

Concept Scheme Option 2 (December 2017)

- 4.4.5 Option 2 extended the boundary of the residential development zone beyond the approximate line of the SPD to the south. This increased the built development area by approximately 0.35 ha to 2.15 ha. As demonstrated in the illustrative site layout in Figure 4.3, at a residential density of 30 units per hectare this iteration would provide 64 new dwellings, while it would provide 75 dwellings at a residential density of 35 units per hectare.

Figure 4.3: Concept Scheme Proposal: Option 2



- 4.4.6 A pre-application meeting was held with CDC on 9th January 2018 to discuss the preliminary proposals. Both indicative site layout options ('Option 1' and 'Option 2') were discussed and it was agreed to pursue the layout which maximises the residential development numbers (Option 2), whilst respecting other considerations, such as the nearby heritage assets.

Preferred Scheme (March 2018)

- 4.4.7 The outline planning application (the 'Development') develops the primary traits of the Concept Scheme options and proposes to bring forward a zone of residential development based on Option 2 alongside green infrastructure on the Site, as shown in Figure 5.1.
- 4.4.8 Development Requirement 9 of the North West Bicester SPD explicitly requires the provision of 40% of the total gross site area to comprise green space of which at least half will be publicly accessible and include a range of open space typologies play spaces and allotments.

- 4.4.9 In developing the design proposals for the Site, the provision of at least 40% of the site as open space has been maintained. In this respect, the Parameter Plans provides in the region of 42% of the Site as open space.
- 4.4.10 A lower density of housing is proposed at the edge of the residential area to provide a soft transition to the open space, thereby breaking up the solid massing and reducing the potential visual impacts and indirect effects on nearby built heritage assets of the Development. In addition, the vista to the Church has informed the location and orientation of the proposed residential avenue within the Site to preserve and enhance the local view to the listed asset.

Transport and Parking

- 4.4.11 CDC encouraged sustainable transport options during the pre-application meeting in-line with the principles set out within the North West Bicester SPD. Consequently, the Development proposals provide for a network of routes and spaces allowing for use by pedestrians, cyclists and vehicles, with that order of priority. This movement network incorporates both formal and informal pedestrian and cycle routes which connect into the surrounding North West Bicester area.
- 4.4.12 As raised during the pre-application meeting, the Church of St Laurence has ambitions to promote the wider community use of the church for new residents at North West Bicester, including securing the provision of a small area for car parking on this Site. As such, a small area of car parking was initially incorporated into the layout of the Preferred Scheme to the south-east of the allotments/community orchard, for use by both church parishioners and the allotments/community orchard.
- 4.4.13 Following consultation with parishioners of the church on 27th February 2018, options were discussed to increase the number of car parking spaces up to approximately 60 spaces to accommodate potential growth in usage of the. However, a larger number of car movements could impact the local highway network and have indirect air quality and noise and vibration effects on the nearby heritage assets and residents and users of Home Farm. The replacement of the allotment/orchard area with a car park would also lead to a loss of green open space that does not accord with CDC policy and also removes a form of proposed mitigation in the form of visual screening to the nearby Grade II* listed Church of St Laurence. As such, this option was not taken forward.
- 4.4.14 Access to this car park would be required via the Home Farm access road and, on consultation with the owners, they voiced concerns about potential disturbances, including aspects of disruption, security and dust and dirt resultant from use of the car park and effects on the existing tenants' relocation. Consequently, the decision was taken to relocate the car park to the northern corner of the Site and bring the Site boundary in-line to the boundary of the proposed orchard. This would minimise the indirect effects of vehicle movements associated with the car park on Home Farm and the nearby listed buildings, such as noise and air quality, whilst maximising parking accessibility to the relocated allotments and church.
- 4.4.15 Following the consultation with the church parishioners, the Development proposals also allowed for the future connection to a pedestrian crossing on Banbury Road (B4100) to St Laurence Church. The additional pedestrian route on the Site, extending from the residential avenue to the north-eastern Site boundary, has facilitated a pedestrian link through the Site to the Church of St Laurence, safeguarding the area to ensure that a pedestrian crossing to the Church can be delivered separately.

REFERENCES

¹ Cherwell District Council, 2015. *Cherwell Local Plan 2011-2031 Part 1*, July 2015.

² Cherwell District Council and Oxford County Council, 2016. *North West Bicester Masterplan Supplementary Planning Document*, February 2016.

5 Description of the Development

5.1 Introduction

5.1.1 This chapter provides a description of the Development which forms the basis of the EIA and has been written by Quod, based on information provided by the project architects (David Lock Associates), and other members of the project team.

5.1.2 This chapter is accompanied by the following:

- Appendix 5.1: Development Specification.

5.2 Overview

5.2.1 The Applicant is seeking the following:

“Outline planning permission with all matters reserved (excluding access) for up to 75 homes, pedestrian and cycle routes, creation of new access point from Charlotte Avenue, provision of open space, play space, orchard, allotments, parking and associated works.”

5.2.2 The residential mix for the Development will be confirmed at reserved matters stage although Table 5.1 provides an indicative housing mix.

Table 5.1: Indicative Housing Mix

Dwelling Type	Market Homes	Affordable Homes
1-bed	3 units	2 units
2-bed	11 units	13 units
3-bed	26 units	7 units
4-bed	10 units	1 unit
Total	52 units (70%)	23 units (30%)

5.3 Parameter Plans

5.3.1 The outline planning application is accompanied by three Parameter plans, listed in Table 5.2 and included as Figures 5.1 – 5.3. A Development Specification document (Appendix 5.1), which sets the context and framework for future development of the Site, has also been prepared.

Table 5.2: Parameter Plans

Parameter Plan (Drawing No.)	Title
RPC001/011	Land Use
RPC011/012	Access and Movement
RPC011/013	Built Form and Storey Height

5.3.2 The following paragraphs in this chapter describe the Development in accordance with the Parameter plans and Development Specification.

Land Use & Layout

5.3.3 Parameter plan 011: Land Use (Figure 5.1) indicates the areas of the Site that will be subject to built development for up to residential use (C3 Use). The residential development zone (approximately 2.15 ha; circa 40% of the Site area) is located in the western third of the Site. It forms an arced border that extends from approximately midway between the northern and western Site boundaries, with open space reserved for the majority of the remainder of Site.

5.3.4 In-line with the requirements of the North-West Bicester SPD¹, a no build area is incorporated into the residential zone, in order to preserve and enhance the local vista of the Church of St. Laurence.

5.3.5 A rectangular area is set aside for allotments and car parking in the northern corner of the Site, adjacent to Banbury Road and in close proximity to the existing access road to Home Farm. This car park will provide community parking provision for the allotments and the nearby Parish Church of St. Laurence.

5.3.6 An area to the south of the car park/allotments, adjacent to the Home Farm access road, is identified for the delivery of a children's play area (Local Equipped Area for Play (LEAP)). An indicative location for a drainage (Sustainable Urban Drainage (SuDS) feature) is also identified in the southern half of the Site, to the south of the residential development zone.

5.3.7 The eastern part of the Site, between Banbury Road and the access road to Home Farm would be planted as a community orchard.

