivers and buses can be predicted by undertaking junction capacity assessments at key junctions. The delay will be identified as a result of the additional traffic associated with the Development, which will in turn increase vehicle movements at key links and junctions.

6.133 Assessment of junction capacity delay is undertaken with industry standard analytical software such as PICADY, for the assessment of priority junctions, and ARCADY, for the assessment of roundabout junctions (combined in software called Junctions 9) and LINSIG, for the assessment of signal junctions. Driver delay is considered to be an issue that requires mitigation only where junctions are predicted to operate beyond capacity in the future.

6.134 As part of the assessment work undertaken for the TA, the two junctions of the B4100 Banbury Road with Braeburn Avenue and Charlotte Avenue have been assessed using PICADY.

6.135 Table 6.8 sets out the results of this assessment and identifies the effect on driver delay for each junction as a result of the traffic associated with the Application Site.

**Table 6.8 Driver Delay – Development Impact**

Junction	2031 Base (Do Minimum)		2031 Base (Do Something)		Change in Delay (s)	
	Driver Delay (S)		Driver Delay (S)		AM	PM
	AM Peak	PM Peak	AM Peak	PM Peak		
<b>Braeburn Avenue</b>						
BA to B4100 N	6.63	8.3	9.98	10.68	3.35	2.38
BA to B4100 S	14.52	16.45	22.78	21.98	8.26	5.53
B4100 N to BA/B4100 S	6.66	7.03	6.99	7.71	0.33	0.68
<b>Charlotte Avenue</b>						
CA to B4100 N	8.73	9.79	32.77	16.94	24.04	7.15
CA to B4100 S	23.08	24.37	79.67	56.1	56.59	31.73
B4100 N to CA/B4100 S	7.22	7.11	7.61	7.89	0.39	0.78

- 6.136 Table 6.8 demonstrates that drivers passing through the junction of the B4100 Banbury Road with Braeburn Avenue will only experience a negligible increase in delay, which is significantly less than 30 seconds. The effect in terms of delay to drivers at the junction of the B4100 Banbury Road with Braeburn Avenue is therefore **negligible adverse**.
- 6.137 For drivers passing through the junction of the B4100 with Charlotte Avenue, only those exiting the minor arm of the junction (i.e. Charlotte Avenue) will experience an increase in delay of between 30 and 60 seconds. The magnitude of the change in delay is low, but as the link has been identified as having receptors that are highly sensitive (i.e. the residents of the Exemplar Scheme), the effect is considered to be **moderate adverse**.
- 6.138 Braeburn Avenue, Charlotte Avenue, and the B4100 Banbury Road along the frontage of the Exemplar Scheme and the existing Home Farm mixed use development, will experience the greatest proportion of additional development traffic as these are the main access links to the Development.
- 6.139 The links and junctions further afield will experience a lesser effect due to the dispersion of Development traffic on to the highway network. The remaining links set out in Table 6.5 are all deemed to have a negligible effect to medium sensitive receptors and given the low increase in traffic due to the Development, they are not considered to experience any perceivable adverse impact and as such, the effect is considered to be **negligible adverse**.

#### Pedestrian Delay and Amenity

- 6.140 The Guidelines state that *"Changes in the volume, composition or speed of traffic may affect the ability of people to cross the roads. In general, increases in traffic levels are likely to lead to greater increase in delay. Delays will also depend upon the general level of pedestrian activity, visibility and general physical conditions of the site."*
- 6.141 The criterion is set out within the Guidelines for assessing the magnitude of impacts on pedestrian delay, and assessors are advised to use their judgement to determine whether pedestrian delay is a significant impact. However, the Guidelines refer to work undertaken that suggests that a lower threshold of a 10 second delay, and an upper threshold of a 40 second delay is appropriate. For a link with no crossing facilities this equates to two-way traffic flows of approximately 1,400 vehicles per hour.
- 6.142 Pedestrian amenity is broadly defined as *"the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic"*. This definition also considers exposure to air pollution and noise.

- 6.143 The Guidelines suggest as a tentative threshold for judging the significance of changes to pedestrian amenity, would be where traffic flows are either halved or doubled. This criterion has been used for this assessment and Table 6.9 sets out the impact of the traffic associated with the Development on each link.
- 6.144 These impacts are considered for the average hourly flows (total vehicles) calculated from the 18-hour AAWT flows.

**Table 6.9 Pedestrian/Cyclist Delay and Amenity – Development Impact**

LINK	Average Hourly Flows - Total Vehicles		
	2031 Base (Do Minimum)	2031 Base (Do Something)	Doubled or Halved (Y/N)
1	329	333	N
2	2,242	2,249	N
3	2,170	2,177	N
4	905	922	N
5	1,053	1,146	N
6	647	693	N
7	503	514	N
8	1,214	1,239	N
9	1,131	1,141	N
10	412	412	N
11	1,254	1,269	N
12	597	644	N
13	743	754	N
14	824	870	N
15	720	726	N
16	81	150	N
17	247	288	N

- 6.145 Table 6.9 demonstrates that none of the links experience a change that would amount to the doubling (or halving) of traffic flows. All links will therefore experience a **negligible adverse** effect.

### Fear & Intimidation

- 6.146 The Guidelines state that *"A further impact that traffic may have on pedestrians is fear and intimidation. The impact of this is dependent on the volume of traffic, its HGV composition, its proximity to people or lack of protection caused by such factors as narrow pavement widths."*
- 6.147 The Guidelines state that there are no commonly agreed thresholds for estimating the level of fear and intimidation but provides a table that could be used as a first approximation as to the likelihood of pedestrian fear & intimidation. The following assessment draws on this as set out in Table 6.2 above.

6.148 Table 6.10 sets the impact of the traffic associated with the Site on each link.

**Table 6.10 Pedestrian/Cyclist Fear & Intimidation – Development Impact**

LINK	Total Vehicles – Average Hourly Flows			HGV - 18 Hour AAWT Flows			Magnitude of Impact		Change in Magnitude (Y/N)
	2031 DM	2031 DS	Change	2031 DM	2031 DS	Change	Total Vehicles	HGV	
<b>1</b>	329	333	4	88	88	0	Negligible	Negligible	N
<b>2</b>	2,242	2,249	7	3,349	3,349	0	High	High	N
<b>3</b>	2,170	2,177	7	3,395	3,395	0	High	High	N
<b>4</b>	905	922	17	2,022	2,022	0	Medium	Large	N
<b>5</b>	1,053	1,146	92	527	527	0	Medium	Low	N
<b>6</b>	647	693	47	641	641	0	Medium	Low	N
<b>7</b>	503	514	11	34	34	0	Low	Low	N
<b>8</b>	1,214	1,239	26	1,076	1,076	0	Large	Medium	N
<b>9</b>	1,131	1,141	11	1,132	1,132	0	Medium	Medium	N
<b>10</b>	412	412	0	213	213	0	Low	Low	N
<b>11</b>	1,254	1,269	15	897	897	0	Large	Low	N
<b>12</b>	597	644	47	597	597	0	Low	Low	N
<b>13</b>	743	754	11	377	377	0	Medium	Low	N
<b>14</b>	824	870	46	650	650	0	Medium	Low	N
<b>15</b>	720	726	6	265	265	0	Medium	Low	N
<b>16</b>	81	150	68	0	0	0	Low	Low	N
<b>17</b>	247	288	41	51	51	0	Low	Low	N

6.149 As shown in Table 6.10 only links 2 and 3 have a high impact on fear & intimidation in the 2031 'Do Minimum' scenario due to the large volume of average hourly total traffic flows over an 18-hour period and the average 18-hour flows of HGVs. The minor increase due to Development traffic on each link does not result in a change in the magnitude of impact, and as such the effect is **negligible adverse**.

6.150 For all other links, the traffic flows represent negligible to medium impacts on fear & intimidation and there is change in magnitude due to the implementation of the Development. The effect on these links is therefore considered **negligible adverse**.

#### Accidents and Road Safety

6.151 The assessment of accident risk and highway safety is based on existing accident rates in the area local to the Site and the circumstances used to identify accident clusters.

6.152 The Guidelines state that professional judgement should be applied to assess the implications of local circumstances.

6.153 A review of the accidents occurring over the most-recent three-year period has been undertaken in order to identify existing accident clusters. A cluster is considered to be

identified where more than five accidents occurred over the three-year period within close proximity.