Figure 5.1: Parameter Plan 011: Land Use

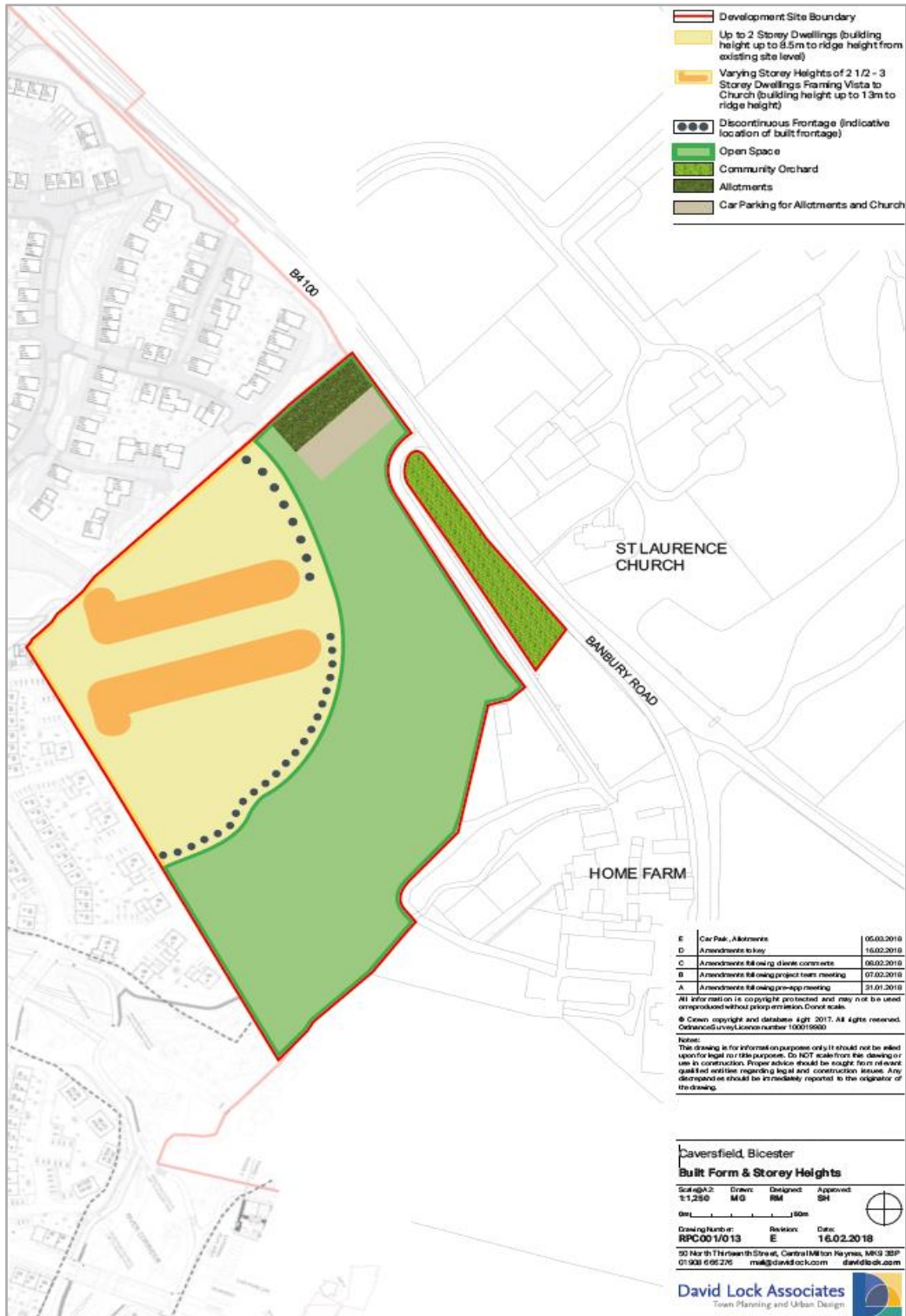


Access, Transport & Movement

- 5.3.8 Parameter Plan 012: Access and Movement (Figure 5.2) identifies the pedestrian, cycle, and vehicular access works that would be delivered as part of the Development.
- 5.3.9 The access to the Site is currently from Charlotte Avenue on the western boundary of the Site via the neighbouring Exemplar development. Once complete, this will form the main entrance to the Development. A residential avenue will extend from this entrance point along an east-west trajectory within the residential zone. This will be along the line of the local vista to the Church of St. Laurence and will be the primary feature within the no-build zone.
- 5.3.10 A footpath/cycle route will extend off this highway and around the periphery of the residential zone within the open space. This footpath/cycle route will link to surrounding development within the Exemplar site through access points on the northern and western Site boundaries. Pedestrian access will also be provided to the community orchard through an existing gate.
- 5.3.11 Vehicular access to the car parking for the allotments/church will be taken from Banbury Road (the B4100), via the existing access road to Home Farm.
- 5.3.12 Oxfordshire's Residential Road Design Guide² states that one allocated car parking space per dwelling will be acceptable at North West Bicester Eco-Town. This may be on-plot or off-plot (see Chapter 6: Transport for further information). Resident car parking will be provided on-plot in garages or on driveways. On-site car parking provision will be made in accordance with the standards and policy set out by CDC and Oxfordshire County Council. In addition, community parking will also be provided in the northern corner of the Development for users of the allotments and church parishioners.
- 5.3.13 As part of the Exemplar development, bus stops are provided along Charlotte Avenue. The E1 bus service provides a service which calls at these bus tops and provides a connection to Bicester Village Station via Caversfield and Bicester Town Centre.
- 5.3.14 The proposals will facilitate a new pedestrian link through the Site towards the Church of St Laurence, with proposals for a new pedestrian crossing along Banbury Road. This will be delivered outwith this application.

from existing site level). This is in order to frame the key local vista from the Parish Church of St. Laurence to the east of the Site. These building heights are considered appropriate to satisfy the requirements of the North-West Bicester SPD.

Figure 5.3: Parameter Plan 013: Built Form and Storey Heights



5.4 Building Appearance

- 5.4.1 The building materials will be determined at the Reserved Matters stage but would be consistent with achieving high sustainability performance and a low embodied energy. Where possible, local materials would be used to enhance the local Oxfordshire vernacular. The style and approach of the external appearance would be designed to contribute to the performance and vision for the Eco-Town.

5.5 Landscaping, Vegetation and Green Infrastructure

- 5.5.1 Development Requirement 9 of the North West Bicester SPD requires 40% of the total gross site area (within NW Bicester) to comprise of green space, of which at least half should be publicly accessible, and consist of a network of high quality green/open spaces which are linked to the open countryside. The Development will provide circa 42% publically accessible open space, providing approximately 0.49 ha of new orchard planting and approximately 0.06 ha of new allotments.
- 5.5.2 Existing hedgerows are to be retained where possible. There is one section of hedgerow that is proposed for removal on the northern Site boundary as illustrated in Figure 5.1. This is to facilitate a pedestrian/cycleway connection to the emerging residential development to the north and west associated with the Exemplar site. The planting of a new length of hedgerow on the eastern Site boundary comprising native plant species or species with a known wildlife benefit will mitigate for loss of the small sections of hedgerow to be removed, meeting the requirement of Development Principle 9 (c) of the SPD.
- 5.5.3 A detailed Tree Removal and Retention Plan will be provided post-submission, to be secured by planning condition.

5.6 Waste and Servicing

- 5.6.1 Waste and recycling storage for the Development will be designed in line with the CDC Planning and Waste Management Design Advice (2009)³, with the waste strategy to be finalised during detailed design. It is anticipated that the waste from the Development will be dealt with within the County, with the nearest transfer station located in Ardley, approximately 4km to the north-west of the Site.

5.7 Drainage

- 5.7.1 The Site is currently undeveloped and there are no formal drainage networks on the Site. There are no adopted sewers beneath Banbury Road or Howes Lane and the surface water is taken to the nearby watercourses, including the River Bure in the south-east of the Site. However, asset records do show a main, of unknown size, in the spine road of the adjacent Exemplar site to the west. The planning application is accompanied by a Flood Risk Assessment (FRA) and Drainage Strategy which demonstrates that the Development would not be at risk of flooding, nor would it increase the risk of flooding elsewhere.
- 5.7.2 The FRA includes proposals for a site-wide approach to drainage of the Site, which has had due regard to the requirements of Policy Bicester 1, Policy ESD1, ESD6 and ESD7 of the Cherwell Local Plan to provide SuDS and mitigate the impact of development within the District on climate change.
- 5.7.3 At this outline stage of design it is proposed that surface water runoff generated by the Development will be discharged via a controlled outfall into the River Bure.
- 5.7.4 The detailed drainage design for the Development will form part of the Reserved Matter Application(s). However, SuDS will be used in the form of a detention basin and permeable paving to store runoff

generated by the Development up to and including 1 in 100 year + 30% allowance for climate change. This restricts the discharge rate into the River Bure to a best practice minimum controlled rate of 5 l/s.

5.8 Sustainability and Energy

- 5.8.1 In-line with the Eco-Town Masterplan, the Development will aspire to achieve the highest levels of sustainability, with the North West Bicester SPD outlining the requirement to achieve BREEAM Communities “Excellent” and zero carbon emissions. The Applicant recognises the context of this Site and it is intended to deliver a high quality and sustainable development.
- 5.8.2 The North West Bicester SPD requires new development to meet the following requirements in relation to sustainability:
- Development Requirement 2: True zero carbon development;
 - Development Requirement 3: Climate Change Adaption; and
 - Development Requirement 4: Homes.
- 5.8.3 As such, the Development has been designed to accord with the sustainability and energy efficiency aspirations of the Council where deliverable. In addition, feedback from CDC from the pre-application meeting was that the Development will be required to mitigate against future climate change scenarios, including aspects of daylight and overheating.
- 5.8.4 The application has been submitted with a Sustainability Statement and an Energy Strategy, which demonstrates how the Development will aspire to meet a BREAAM Communities “Excellent” rating once the wider Eco-Town is operational and end users are known.
- 5.8.5 Carbon emissions will be reduced by minimising energy demand through appropriate orientation, passive solar design and a fabric first approach that maximises the performance of the building and its method of construction. Passive and active design measures will maintain a low energy demand for the buildings.
- 5.8.6 The main residential avenue is aligned west-to-east through the Site. This will allow some of the buildings bordering the avenue (expected to be 2½ to 3 storeys) to have south-facing aspects, thereby increasing opportunities for natural daylighting, passive solar gains and roof-mounted renewable technologies which accords with Development Requirement 4: Homes.
- 5.8.7 Plot layout and building location will be defined at the detailed design stage, to help to facilitate air movement and enhance natural ventilation, thereby reducing the risk of overheating in dwellings. Low density of development, interspersed with green open spaces, provides evaporative cooling at night, helping to reduce the heat island effect.
- 5.8.8 At the reserved matters stage, the landscaping scheme will be carefully designed to encourage passive solar shading. This could include street-scene planting to provide naturally shading areas and corridors (such as along the main carriageway) and, where appropriate, using deciduous planting to allow winter sunlight.
- 5.8.9 The Development will not include an energy centre. In-line with Policy ESD4 of the Cherwell Local Plan, the dwellings will be capable of connecting to the District Heating System (DHS) being delivered as part of the wider Eco-Town. Until this is available, it is proposed that a plant room will serve the residential zones. The capacity of the existing heat network to be extended to the Site will need to be considered

with SSE Heat Networks Limited (the operational managers of the energy centre). Initial contact has been made with SSE and potential opportunities are being explored. These aspects will be finalised during detailed design.

5.9 Utilities

- 5.9.1 A Utilities Assessment has been submitted with the planning application. There is an electrical connection on the Site. An underground high voltage cable (11kV) runs perpendicular to the northern Site boundary on the B4100. From this cable an overhead 11kV cable enters the Site.
- 5.9.2 There are no formal drainage networks on the Site, with the closest known Thames Water asset located on the adjacent Exemplar site to the west. It is expected that all water and foul water to and from the Development would be connected to this asset (see FRA which accompanies the planning application for further details).
- 5.9.3 There are no Telecom or Cable TV services on the Site, however an underground BT cable is located to the north of the Site running along the B4100.
- 5.9.4 Connection points for utility infrastructure for the Development will be confirmed during detailed design for the Development, and consultation with the respective service providers conducted to ensure that the local networks have adequate provision to service the Development.

5.10 Construction

- 5.10.1 It is anticipated that the Development will be built-out over an approximately 18 – 30 month period, with construction expected to commence in Q4 2018 and, assuming a worst-case, completing in Q2 2021.
- 5.10.2 Whilst details regarding the construction programme and methods to be employed by the Principal Contractor have not been finalised at this stage, an indicative development programme has been developed based on reasonable assumptions, although this may be subject to change.
- 5.10.3 It is currently envisaged that construction access will be taken off Banbury Road through an existing gate to the northern corner of the Site.

Hours of Work

- 5.10.4 It is anticipated that the core working hours for the Development will be as follows:
- 08:00 – 18:00 hours Weekdays;
 - 08:00 – 13:00 hours Saturday; and,
 - No working normally undertaken on Sundays or Bank Holidays.
- 5.10.5 It is recognised that approval from the CDC is required for any works that need to be undertaken outside these permitted hours, and that CDC may vary these hours where the works are in close proximity to sensitive businesses or residential properties.