6.154 The review revealed that none of the junctions located within the accident study area had more than five accidents within the three-year period. Furthermore, there were no clusters identified along the links within the study area that had more than five accidents over the period.

6.155 It is concluded that the increase in traffic due to the Development will have a **negligible adverse** effect on accident risk and road safety.

## Mitigation Measures

### Construction Phase

#### *CEMP & CTMP*

6.156 A CEMP will be prepared and agreed in advance of the commencement of construction, which will set out measures to manage the traffic associated with the construction of the Site within a Construction Traffic Management Plan (CTMP). The CEMP and the CTMP will be secured by planning condition and developed by the contractor, once appointed, and will be based on best practice. The expected mitigation measures that will be included within the CEMP/CTMP are:

- The contractor will set out the agreed construction vehicle routes in line with what was previously agreed for the Exemplar Scheme and as identified in this ES, ensuring that construction vehicles will keep away from minor roads wherever possible;
- A Travel Plan for construction staff will be prepared to reduce vehicle traffic generated by the construction works;
- Clearly marked pedestrian and vehicle routes will be provided on site and wherever possible be kept separate;
- Main entry and exit points will be signposted;
- Vehicles will be able to enter and exit in forward gear;
- A site map will be provided to all drivers with safety instructions; and
- Vehicle routes on site will be specifically constructed to an appropriate standard for the purposes of construction.

## Operational Phase

### *Framework Residential Travel Plan*

- 6.157 A Framework Residential Travel Plan has been prepared and is submitted with the planning application. A copy is included at Appendix 6.2 of the ES. The Framework Residential Travel Plan sets out measures to reduce reliance on the private car, promote walking and cycling, as well as promoting the use of public transport.
- 6.158 The Framework Residential Travel Plan sets out an action plan which details the measures proposed, commitments, and obligations that the developer and future occupiers will have to adhere to in order to deliver the Full Residential Travel Plan. The measures include appointing a Travel Plan Co-ordinator, providing travel information to occupiers, and educating occupiers about smarter travel choices to encourage a change in travel habits.
- 6.159 The targets identified include the reduction of single occupancy car journeys and an increase in sustainable travel.
- 6.160 The Framework Residential Travel Plan mitigation measures will be secured through a Section 106 Agreement.

### *Public Transport*

- 6.161 As part of any planning permission granted for the Development, the Applicant will agree to Section 106 financial contributions to assist with the funding of public transport improvements and services. This approach is consistent with other schemes north of the railway line that have recently been permitted within wider North West Bicester Eco Town.
- 6.162 As part of the planning permission, the Applicant will also agree to participate in the North West Bicester Bus Forum to plan future bus services as part of the wider public transport strategy for the North West Bicester Masterplan.
- 6.163 This approach is consistent with local transport policy and strategic objectives, as well as the delivery of other development sites within the North West Bicester Eco Town. It will provide strong public transport links from the Site to the wider Eco Town and surrounding areas, including Bicester town centre and beyond. It therefore supports the wider public transport access strategy of the North West Bicester Masterplan.

6.164 By providing a financial contribution towards the funding of improved public transport provision, this will assist in mitigating the moderate adverse effects identified in relation to Severance on Braeburn Avenue and in relation to Driver Delay at Charlotte Avenue.

#### *Severance*

6.165 Braeburn Avenue will experience **moderate adverse** impact in terms of severance due to the increase in traffic when the Development is operational.

6.166 Although drivers travelling through the junction will experience an increase in delay, the junction will still operate within capacity and as such mitigation at the junction is not required as part of the Development.

6.167 It is also worth noting that at present, and as part of the Development, there will be no footway connections through the Braeburn Avenue junction with the B4100 Banbury Road as there are currently no footways along the B4100 Banbury Road. This is due to the fact that there are no identifiable destinations along the B4100 Banbury Road north of its junction with Braeburn Avenue that might warrant pedestrian and/or cycle activity associated with the Site.

#### *Driver Delay*

6.168 Charlotte Avenue will experience **moderate adverse** impact in terms of driver delay due to the increase in traffic when the Development is operational.