Environmental Management

- 5.10.6 Standard best practice principles of environment management will be adhered to on-site during construction works. A Construction Environmental Management Plan (CEMP) will be submitted with the Reserved Matters application(s) for the detailed design to ensure that the mitigation measures and

management controls and/or procedures adopted are sufficient to meet the commitments made throughout the assessments.

5.10.7 The CEMP will include roles and responsibilities, detail on control measures and activities to be undertaken to minimise environmental effects, and monitoring and record-keeping requirements.

5.10.8 The CEMP will also outline how the Development will avoid, minimise or mitigate effects on the environment and surrounding area during construction, as well as how site waste will be dealt with.

5.10.9 The CEMP will comprise, but not limited to, the following elements to minimise the environmental effects of the Developments construction on the surrounding area:

- Construction Method Statement (CMS);
- Neighbour relations;
- Management of trade contractors;
- Construction traffic logistics;
- Noise management;
- Dust management;
- Waste management; and
- Protection of water resources and ecology.

REFERENCES

¹ Cherwell District Council, 2016, *North West Bicester Supplementary Planning Document*, February 2016

² Oxfordshire County Council, 2013. *Oxfordshire's Residential Road Design Guide*. 2013, as amended 2015

³ Cherwell District Council, 2009, *Planning and Waste Management Design Guide*, October 2009

6 Transport

6.1.1 This chapter of the ES has been prepared by Peter Brett Associates LLP (PBA) and assesses the likely significant effects associated with traffic and transport from the Development.

6.1.2 This chapter sets out the assessment methodology for determining the traffic and transport impact from the Development; the baseline conditions at and in the vicinity of the Site; the predicted significant effects resulting from the Development; proposed mitigation measures (as required); and the likely residual effects after the mitigation measures have been implemented.

6.1.3 The chapter is supported by the following technical appendices:

- Appendix 6.1: Transport Assessment (PBA, March 2018); and
- Appendix 6.2: Travel Plan (PBA, March 2018)

Competence

6.1.4 PBA has a dedicated transport team that specialises in undertaking transport planning, modelling and appraisal for development schemes, including land development, regeneration and infrastructure projects. PBA's transport team includes experienced staff, who have relevant academic and professional experience and qualifications, including those who hold Transport Planning Professional (TPP) and those who are Chartered Members of the Institute of Highways and Transportation (CMIHT). In addition, PBA holds corporate membership of the Transport Planning Society (TPS) and the Chartered Institute of Highways and Transport (CIHT).

6.1.5 The authors of this chapter have extensive experience in respect of preparing transport assessments and ES chapters for residential developments and a range of developments across Oxfordshire.

6.2 Legislation, Planning Policy and Guidance

Planning Policy Context

National

6.2.1 The following national policy and guidance documents are relevant to the Development.

- National Planning Policy Framework¹;
- National Planning Practice Guidance²; and
- Planning Policy Statement: Eco Towns – A Supplement to Planning Policy Statement 1³.

Local

6.2.2 The following local policy and guidance documents are relevant to the Site.

- Oxfordshire Local Transport Plan 4 (LTP4)⁴;
- Cherwell Local Plan 2011-2031 – Part 1⁵;
- Oxfordshire County Council Parking Standards for new residential developments (2011)⁶;
- Oxfordshire Walking Design Standards (2017)⁷;
- Oxfordshire Cycling Design Standards (2017)⁸; and
- North West Bicester Supplementary Planning Document⁹.

6.3 Assessment Methodology

- 6.3.1 This section outlines the approach taken to baseline data collection and assessing the traffic and transport impacts of the Development. The adopted methodology has been determined through reference to guidance including in particular the IEMA note 'Guidelines for the Environmental Assessment of Road Traffic' (Guidance Note No. 1)¹⁰.

Consultation

- 6.3.2 Table 6.1 summarises key comments raised by consultees of relevance to this assessment and how the assessment has responded to them.

Table 6.1: Consultation Response Summary

Consultee (Date) and Comment	Response
Cherwell District Council (7 February 2018) – Screening Opinion	
Schedule 3 makes it clear that the size of the proposed development and its consequent potential impact needs to be considered cumulatively with other development. While the characteristics of the development (the construction of up to 75 dwellings and associated infrastructure and open space) on its own does not exceed the 1,000 dwelling threshold, the development must be considered cumulatively with other development.	The assessment makes use of the Bicester Transport Model which includes background traffic growth arising from cumulative developments and provision of planned transport infrastructure.
Oxfordshire County Council (OCC)(25 January 2018) – Pre-Application Scoping Meeting with PBA	
OCC encouraged PBA to make use of the Bicester Transport Model which provides a forecast of traffic flow on the immediate highway network adjacent to the application site in a number of future forecast years with the results of infrastructure improvements.	The assessment makes use of the Bicester Transport Model which includes background traffic growth arising from cumulative developments and provision of planned transport infrastructure.
OCC encouraged PBA to adopt a similar travel demand, modal split and trip distribution and assignment methodology to that used by local development sites and set out in local policy guidance.	PBA has adopted the recommended approach, which is documented within the Transport Assessment and resulting development traffic flows are incorporated into the assessments reported in this ES Chapter.
OCC encouraged the scheme design and access proposals to consider adjacent development proposals and to maximise sustainable transport connections follow local design guidance.	PBA has discussed these requirements with the wider project team and the Parameter Plans and illustrative masterplan have responded to this request.

Study Area and Scope

- 6.3.3 The IEMA guidelines suggest that the study area should include:
- 'Highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%'); and / or
 - 'Any other specifically sensitive areas where traffic flows have increased by 10% or more.'

6.3.4 For the purposes of the assessment in this chapter, the study area has been represented by 6 highway links to enable the assessment of changes in network traffic flow resulting from development as listed above (30% or 10% in receptor sensitive areas). Table 6.2 lists the highway links within the study area.

Table 6.2: Highway Network Study Area

Link Number	Link Name	Link Description
1	Charlotte Avenue	Through the adjacent Exemplar site (see Chapter 8: Cumulative Assessment for further information) from Site to its junction with B4100 (Banbury Road)
2	B4100 (1)	North of the B4100 / Charlotte Avenue T-junction
3	B4100 (2)	South of the B4100 / Charlotte Avenue T-junction to the roundabout junction with the A4095
4	B4100 (3)	South of the roundabout junction with the A4095
5	A4095 (1)	East of the roundabout junction with B4100
6	A4095 (2)	West of the roundabout junction with B4100

6.3.5 As agreed with OCC during the pre-application scoping meeting, the forecast years (limited to those that exist within the County Bicester Transport Model) identified to assess the traffic and transport impacts of the Development are:

- 2016: Existing Conditions;
- 2026: Do Nothing (i.e. consented development and planned infrastructure); and
- 2026: Do Something (i.e. 2026 Do Nothing + Development traffic).

6.3.6 The 2016 Base Year provides a review of the existing conditions in the vicinity of the Site as well as 2016 traffic flows for the highway network in the study area obtained from the SATURN traffic model.

6.3.7 The *2026 Do Nothing* scenario provides the baseline against which the assessment of Development traffic will be undertaken: the traffic flows associated with this forecast year are as set out within the 'Bicester Transport Model – Future Year Forecasting Report' (Issue 2, April 2017 – prepared by White Young Green on behalf of OCC). OCC specifically requested that a 2026 forecast year was assessed, on the basis that this was 5-years after the expected completion year. The flows take into account:

- Future year background traffic growth; and
- Future planned residential, employment and school development proposals and planned infrastructure proposals as expected to be delivered at a 2026 future year (as detailed at Appendix A of the 'Bicester Transport Model – Future Year Forecasting Report')

6.3.8 The *2026 Do Something* scenario adds the predicted development traffic flows to the 2026 Do Nothing scenario, the flows associated with the Development are based on the methodology set out within the Transport Assessment.

Establishing Baseline Conditions

6.3.9 The existing baseline conditions within the study area were determined through both a desk-top review and a site visit undertaken by PBA in January 2018. A number of data sources have also been used by PBA to obtain data used at various stages of the Transport Assessment work and EIA to support the Development proposals. A summary of these data sources is provided in Table 6.3.

Table 6.3: Data Sources to Determine Baseline Conditions

Source	Data
Automatic Traffic Count (ATC) survey	Traffic flows and recorded speeds on links within the study area and to determine % Heavy Goods Vehicles (HGV) of existing roads
Bicester Transport Model: modelled outputs and associated model reports	2016 & 2026 traffic flows and to determine % HGV for Charlotte Avenue
OCC	Personal Injury Collision (PIC) data
Google Maps / Site Visit / Desktop review of publicly available data	To confirm baseline conditions and identify local receptors
North West Bicester Masterplan Access & Travel Strategy	Development trip rate and generation methodology set out within the Transport Assessment, confirm local transport proposals and identify local receptors
North West Bicester Supplementary Planning Document	Masterplan Framework and Access & Movement Framework to confirm local transport proposals and identify local receptors
Transport Assessment	Policy context, baseline conditions, site transport proposals and development trip generation

- 6.3.10 ATC surveys were undertaken along B4100 Banbury Road (to the north and south of its junction with Charlotte Avenue) and along the A4095 (to the west of the A4095 / B4100 Banbury Road roundabout junction) for a 7-day period between 22 February 2018 and 28 February 2018 by a 3rd-party traffic survey company. The outputs from the SATURN traffic model and data from the ATC have both been used to prepare traffic flows for this ES chapter.
- 6.3.11 PIC data for the highway network in the study area was obtained from OCC in order to undertake a safety assessment of the highway network in the study area and determine whether there were any significant trends in the number of collisions as a result of factors which relate to the layout of the highway during the search period. The PIC data obtained covers the period between 1st January 2013 and 31st December 2017.

Identifying Likely Significant Effects

- 6.3.12 The assessment used in this chapter identifies the traffic and transport effects of the Development on the environment which could be considered as potentially significant whenever a new development is likely to give rise to changes in traffic flows. These effects are:
- Severance;
 - Driver Delay;
 - Pedestrian Delay;
 - Pedestrian Amenity;
 - Fear and Intimidation;
 - Accidents and Safety; and
 - Hazardous Loads.
- 6.3.13 Each of the above environmental effects has been considered in the context of anticipated changes in traffic volume and composition during both the construction and operational phases of the Development.

- 6.3.14 Consideration of other topics listed in the IEA Guidelines including the visual impacts and heritage and conservation effects are considered elsewhere in the ES, whilst effects of air pollution, dust and dirt, and noise and vibration are considered within standalone reports provided with the planning application.
- 6.3.15 The traffic and transport related environmental effects are defined and have been quantified and assessed on the following basis, and informed by the author's professional judgement.

Severance

- 6.3.16 Severance is the perceived division that can occur within a community when it becomes severed by a major traffic artery. This may result from difficulty in crossing a road with heavy traffic flow or a physical barrier. Severance is difficult to measure and, by its subjective nature, is likely to vary between different groups within a single community. In addition to the volume, composition and speed of traffic, severance is also likely to be influenced by the geometric characteristics of a road, the demand for movement across a road and the variety of land uses and extent of community located on either side of a road. All these factors are considered when determining the likely severance effect.
- 6.3.17 As the severance percentage impact is a function of the base flows, the trigger levels shown in Table 6.4 have been used to define whether an effect is present. This aims to prevent minor changes on links with low baseline flows from being considered disproportionately significant. A potentially significant effect is therefore only considered to occur if the baseline traffic flow is increased to any of the levels shown in Table 6.4.

Table 6.4: Severance Indicators

Indicator	Change in Traffic Flows
High	>60%
Medium	30% - 60%
Low	10% - 30%

Driver Delay

- 6.3.18 A delay to drivers generally occurs at junctions where opposing vehicle manoeuvres are undertaken, with vehicles having to give or receive priority depending on the type of junction arrangement. The IEMA guidance states that computer modelling programs can be used to assess the changes in driver delay on the network as a result of the proposed development. The guidelines do not state specific thresholds to calculate the magnitude of the change; however, they advise that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.
- 6.3.19 The delay to drivers is considered for highway links that are demonstrating a low, medium or high adverse change against the severance indicator. This indicator has been chosen because it represents an increase in the flow of traffic on a highway link as a result of the proposed development, and it is therefore in these locations that driver delay is most likely to be affected.

Pedestrian Delay

- 6.3.20 A delay to pedestrians is most likely to occur when pedestrians need to cross the highway at either controlled or uncontrolled crossings where pedestrians need to give priority to vehicular traffic. The delay is likely to increase due to an increase in traffic volume or due to a change in the proposed crossing arrangement, for example from a Zebra to Puffin type crossing. On this basis pedestrian delay has been considered on all links that are demonstrating a *low*, *medium* or *high* adverse change against the severance indicator and / or where a change in crossing type is proposed.

Pedestrian Amenity & Fear and Intimidation

- 6.3.21 The amenity of pedestrians is broadly defined as the relative pleasantness of a journey. It is affected by traffic flow, traffic composition and pavement width / separation from traffic. It encompasses the overall relationship between pedestrians and traffic, including fear and intimidation, which is the most difficult effect to quantify and assess. There are no commonly agreed thresholds for quantifying the significance of changes in pedestrian amenity, although the IEMA guidelines suggest a useful study that could be referenced when considering any effect. These thresholds are replicated in Table 6.5.

Table 6.5: Fear and Intimidation Thresholds

Degree of Hazard	Average Traffic Flows over 18-hour Period (vehicles/ hour)	Total 18-hour HGV Flow	Average Vehicle Speed over 18-hour Period (mph)
High	1,800	>3,000	>20
Medium	1,200 – 1,800	2,000 – 3,000	15 – 20
Low	600 – 1,200	1,200 – 2,000	10 – 15

Note: No category is given in the guidance for flows lower than those set out above; for the purposes of this assessment, any flows below the thresholds have been categorised as *negligible*.

Accidents and Safety

- 6.3.22 The guidance states that overall changes in vehicle kilometres on account of a proposed development may be used to assess the magnitude of impact on accidents and safety. However, the guidance does not prescribe specific criteria that can be applied to the changes in vehicle kilometres to identify impact magnitude, depending on local circumstances such as traffic speed, flow and composition, as well as vehicle conflict and pedestrian activity. The guidelines state that it is this combination that enables a professional judgement to be made with regards to the significance of the effect.

Hazardous Loads

- 6.3.23 The Development is not anticipated to generate any hazardous loads. As such, this has not been included within this assessment.

Construction

- 6.3.24 Given the outline nature of the planning application, there is limited information available at the time of writing on the proposed construction works. The traffic and transport effects associated with the construction of the Development will be dependent on a number of factors. This includes the final programme and phasing of construction works, the import / export of materials and the construction processes adopted.
- 6.3.25 With this in mind, a high level quantitative assessment has been undertaken in this chapter to determine the likely volume of construction traffic to be generated and the significant traffic and transport effects of these proposed construction works. This assessment has been based on an estimation of reasonable worst case conditions and has considered aspects of the construction works that could lead to significant effects.
- 6.3.26 A number of suitable management and control measures have been identified in this chapter which it is proposed will be incorporated into a Construction Environment Management Plan (CEMP) to manage construction works of the Development.

Operations

- 6.3.27 The impact of operational traffic on the environment has been quantified through completion of bespoke traffic impact / modelling as part of the Transport Assessment work for the Development and using a comparison of the 2026 Do Nothing and 2026 Do Something scenarios.
- 6.3.28 The assessment has considered highway links in the study area that have the potential to be significantly affected by the Development based on criteria included within the IEMA Guidelines as set out above.

Cumulative effects

- 6.3.29 The 2026 Do Nothing traffic flows have been sourced from the OCC Bicester Transport Model as set out within the 'Bicester Transport Model – Future Year Forecasting Report' (Issue 2, April 2017 – prepared by White Young Green on behalf of OCC). The 2026 flows take into account:
- Future year background traffic growth; and
 - Future planned residential, employment and school development proposals and planned infrastructure proposals as expected to be delivered at a 2026 future year (as detailed at Appendix A of the 'Bicester Transport Model – Future Year Forecasting Report').
- 6.3.30 The *2026 Do Something* scenario adds the predicted development traffic flows to the 2026 Do Nothing scenario, the flows associated with the Development are based on the methodology set out within the Transport Assessment.

Determining Effect Significance

- 6.3.31 The assessment of environmental effects as a result of the Development will take into account both the construction phase and the operational phase. The methodology to determine the significance of environmental effects is typically derived from a function of receptor sensitivity (to change in traffic conditions) and the magnitude of change of the impact.
- 6.3.32 The IEMA Guidelines identifies groups and special interests such as the following which should be considered as part of the assessment:
- People at home and in work places;
 - Sensitive locations such as schools, hospitals, places of worship and historical buildings;
 - People walking and cycling;
 - Open spaces, recreational sites, shopping areas; and
 - Sites of tourist and visitor attraction.
- 6.3.33 These have been used to outline in broad terms the sensitivity of receptors to traffic for the categories identified in this chapter, although each receptor would have a different sensitivity to each specific effect.

Sensitivity of Receptor

- 6.3.34 The presence of receptors in the study area has been identified for each highway link to identify their potential sensitivity level. The definitions to determine the sensitivity of a receptor in the study area are shown in Table 6.6.

Table 6.6: Receptor Sensitivity Descriptors

Value (Sensitivity)	Descriptor
High	Schools and other educational institutions Retirement / car homes for the elderly Roads with no footway that may be used by pedestrians Roads with a poor personal injury collision record
Medium	Hospitals, surgeries and clinics Parks and recreation areas Shopping areas Roads with a narrow footway that may be used by pedestrians
Low	Open space Tourist / visitor attractions Historical buildings Churches and other places of worship Individual residences Employment areas

6.3.35 For the purposes of this assessment, the receptor group is highway users (pedestrians, cyclists and motorists) accessing the receptors described above.. The receptors are considered and identified later in this chapter.

Magnitude of Impact

6.3.36 The typical criteria to define the magnitude of an impact has been derived from the IEMA Guidelines to help determine the magnitude of impact based on a change in the percentage of traffic flows along a highway link.

6.3.37 The guidance states that a 30%, 60% and 90% change in traffic flow should be considered as *low*, *medium* and *high* impacts respectively. These criteria have been incorporated into the magnitude of impact categories shown in Table 6.7.

Table 6.7: Magnitude of Impact Descriptors

Value (Sensitivity)	Descriptor
High	>90%
Medium	60% - 90%
Low	30% - 60%
Negligible	<30%

6.3.38 The assessment set out in this Chapter makes use of the magnitude of impact as described in Table 6.7, in addition to the details set out in Tables 6.4 and 6.5 in respect of the Development effects on 'severance' and 'fear and intimidation' respectively.

6.3.39 In accordance with the IEMA guidance, the absolute change in traffic levels has been considered in the assessments to ensure that very small changes on links with low baseline flows are not considered as more significant.

Assessing Significance

6.3.40 The significance of effects will be determined as per the matrix in Table 6.8.

Table 6.8: Matrix to Determine the Significance of Effects

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

6.3.41 The bullet points below provide a description of the terms used in Table 6.8 to define the significance of the effects identified.

- Major: where the Development could be expected to have a very significant effect (either beneficial or adverse) on traffic volumes on the surrounding highway network;
- Moderate: where the Development could be expected to have a noticeable effect (either beneficial or adverse) on traffic volumes on the surrounding highway network;
- Minor: where the Development could be expected to result in a small, barely noticeable effect (either beneficial or adverse) on traffic volumes on the surrounding highway network; and
- Negligible: where no discernible effect is expected as a result of the Development on traffic volumes on the surrounding highway network.

Evidence Assumptions and Limitations

6.3.42 The evidence used in this chapter has been provided through review of the data as outlined in Table 6.3 incorporating a desk-top review and outcomes of a site visit undertaken by PBA in January 2018.

6.3.43 The modelling data secured from the Bicester Transport Model forms a key component of the assessment reported in this chapter and has been provided by OCC. This has been in response to a direct request from OCC to adopt this approach to determine future traffic flows as part of the Transport Assessment.