6.169 During consultation with OCC, the highway authority introduced plans to upgrade the B4100/A4095/Banbury Road/A4095 roundabout junction located south of Charlotte Avenue. These proposals all assume that the junction of the B4100 Banbury Road with Charlotte Avenue will be signalised in the future, and it was requested that a capacity assessment for the signalisation of the junction is provided as part of the planning application.

6.170 The signalisation of the junction will not result in perceptible changes to the driver delay for vehicles at Charlotte Avenue but will allow the two junctions to be linked in the future which could reduce overall delay along the corridor. As such, the signalisation of the junction of Charlotte Avenue with the B4100 Banbury Road is considered to mitigate the effects on Driver Delay.

## Residual Effects

### Construction Phase

- 6.171 The residual effects during the construction phase following the implementation of the CEMP and the CTMP are likely to be temporary **minor adverse** as a result of the construction of the Development.

### Operational Phase

- 6.172 No significant residual effects of severance are considered on the local network, with the exception of a slight increase in traffic at the junction of Braeburn Avenue with the B4100 Banbury Road. However, as there will be no pedestrian or cycle activity at the Braeburn Avenue junction with the B4100 Banbury Road, there is considered to be a **moderate adverse** residual effect with regards severance at this junction. This is consistent with the effect identified for the Operational Phase of the Development only.
- 6.173 There is an identified **moderate adverse** residual effect in relation to driver delay at the Charlotte Avenue junction with the B4100 Banbury Road. This is proposed to be mitigated by the introduction of a traffic signal-controlled junction. This is consistent with the effect identified for the Operational Phase of the Development only.
- 6.174 **Negligible adverse** residual effects were identified in relation to Pedestrian Delay & Amenity, Fear & Intimidation, or Accidents & Safety as a result of the implementation of the Development. This is consistent with the effect identified for the Operational Phase of the Development only.

## Cumulative Effects

- 6.175 The 2031 'Do Something' scenario includes all the cumulative schemes listed in the uncertainty log provided with the BTM traffic data which includes highway infrastructure improvements and associated redistribution of traffic. As such, the cumulative effects have been included in the assessment of the Development.
- 6.176 This ES has already considered these cumulative effects and the measures proposed to ensure that any cumulative impact is mitigated.
- 6.177 As part of the North West Bicester allocation, measures have been identified to mitigate the impact of the allocated site of which the Development forms a part of. These mitigation

measures include:

- Signalisation of the B4100 Banbury Road/Charlotte Avenue junction;
- Replacement of the B4100/A4095/Banbury Road/A4095 roundabout junction with a potential traffic signal arrangement, which is currently being consulted upon by OCC;
- Traffic management measures on the B4100 Banbury Road/Caversfield unnamed road to reduce traffic levels and accident issues;
- Traffic calming measures in Bucknell and Caversfield to reduce through traffic;
- Measures to further reduce through traffic and assist walkers and cyclists in the Shakespeare Drive area.

6.178 The following strategic improvements were also identified to which all development sites included within the North West Bicester Masterplan would be anticipated to contribute towards in a manner proportionate to the impacts associated with each of these sites:

- The A4095 North West Strategic Link Road (Planning Ref 14/01968/F);
- Town Centre access improvements;
- Modifications to the A4095/Buckingham Road/Skimmingdish Lane/A4421 roundabout junction (as part of the Eastern Peripheral Route being promoted by OCC); and
- Improvements to the Eastern Peripheral Route being promoted by OCC.

6.179 As the 2031 'Do Nothing' and the 2031 'Do Something' scenarios include all the cumulative schemes listed in the ES, agreed committed developments identified with the Local Plan as coming forward by 2031, and highway improvement schemes, the assessment of the predicted likely effects fundamentally considers the cumulative effect of the proposed development, other Local Plan Commitments, and known developments for the Plan Period to 2031.

6.180 Therefore, this ES has already considered these cumulative effects, and the measures proposed ensure that any cumulative impact is mitigated.

## Summary

6.181 A Transport Assessment has been undertaken in the context of scoping discussions with the authorities, including Highways England (HE), Oxfordshire County Council (OCC), and Cherwell District Council (CDC).