6.3.44 In respect of determining the proportion of HGVs on the identified road links, two different methods have been adopted. Existing links have been determined using the average of three locations where ATC data is available, providing a robust and locally determined approach to estimating HGV % of all traffic on these links (links 2 to 6 inclusive from Table 6.2). However, this information is not available for Charlotte Avenue as it is not fully open at this stage, accordingly forecast data from the Bicester Transport Model has been used to inform a best estimate of existing and future HGV % on this link (link 1 from Table 6.2).

6.4 Baseline Conditions

6.4.1 This section identifies the baseline conditions of the study area. It includes a description of the existing highway network in proximity to the Site and a summary of the existing sustainable access opportunities. It identifies the existing receptors along the highway links within the study area as well as the traffic flows along these highway links for the 2016 Base Year and 2026 Future Base Year. It also considers the changes to the local transport network directly associated with adjacent schemes which are expected to be in place in advance of the Development.

Local Highway Network

Charlotte Avenue

- 6.4.2 Charlotte Avenue is a proposed 6.0m-wide internal access road through the Exemplar development scheme. From PBA observations, it is evident that while the southern section of Charlotte Avenue is accessible for vehicular traffic, the northern section along the frontage of the Site is currently under construction but is expected to be complete in advance of the commencement of the works associated with the Development.
- 6.4.3 Where Charlotte Avenue is complete, access onto B4100 (Banbury Road) is provided to the south-east by means of a priority T-junction, although this junction arrangement with in the future be changed to a signalised T-junction arrangement. Charlotte Avenue is subject to a speed limit of 20mph with a gateway feature provided at the access to encourage drivers to observe this speed limit. It also incorporates conventional traffic calming features to ensure that the route does not dominate the area with vehicular traffic and become an obstruction to movement by other travel modes. It includes local narrowing of the carriageway in places to a minimum width of 3.5m along with raised table junctions to slow vehicular traffic down.
- 6.4.4 As part of the North West Bicester Masterplan, it is proposed that when built, a 4.0m-wide bus only link will be provided along the northern section of Charlotte Avenue to prioritise bus movement and limit through flow traffic.

B4100 Banbury Road

- 6.4.5 The B4100 runs adjacent to the north-eastern Site boundary between the A43 to the north and its junction with the A4095 to the south, where it continues towards its convergence with Buckingham Road and Field Street via a roundabout junction in the centre of Bicester.
- 6.4.6 The section of B4100 that passes adjacent to the Site boundary is predominately rural in nature and is subject to a speed limit of 40mph until just to the south of its junction with Bainton Road (approximately 1km north of the Site) where the national speed limit applies. The section of the B4100 to the south of the A4095 is more urban in nature with the presence of footways and traffic calming features. This section is subject to a speed limit of 40mph then 30mph towards the town centre.

A4095 Howes Lane / A4095 Lords Lane

- 6.4.7 The A4095 is a single lane carriageway that runs to the north-west and north of Bicester as a town centre by-pass route between B4030 (Middleton Stoney Road) and its convergence with the A4421 and Buckingham Road via a roundabout junction.
- 6.4.8 The section of the A4095 to the south of the railway line known as Howes Lane is rural in nature and is subject to a speed limit between 40mph and 50mph with little lighting and no footways or adjacent path. The section to the north of the railway line is subject to a speed limit of 50mph with street lighting provided.

Sustainable Access Opportunities

- 6.4.9 There are opportunities to access the Site, through the Exemplar site, by sustainable modes of transport and reflects the wider strategic access objectives of the North West Bicester Masterplan.

Walking / Cycling

- 6.4.10 Access on foot and by cycle to the Site, through the Exemplar site, will be achievable along Charlotte Avenue. At the time of writing, the southern section of Charlotte Avenue is accessible while the northern section is under construction. Where Charlotte Avenue has been built, a footway with a minimum width of 2.0m is provided on either side of the carriageway with uncontrolled pedestrian crossing points provided with dropped kerbs and tactile paving located at regular intervals. This provision will be extended along the whole length of Charlotte Avenue as the northern section is completed.
- 6.4.11 Charlotte Avenue will be designated as a 'direct' walking and cycling route and as such, will act as fast commuter route to Bicester when complete.
- 6.4.12 An existing shared footway / cycleway is provided alongside the northbound carriageway of B4100 which provides access on foot and by cycle to the existing footway alongside the southern section of Charlotte Avenue.
- 6.4.13 A signalised crossing is provided on B4100 to the south of the Exemplar site to enable pedestrians and cyclists to cross the carriageway and head eastwards onto another shared footway / cycleway alongside the A4095 which is separated from the carriageway by a grass verge. The shared footway / cycleway continues south into Bicester town centre where further pedestrian and cyclist connections are provided towards the existing residential areas to the south.
- 6.4.14 From a strategic access perspective, National Cycle Network Route 51 passes through Bicester town centre and runs towards Bletchley, Milton Keynes and Bedford to the north-east and Weston-on-the-Green, Kidlington and Oxford to the south-west. A number of local routes within Bicester connect to Route 51 including those on B4100 and the A4095.

Bus Services

- 6.4.15 In terms of access by public transport to the Site, a number of bus stops are already provided along Charlotte Avenue as part of the Exemplar site. These bus stops are provided with seating and a shelter to protect waiting passengers from inclement weather as well as Real Time Information which indicates the status of the bus service. They are also provided with cycle parking which demonstrates the inclusive sustainable access strategy of the Eco Town scheme.
- 6.4.16 The nearest active bus stop to the Site is located approximately 300m to the south on Charlotte Avenue. However observations as part of the site visit indicate that while not active at the time of writing, a bus stop is located less than 200m from the Site access point and this is expected to be operational in advance of the Development being occupied.
- 6.4.17 The E1 bus service calls at the bus stops along Charlotte Avenue and provides a service from the Exemplar site to Bicester Village Station via Caversfield and Bicester town centre which takes approximately 15 minutes. It is operated by Grayline Coaches and forms part of Bus Route 2 proposed as part of the North West Bicester Masterplan.
- 6.4.18 The bus interchange within Bicester town centre itself where the E1 bus service calls is provided along Manorsfield Road. A total of eight bus stands are provided where 10 bus services call. The bus services provided from Bicester town centre travel to the majority of the surrounding areas. Included is the X5, which is an inter-city express service provided by Stagecoach, that provides connections from Bicester to the major towns and cities on the Cambridge to Oxford corridor.

Rail Services

- 6.4.19 Bicester is served by two mainline railway stations: Bicester North (2.15km from the Site boundary) and Bicester Village (3.35km from the Site boundary), both of which are managed by Chiltern Railways.
- 6.4.20 Bicester North is located on the Chiltern mainline between London Marylebone and Birmingham Snow Hill. The facilities at this station include storage provided for up to 65 cycles as well as parking bays which include EV charging points.
- 6.4.21 Bicester Village is located to the south of Bicester adjacent to the Bicester Village outdoor shopping mall. It can be accessed directly from the site via the E1 bus service and is also located on the Chiltern mainline between Oxford and London Marylebone.
- 6.4.22 The regular services throughout the day ensure a good range of destinations are readily accessible from Bicester North and Bicester Village rail stations. The employment, recreational and shopping opportunities within Oxford are available within a 30-minute rail journey from Bicester. There is a service approximately every 15 minutes to Banbury, Birmingham and London from Bicester North station.

Personal Injury Collision Data

- 6.4.23 PIC data for the local highway network was obtained from OCC. The data obtained indicates a total of seven collisions occurred during this period within the study area. Of these seven collisions, four were 'slight' in nature and three were 'serious' in nature.
- 6.4.24 During this 60-month period, two collisions involved vulnerable road users, one of which was 'slight' in nature while the other was 'serious' in nature. The 'serious' collision involved a pedestrian crossing the road at a pedestrian crossing being struck by a car although the traffic signal was green for the car. The 'slight' collision involved a collision between a cycle and a car.
- 6.4.25 A review of this PIC data and information on the collision factors indicates that all seven collisions that occurred in the study area for the 60-month period were as a result of driver or pedestrian error and do not point to any specific local highway safety issues.

2016 Baseline Traffic Flows

- 6.4.26 18-hour AAWT and 24-hour Annual Average Daily Traffic (AADT) baseline traffic flows and HGV% for the 2016 Base Year have been derived from the SATURN traffic model for each highway link in the study area. This data is provided in Table 6.9. The posted speed limit of each highway link has also been provided and has been used to undertake future year assessments which factor in the speed of the road.

Table 6.9: 2016 Base Year Traffic Flows

Link Number	Link Name	Speed Limit	2-Way Vehicle Flows		%HGVs > 3.5T (18-hour)
			All Vehicles Annual Average Weekly Traffic AAWT (18-hour)	All Vehicles AADT (24-hour)	
1	Charlotte Avenue	20	1011	1138	1%
2	B4100 Banbury Road (1)	40	14240	16033	9%
3	B4100 Banbury Road (2)	40	14721	16574	9%

Link Number	Link Name	Speed Limit	2-Way Vehicle Flows		
			All Vehicles Annual Average Weekly Traffic AAWT (18-hour)	All Vehicles AADT (24-hour)	%HGVs > 3.5T (18-hour)
4	B4100 Banbury Road (3)	40	6011	6768	9%
5	A4095 (1)	50	22746	25610	9%
6	A4095 (2)	50	14666	16512	9%

Future Baseline

6.4.27 The future baseline conditions of the study area without development at Site includes infrastructure proposed for the wider Eco-Town through the North West Bicester Masterplan.

6.4.28 The North West Bicester Masterplan sets out the following with respect to transport development principles:

“The overall design is centred around four urban and four rural areas interconnected through green ‘lanes’ which include both direct and leisure routes, so everyone can get from home to work, and play, in no time at all.

There will be plenty of opportunities to reduce travel by car and minimise CO₂ emissions, because every home will be within 400 metres of a bus stop and within an easy ten-minute walk of local shops and primary schools. With so many beautiful and spacious green lanes, it will be easy for everyone to cycle to work in and around NW Bicester. And for those who travel a little further, there will also be improved cycle and bus routes into Bicester that can connect into improved rail connections to Oxford and beyond. Real time travel information in every home will make use of public transport more accessible.

The network of rural footpaths and cycleways and a series of bus only road links will mean public transport is more rapid and frequent; enabling people to make sustainable travel choices. With a car club and network of charging points for electric vehicles, for those that do still require cars for longer journeys, we will inspire the use of hybrid or electric vehicles”.

6.4.29 The North West Bicester Masterplan sets out the following strategic access objectives for the wider site:

- Ensure future access and connectivity works with the surrounding area and the new proposed development;
- Ensure there are good connections within the development between all facilities;
- Ensure the development is well connected to the rest of Bicester;
- Enable a frequent and high-quality bus service to be provided;
- Give priority to strong walking, cycling and bus connections; and
- Minimise traffic going through existing communities.

6.4.30 The North West Bicester Masterplan outlines that walking and cycling routes through the Eco-Town will be of a high-quality with all-weather surfacing, well-lit and easily maintained. Where possible, these will be segregated from the carriageways and cyclists and pedestrians will also be segregated to avoid conflicts. Safety will be ensured by providing routes of appropriate widths and with numerous crossing points.

- 6.4.31 It is proposed that walking and cycling routes across the Eco-Town will be split into two distinct categories: 'Direct Routes' will act as commuting routes to enable direct and fast access to key local employment areas, schools, local centres and hubs; while 'Leisure Routes' will be introduced which will consist of longer meandering paths which will be more rural in nature.
- 6.4.32 The North West Bicester Masterplan states that bus routes through the Eco-Town will be designed to take residents in the most direct route possible to key destinations in Bicester including local centres, employment sites and public transport interchanges. A bus service is to be provided with frequent and direct links to the town centre and local facilities to encourage bus travel over car use.
- 6.4.33 The Eco-Town will have two bus routes: Bus Route 1 will serve the southern half of the Eco-Town while Bus Route 2 will serve the northern half where the Site is located. Both routes will loop within the side of the Eco-Town that they serve and then travel along Bucknell Road towards the town centre.
- 6.4.34 There are plans for a form of bus priority on Bucknell Road included in the North West Bicester Masterplan, as well as improvements to bus priority in the town centre. This will give advantage to buses on routes with heavy traffic flow therefore improving journey times and making bus travel a more attractive option.

2026 Future Baseline Traffic Flows

- 6.4.35 18-hour AAWT and 24-hour AADT baseline traffic flows and HGV% for the 2026 Future Base Year have been derived from the SATURN traffic model for each highway link in the study area. This data is provided in Table 6.10. The posted speed limit of each highway link has also been provided and has been used to undertake future year assessments which factor in the speed of the.

Table 6.10: 2026 Future Base Year Traffic Flows

Link Number	Link Name	Speed Limit	2-Way Vehicle Flows		
			All Vehicles AAWT (18-hour)	All Vehicles AADT (24-hour)	%HGVs > 3.5T (18-hour)
1	Charlotte Avenue	20	2712	3054	1%
2	B4100 Banbury Road (1)	40	21044	23694	9%
3	B4100 Banbury Road (2)	40	23206	26128	9%
4	B4100 Banbury Road (3)	40	9063	4546	9%
5	A4095 (1)	50	27841	31347	9%
6	A4095 (2)	50	12883	14505	9%

Summary of Receptors and Sensitivity

- 6.4.36 A review of each highway link within the study area has been undertaken to identify the presence of sensitive receptors both for the 2016 Base Year and 2026 Future Base Year. The receptors within the study area are shown in Table 6.11 alongside their potential level of sensitivity to road traffic.

Table 6.11: Summary of Receptor Sensitivity

Receptor	Sensitivity (Value)
Existing	
Charlotte Avenue	Residential – <i>low</i>
B4100 (1)	Residential – <i>low</i> Employment – <i>low</i> St Laurence Church – <i>low</i>
B4100 (2)	Residential – <i>low</i>
B4100 (3)	Residential – <i>low</i>
A4095 (1)	Residential – <i>low</i>
A4095 (2)	Residential – <i>low</i> Employment – <i>low</i>
Future	
Charlotte Avenue	Residential – <i>low</i> Gagle Brook Primary School – <i>high</i>
B4100 (1)	Residential – <i>low</i> Employment – <i>low</i> St Laurence Church – <i>low</i>
B4100 (2)	Residential – <i>low</i>
B4100 (3)	Residential – <i>low</i>
A4095 (1)	Residential – <i>low</i>
A4095 (2)	Residential – <i>low</i> Employment – <i>low</i>

6.5 Scheme Design and Management

Construction

- 6.5.1 There will be mitigation measures which will be in place during the construction phase on-site. It is important that construction traffic is managed and controlled to limit the impact on existing highway users and residents as far as practicable.
- 6.5.2 It is proposed to provide a temporary construction access along B4100 to the north of the Site using an existing field gate with all construction traffic using the peripheral roads (B4100 / A4095) to access the Site.
- 6.5.3 Detailed construction arrangements would be secured through a planning condition prior to commencement of development. A CEMP will be prepared and agreed with CDC before commencement of construction works. The CEMP will outline the following transport specific details:
- Site logistics;
 - Working hours;
 - Maintaining access;
 - General site layout (including accesses and routes);

- Construction traffic; and
- Designated access routes.

- 6.5.4 The CEMP will also include a Construction Traffic Management Plan (CTMP). It will be agreed with both the local planning authority and local highway authority and will describe the measures to prevent, reduce, and where possible, off-set the environmental effects from construction traffic activity.
- 6.5.5 Where possible, the CTMP would route construction traffic along the strategic highway network to limit any associated impact on the residential and town centre areas of Bicester therefore to reduce the impact of construction traffic on the town centre.
- 6.5.6 A Route Management Plan will be defined within the CTMP, reflecting any existing weight limit restrictions in the area. It will be implemented to control construction HGV movements to avoid them routing through sensitive areas on the local highway network.
- 6.5.7 Providing an appropriate level of parking on-site for construction activity is essential; over-provision would result in attracting too many vehicle trips, while under-provision could lead to fly-parking in the surrounding streets as well as less productive working as the workforce has further to walk. To serve the construction workforce at the Development, delineated areas will be provided for parking. Similarly, areas will be defined on-site for the parking of HGVs delivering to the Site. As part of the involvement with the contractors to minimise the movements on-site, the available levels of car parking will be monitored, and amended if required, to reflect the change in on-site activity.

Operational Development

- 6.5.8 The design and access strategy of the Development builds upon the aspirations of the North West Bicester Masterplan and Supplementary Planning Document. A vehicular access is provided off Charlotte Avenue. The Development also encourages travel by sustainable modes of transport both within the Eco-Town and towards Bicester town centre.

Cycle / Vehicular Parking

- 6.5.9 It is proposed that cycle parking will be provided for each residential unit as part of the development in accordance with the standards as set out in the adopted Cherwell Local Plan 2011-2031 document which states 1 space for each 1-bedroom unit and 2 spaces for each unit with 2 or more bedrooms, with an additional visitor parking stand provided for every two units.
- 6.5.10 Oxfordshire's Residential Road Design Guide¹¹ states that one allocated car parking space per dwelling will be acceptable at North West Bicester Eco-Town. This may be on-plot or off-plot. Off-plot provision may be grouped in a parking court provided the courts are small, close by, secure and conveniently accessed. Additional unallocated off-plot car parking may also be provided up to a maximum of one space per dwelling. Provision for car parking on-site will be made in accordance with the standards and policy set out by CDC and OCC. Resident car parking will be provided on-plot in garages or on driveways.
- 6.5.11 It is also proposed that space is to be provided in the northern corner of the Site, adjacent to the allotment area, for an informal parking area to cater for parking for the local Church Parishioners and users of the allotments.

Walk / Cycle Access

- 6.5.12 It is proposed pedestrian and cycle access into the Site will be taken from the adjacent Exemplar site. A recreational footpath / cycleway is proposed through the Site running around the periphery of the residential units within the open space to will enable access on foot and by cycle from residential areas in

the Exemplar site to the north and south-west. The detailed design of these routes would be established at the Reserved Matters stage.

- 6.5.13 The proposals will also allow for the future provision of a pedestrian link through the Site towards the Church of St Laurence located across B4100. The applicant is willing to provide an appropriately scaled financial contribution toward delivery of a pedestrian crossing facility across the B4100 Banbury Road, subject to ongoing discussions with OCC and S106 negotiations.
- 6.5.14 This strategy will provide strong pedestrian and cycle links from the Development to the wider Eco Town and surrounding areas and supports the wider walking and cycling access strategy of the North West Bicester Masterplan.

Public Transport Access

- 6.5.15 The location of the residential units will be within a 400m walking distance of the E1 bus route which runs along Charlotte Avenue through the adjacent Exemplar scheme and into Bicester town centre.
- 6.5.16 The Applicant is willing to provide an appropriately scaled financial contribution toward the delivery of the proposed local bus service improvements consistent with other local development sites, subject to ongoing discussions with OCC and S106 negotiations.
- 6.5.17 This strategy will provide strong public transport links from the Development to the wider Eco Town and surrounding areas and therefore supports the wider public transport access strategy of the North West Bicester Masterplan.

Vehicular Access

- 6.5.18 It is proposed vehicular access to the Site will be provided from Charlotte Avenue using an existing T-junction arrangement built out as part of the Exemplar scheme.
- 6.5.19 The new internal access road will include provision of a 5.5m carriageway and minimum 1.8m footways on either side of the carriageway, in accordance with local design standards. The internal street network will be designed in accordance with local guidance although remain subject to detailed design at the reserved matters stage. Further details are set out within the accompanying Design and Access Statement.

Travel Planning

- 6.5.20 As part of the operational phase of the Development, a Travel Plan (TP) is expected to be a condition of planning and will be in place to encourage travel by sustainable modes of transport and therefore mitigate against the environmental effects of the Development.
- 6.5.21 The overarching aim of the TP is to *“reduce the need or desire to travel through integrated design and provide sustainable travel choice options that have less reliance on private cars and seek to relieve congestion.”* This will in part be realised by the design of the Development, providing high quality facilities and levels of sustainable access by foot, cycle and public transport.
- 6.5.22 This overarching aim has been used to develop specific objectives for this TP:
- To create a high-quality environment for people to live in;
 - To reduce the need to travel by providing the facilities people need to work-from-home;
 - To promote the use of sustainable modes of travel, such as walking, cycling and public transport, and to provide information on such modes;

- To reduce the travel related carbon impact of the Development by reducing the number of single occupancy vehicle trips made by residents and to reduce the impact of traffic from the Development on the wider area;
- To provide a safe environment for those travelling by active modes, such as walking and cycling; and
- To provide the capability for ongoing management and development of the TP, as well as the measures.