6.182 The total person travel demand generated by the Development has been predicted and considered in detail in the context of the transport network by utilising trip rates and

distribution profiles agreed with the authorities and consistent with the *North West Bicester Masterplan – Interim Access and Travel Strategy* (prepared by Hyder and published in March 2014).

- 6.183 This Transport and Access chapter considers the effects of the traffic associated with the construction and operation of the Site in relation to Severance, Driver Delay, Pedestrian Delay & Amenity, Fear & Intimidation, and Accidents & Safety. The traffic associated with the Development in 2031 was used to identify key highway links with regard to the thresholds.
- 6.184 The majority of links were identified as minor and adversely affected or negligible in relation to Severance, with Braeburn Avenue being identified as having potential to experience a minor to moderate adverse effect. However, due to the fact that there would be no pedestrian or cycle activity at this junction, it is not considered that mitigation would be necessary as the junction has been demonstrated to still operate within capacity. Beyond this local junction, the Development is predicted to have a negligible adverse effect on Severance.
- 6.185 There is an identified residual effect in relation to Driver Delay at the Charlotte Avenue junction with the B4100 Banbury Road. This is proposed to be mitigated by the introduction of a traffic signal-controlled junction. Beyond this local junction, the Development is predicted to have a negligible adverse effect on Driver Delay.
- 6.186 No significant residual effects were identified in relation to Pedestrian Delay & Amenity, Fear & Intimidation, or Accidents & Road Safety as a result of the implementation of the Development.
- 6.187 Table 6.11 contains a summary of the likely significant effects of the Development.

**Table 6.11: Table of Significance – Transport and Access**

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
<b>Construction</b>											
Severance	Temporary	Negligible Adverse	Implementation of CEMP/CTMP and Travel Plan							X	Negligible Adverse
Driver Delay	Temporary	Negligible Adverse	Implementation of CEMP/CTMP and Travel Plan							X	Negligible Adverse
Pedestrian Delay & Amenity	Temporary	Negligible Adverse	Implementation of CEMP/CTMP and Travel Plan							X	Negligible Adverse
Fear & Intimidation	Temporary	Negligible Adverse	Implementation of CEMP/CTMP and Travel Plan							x	Negligible Adverse
Accidents & Road Safety	Temporary	Negligible Adverse	Implementation of CEMP/CTMP and Travel Plan							x	Negligible Adverse
<b>Completed Development</b>											
Severance	Permanent	Negligible to Moderate Adverse	None required							X	Negligible Adverse
Driver Delay	Permanent	Negligible to Moderate Adverse	Signalised junction provided at Charlotte Avenue in the future							X	Moderate Adverse
Pedestrian/Cyclist Delay & Amenity	Permanent	Negligible Adverse	None required							X	Negligible Adverse
Fear & Intimidation	Permanent	Negligible Adverse	None required							x	Negligible Adverse
Accidents & Road Safety	Permanent	Negligible Adverse	None required							x	Negligible Adverse

**\* Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

## REFERENCES

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- <sup>i</sup> Ministry of Housing, Communities and Local Government, *National Planning Policy Framework (February 2019)*
- <sup>ii</sup> Ministry of Housing, Communities and Local Government, *Planning Practice Guidance - Travel Plans, Transport Assessments and Statement (March 2014)*
- <sup>iii</sup> Department for Transport's *Guidance on Transport Assessment (March 2007)*
- <sup>iv</sup> Ministry of Housing, Communities and Local Government, *Planning Policy Statement: eco-towns – A supplement to Planning Policy Statement 1 (July 2009)*
- <sup>v</sup> Oxfordshire County Council, *Connecting Oxfordshire Local Transport Plan 2015 – 2031 (October 2015)*
- <sup>vi</sup> Cherwell District Council, *Local Plan 2011 – 2031 (July 2015)*
- <sup>vii</sup> Cherwell District Council, *North West Bicester Supplementary Planning Document (February 2016)*
- <sup>viii</sup> Institute of Environmental Assessment, *Guidelines for the Environmental Assessment of Road Traffic (1993)*
- <sup>ix</sup> NW Bicester Masterplan, *Interim Access and Travel Strategy (March 2014)*
- <sup>x</sup> Cherwell District Council, *Annual Monitoring Report (December 2017)*