6.6 Construction

Assessment of Effects

- 6.6.1 This section provides an assessment of the potential effects during the construction phase of the Development. The predicted volume of construction traffic to be generated by the Development has been determined through a calculation with regards to total floor space and HGVs with an average capacity of 10 tonnes. It assumes all 75 residential units to be 3-bed houses with standard construction techniques being used. This approach provides a means of forecasting the level of activity and the total number of deliveries to the Site in the absence of a more detailed construction management schedule.
- 6.6.2 It is understood the Development will come forward over a single-phased construction programme of between 18 and 30 months, with construction works likely to commence in Quarter 4 2018 and, assuming a worst-case programme, completing in Quarter 2 of 2021.
- 6.6.3 The calculation used as part of this assessment concludes the following level of construction traffic over an 18 to 30 month construction phase with a total of 260 working days per year:
- Up to 5 HGVs per working day; and
 - Up to 1 HGV per working hour (2 two-way HGV trips).
- 6.6.4 The construction phase of the Development is expected to include a temporary construction access located along B4100 to avoid the requirement for HGVs to travel along Charlotte Avenue. The movement of construction traffic will therefore route along B4100 and the A4095 in both directions.
- 6.6.5 With reference to Table 6.9, the 2016 Base Year 18-hour AAWT HGV flows on these highway links are as below.
- B4100 (1): 1,216;
 - B4100 (2): 1,257;
 - A4095 (1): 1,942; and
 - A4095 (2): 1,252.
- 6.6.6 The environmental effects of construction traffic on these highway links, all of which are considered to be temporary as they will be limited to the construction stage, are stated below.

Severance

- 6.6.7 A total of five HGVs (10 two-way HGV movements) over an 18-hour period equates to less than a 10% increase on both B4100 and A4095. Therefore, given the low magnitude of impact and low sensitivity of receptors on these links, it is predicted that construction traffic would have a **negligible** effect on severance.

Driver Delay

- 6.6.8 Given the low magnitude of impact and low sensitivity of receptors on these links it is predicted that construction traffic will have a **negligible** effect on driver delay.

Pedestrian Delay

- 6.6.9 Given the low magnitude of impact and low sensitivity of receptors on these links it is predicted that construction traffic will have a **negligible** effect on pedestrian delay.

Pedestrian Amenity

- 6.6.10 Given the low magnitude of impact and low sensitivity of receptors on these links it is predicted that construction traffic will have a **negligible** effect on pedestrian amenity.

Fear and Intimidation

- 6.6.11 The 18-hour AAWT HGV flows in the 2016 Base Year along B4100 and the A4095 already present a low degree of hazard for pedestrians. The addition of five HGVs (10 two-way HGV movements) over an 18-hour period along these links would still present a low degree of hazard for pedestrians and therefore the construction phase of the Development would have a **negligible** effect on fear and intimidation for pedestrians along these highway links.

Accidents and Safety

- 6.6.12 Given the low magnitude of impact, low sensitivity of receptors and limited record of existing or baseline accidents on these links, it is predicted that construction traffic will have a **negligible** effect on accidents and safety.

Mitigation and Residual Effects

- 6.6.13 Assuming the mitigation measures described under section 6.5 are implemented during the construction phase, i.e. the completion and adherence to a CEMP and CTMP, no further mitigation is considered necessary. As such, the residual effects during the construction phase of the Development will remain as those described above.

6.7 Completed Development

Assessment of Effects

- 6.7.1 This section provides an assessment of the potential effects of an increase in traffic on highway links in the study area as a result of the Development when complete.
- 6.7.2 The generation and assignment of peak hour development traffic (factored up to 18-hour AAWT flows) on to highway links across the study area has been undertaken based on the approach set out within the Transport Assessment.
- 6.7.3 18-hour AAWT flows for the highway links in the 2026 Future Base Year are shown in Table 6.10. This includes the % increase in traffic flow along these highway links as a result of Development traffic.

Table 6.10: 18-hour AAWT Flows and Development Traffic % Impact

Link Number	Link Name	2026 Do Nothing (Future Year without Development)		2026 Do Something (Future Year with Development)		% Impact (18-hour AAWT)
		18-hour AAWT	HGV %	18-hour AAWT	HGV %	
1	Charlotte Avenue	2712	1%	3260	1%	20%
2	B4100 Banbury Road (1)	21044	9%	21128	9%	0%
3	B4100 Banbury Road (2)	23206	9%	23671	8%	2%
4	B4100 Banbury Road (3)	9063	9%	9465	8%	4%
5	A4095 (1)	27841	9%	27872	9%	0%
6	A4095 (2)	12883	9%	12914	9%	0%

- 6.7.4 From the information provided in Table 6.10, the only highway link in the study area where traffic flows will change by more than either 10% as a result of the Development is Charlotte Avenue.
- 6.7.5 The other five links in the study area will all experience an increase in traffic flow as a result of Development traffic of less than 5% and in some cases 0% and have therefore been scoped out of any further assessment in this chapter.
- 6.7.6 It should be noted that this 20% increase in traffic flow along Charlotte Avenue in the 2026 Do Something scenario as a result of the Development is due to the fact that this is a new highway link built out as part of the North West Bicester Masterplan with a low baseline traffic flow. The percentage impact of Development traffic along Charlotte Avenue would in reality reduce further in the future as more of the Eco-Town scheme is built out over time beyond 2026.
- 6.7.7 Notwithstanding the above, an assessment of the potential environmental effects along Charlotte Avenue has been undertaken for the 2026 Do Something scenario in the context of a 20% increase in traffic flow.

Severance

- 6.7.8 The Development is predicted to increase 18-hour AAWT flows on Charlotte Avenue by 20% in the 2026 Do Something scenario against the 2026 Do Nothing scenario. This increase falls into the low magnitude of change identified in Table 6.4. The receptors identified adjacent to this highway link are of a low sensitivity (residential) and high sensitivity (Gagle Brook Primary School – which will be open in the 2026 Future Base Year). These effects are largely due to the low level of flow predicted on this link in the Do Nothing scenario.
- 6.7.9 Given the actual predicted flows (rather than percentage increase) and the design standard of the road, including low design speeds at 20mph and opportunities for safe pedestrian crossing, it is considered that severance is unlikely to be a significant constraint to movement.
- 6.7.10 It is therefore predicted that operational traffic from the Development would have a **negligible** effect on severance on this highway link.

Driver Delay

- 6.7.11 The Development is predicted to have a **negligible** effect on driver delay, on the basis of the low magnitude of change and the residual capacity available on this link when considering future traffic flows and the design standards of the road itself.

Pedestrian Delay

- 6.7.12 The Development is predicted to have a **negligible** effect on pedestrian delay, on the basis of the low magnitude of change, consideration of the future traffic flows and given there are adequate crossing facilities designed into the link.

Pedestrian Amenity

- 6.7.13 The Development is predicted to have a **negligible** effect on pedestrian amenity, on the basis of the low magnitude of change, consideration of the future traffic flows and integration with local developments has adequately catered for future pedestrian use.

Fear and Intimidation

- 6.7.14 The average hourly traffic flow over an 18-hour period along Charlotte Avenue is predicted to be 181 vehicle movements in the 2026 Do Something scenario. This level of traffic flow equates to a negligible degree of hazard for pedestrians. In terms of HGV flow, it is predicted that Charlotte Avenue would have a total of 33 HGV movements over an 18-hour day which equates to a **negligible** degree of hazard for pedestrians.

Accidents and Safety

- 6.7.15 It is not predicted that Development traffic flows along Charlotte Avenue would present a risk to accidents and safety due to the design of this highway link and relatively low future traffic flows.

Mitigation and Residual Effects

- 6.7.16 Assuming the mitigation measures identified to support the operation of the Development and described under section 6.5 are implemented, no further mitigation is considered necessary. As such, the residual effects during the construction phase of the Development will remain as those described above.
- 6.7.17 The residual effects during the operational phase of the Development will remain as those described above.

REFERENCES

- ¹ Department for Communities & Local Government, 2012. *National Planning Policy Framework*. March 2012
- ² Department for Communities and Local Government, 2015. *Planning Practice Guidance - Environmental Impact Assessment*. ID 4, updated: April 2015. Available online at:
<http://planningguidance.planningportal.gov.uk/blog/guidance/environmental-impact-assessment>
- ³ Department for Communities & Local Government, 2009. *Planning Policy Statement: Eco Towns – A Supplement to Planning Policy Statement 1*. July 2009
- ⁴ Oxfordshire County Council, 2016. *Oxfordshire Local Transport Plan 4 (LTP4)*. September 2015 – updated 2016
- ⁵ Cherwell District Council, 2016. *Cherwell Local Plan 2011-2031 – Part 1*. December 2016
- ⁶ Oxfordshire County Council, 2011. *Oxfordshire Parking Standards for new residential developments*. December 2011
- ⁷ Oxfordshire County Council, 2017. *Oxfordshire Walking Design Standards. A guide for Developers, Planners and Engineers Summer 2017*
- ⁸ Oxfordshire County Council, 2017. *Oxfordshire Cycling Design Standards. A guide for Developers, Planners and Engineers Summer 2017*
- ⁹ Cherwell District Council, 2016. *North West Bicester Supplementary Planning Document*. February 2016
- ¹⁰ Institute of Environmental Assessment, 1993. *GN 1 Guidelines for the environmental assessment of road traffic*
- ¹¹ Oxfordshire County Council, 2013. *Oxfordshire's Residential Road Design Guide*. 2013, as amended 2015

7 Cultural Heritage

7.1.1 This chapter of the ES has been prepared by CgMs Consulting and assesses the likely significant effects of the Development in regards to built heritage and archaeology. The chapter presents a summary of the built heritage and archaeology baseline work undertaken for the Site. It is supported by, and should be read in conjunction with, the following:

- Appendix 7.1: Built Heritage Statement (CgMs, 2018); and
- Appendix 7.2: Archaeological Desk-Based Assessment (DBA) (CgMs, 2018).

7.1.2 This chapter describes the methods used to establish baseline conditions currently existing on the Site; the methodology used to determine potential impacts and the mitigation measures required to prevent, reduce or offset (where possible) any significant adverse impacts; and the likely effects after these measures have been implemented.

7.1.3 Built Heritage includes potential effects on the setting of designated (listed buildings) or non-designated historic buildings, Conservation Areas and Registered Parks and Gardens.

7.1.4 Potential impacts on archaeology include the impact of construction on buried remains found within the Site and impacts on the setting of Scheduled Monuments within the local area.

Competence

7.1.5 Florence Maxwell BA (Hons) MA, Senior Built Heritage Consultant, has four years of experience working in the Built Heritage sector, across both the private and public sectors. As part of this Florence has experience in producing conservation area appraisals, built heritage appraisals for alterations to sensitive listed buildings, heritage appraisals for large scale developments within the setting of heritage assets and ES Chapters. This follows on from a Masters degree in Building Conservation from the University of York.

7.1.6 Nick Cooke BA (Hons), PhD, MCIfA, FSA, Director, Historic Environment has over twenty years' experience in commercial archaeology and consultancy. He has undertaken work for transport and infrastructure providers as well as public agencies and private sector developers. His experience includes road, rail and aviation projects, renewable energy schemes and a considerable number of large-scale residential and commercial schemes. He has experience in writing Environmental Statements, Heritage Appraisals, Scheduled Monument Consent applications, Impact & Desk Top Assessments, Expert Witness Reports and Written Schemes of Investigation.

7.2 Legislation, Planning Policy and Guidance

7.2.1 The assessment of impact on cultural heritage resources by the project has been conducted in-line with the guidance provided in:

- Ancient Monuments and Archaeological Areas Act 1979, amended by the National Heritage Act 1983 and 2002, and updated in April 2014¹;
- National Planning Policy Framework (NPPF) (2012) Section 12 Conserving and enhancing the historic environment, Paragraphs 126 to 141²;
- Cherwell Local Plan 2011-2031 (Part 1) (re-adopted December, 2016)³;
- Town and Country Planning (Environmental Impact Assessment) Regulations 2011⁴;

- Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets published by Historic England (revised 2017)⁵; and
- Conservation Principles, Policies and Guidance published by English Heritage 2008⁶.

7.3 Assessment Methodology

Consultation

- 7.3.1 Following submission of an EIA Screening Request to CDC, an EIA Screening opinion was received from CDC on 7th February 2018 which concluded the need for an EIA. The Opinion states that the Site *“has a number of site constraints including that there are heritage assets within proximity (including potential for archaeology)”*. It also goes on to state that there is *“the potential for impacts upon the setting of nearby heritage assets”*.
- 7.3.2 CDC also provided a response to an informal Scoping Note on the proposed scope of the ES on 26th February 2018. Whilst the potential for archaeology has been assessed as being low, this has been included within the EIA in order to ensure that all potential topics are covered.
- 7.3.3 There has not been direct formal consultation with the Conservation Officer or Historic England at this point.

Study Area and Scope

- 7.3.4 Given the surrounding topography and built development, an initial study area of 1km was identified, within which there might be built heritage assets which had the potential to be impacted. It was found that most assets within this 1km search radius will not be impacted by the Development due to sharing no visual or functional connection with the Site.
- 7.3.5 In order to assess the potential for archaeological remains a 2km study area around the Site was identified. Data on designated and non-designated archaeological assets within this study area was used to determine whether the scheme would impact on any designated assets (World Heritage Sites, Scheduled Monuments, Protected Wreck Sites or Registered Battlefields) or non-designated assets either within the Site or within the wider study area.

Establishing Baseline Conditions

- 7.3.6 The baseline conditions for archaeological assets are set out in the accompanying Archaeological DBA (Appendix 7.1). This was based on a consideration of evidence in the National Heritage List for England, Oxfordshire County Council Historic Environment Record (HER), Oxfordshire History Centre, Cherwell District Council website and various on-line sources. It included a consideration of available historic maps, aerial photographs and LiDAR data. This was supported by a site visit and walkover undertaken on 20th January 2018.
- 7.3.7 Built Heritage Baseline conditions for the Site were determined through a walkover of the Site and the surrounding area in February 2018. Whilst weather was overcast and wet, full and clear appreciation of the Site and surrounding heritage assets was possible. This was backed up by historic research and an assessment of Historic England data sets.
- 7.3.8 The reports and studies have been undertaken in accordance with guidance published by Historic England and the Chartered Institute for Archaeologists (CIFA) regulations, standards and guidelines, specifically, the CIFA Standard and guidance for desk-based assessment.

Determining Effect Significance

Sensitivity of Receptor

- 7.3.9 The sensitivity of a cultural heritage receptor (heritage asset) will depend on factors such as the condition of the asset and the perceived heritage value/importance of the asset. The sensitivity of the heritage asset is defined by its importance in terms of national, regional or local statutory or non-statutory protection and grading of the asset. The non-statutory criteria used by the Secretary of State for Scheduling Ancient Monuments provide relevant criteria to assist this process, as do the Historic England Listing Selection Guides and the DCMS Principles of Selection for Listing Buildings document. Table 7.1 below sets out the criteria for assessing sensitivity.

Table 7.1: Receptor Sensitivity Descriptors

Value (Sensitivity)	Descriptor
High	World Heritage Sites; Scheduled Monuments and Areas of Archaeological Importance; Archaeological Sites of schedulable quality and importance; Registered battlefields; Protected wreck sites; Listed Buildings; and Registered Parks and Gardens.
Medium	Local Authority designated sites e.g. Conservation Areas; and Non-designated sites of demonstrable regional importance.
Low	Sites with specific and substantial importance to local interest groups; and Sites whose importance is limited by poor preservation and poor survival of contextual associations.

Magnitude of Impact

- 7.3.10 The determination of magnitude of change is based on the level of impact upon cultural heritage resources e.g. temporary or permanent land take or excavation, ground disturbance and compaction, change to setting of built heritage; and the current state of survival/condition of the receptor e.g. the nature of past development or management effects. Such change can be adverse or beneficial and may also be reversible or irreversible.
- 7.3.11 Development impacts can be characterised as to whether they would be:
- Temporary or Permanent;
 - Direct or Indirect; and/or
 - Cumulative.
- 7.3.12 The magnitude of impact is assessed by taking into consideration the extent/proportion of the asset affected, its type, its existing degree of survival/condition, and its potential amenity value. In considering the above factors, the criteria for assessing the magnitude of predicted change on cultural heritage resources are given in Table 7.2.

Table 7.2: Magnitude of Impact Descriptors

Level of Impact		Descriptor
High	Adverse	Almost total loss of a heritage asset's importance Change to a heritage asset's setting such that its importance is markedly reduced.
	Beneficial	Prevention of further degradation of the asset consistent with safeguarding its heritage significance. Increase accessibility and understanding of visible assets by removal of visibly intrusive elements.
Medium	Adverse	Partial loss or alteration of the importance/value of a heritage asset. Considerable change to a heritage asset's setting, such that the asset's importance would be materially affected/considerably devalued, but not totally or substantially lost.
	Beneficial	Reduce rate of current degradation, improve setting, enhance existing character.
Low	Adverse	Slight loss of the importance of a heritage asset. This could include the removal of fabric that forms part of the heritage asset, but that is not integral to its importance. Some change to the heritage asset's setting, to the degree that it would only marginally compromise the importance of the heritage asset.
	Beneficial	Reintroduce accessibility to below-ground archaeological asset.
Negligible	Adverse	A very slight change to a heritage asset. This could include a change to a part of a heritage asset that does not materially contribute to its importance. Very minor change to a heritage asset's setting such that there is a slight impact not materially affecting the heritage asset's importance.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

Assessing Significance

- 7.3.13 The sensitivity of the receiving environment, together with the magnitude of change, defines the significance of effects as set out in table 7.2 below. This table differs from that set out in Chapter 3: EIA Methodology above, as low magnitudes of impact to highly sensitive heritage assets does not always equate to a moderate significance of effect, but rather a minor one. Effects of 'moderate' or 'major/substantial' significance are considered to equate to significant effects in the context of EIA Regulations. Assessment of the effect of development on the setting of heritage assets follows the guidance issued by Historic England in 2015.

Table 7.3: Significance of effect

Value (Sensitivity)	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate/Minor	Negligible
Medium	Major	Moderate/Minor	Minor	Negligible
Low	Moderate/Minor	Minor	Negligible	Negligible
Negligible	negligible	Negligible	Negligible	Negligible

Evidence Assumptions and Limitations

- 7.3.14 The application is for outline planning permission only, and therefore there are a number of unfixed details against which assumptions have been made. The following assessment is made on the assumption that the proposed residential development will be no more than three storeys (not exceeding 13 metres to ridge height).
- 7.3.15 The report has been written based on the Parameter Plans which define the areas and scale of built development.

7.4 Baseline Conditions

Built Heritage

- 7.4.1 The Site includes no built heritage assets within the boundary. There are nine listed buildings within 1km of the Site, however the majority of these will be unaffected by the Development due to the lack of any visual or functional connection with the Site. Of the listed buildings within 1km, only the Church of St Laurence (Grade II*) and Home Farmhouse (Grade II) are considered to have the potential to be affected. These two listed buildings are therefore discussed below, with all others having been scoped out. In addition, the complex of buildings at Caversfield House were considered within the baseline report to be worthy of non-designated heritage asset status and so are therefore considered below.

Home Farmhouse

- 7.4.2 Home Farmhouse is an early-mid seventeenth century farmhouse, with eighteenth and nineteenth century extensions, which was designated as a Grade II listed building in 1987. The building is constructed from coursed squared limestone, with ashlar dressings and has a gabled roof which is covered with old plain tiles, and at each gable end. The building is two storeys in height and a three unit plan, in addition to the added rear extensions.
- 7.4.3 The importance of the building is principally derived from the architectural and historic special interest of the asset, which is embodied within its historic fabric. It has a degree of evidential value, with it having the potential to yield evidence about historic farming practices and the association with accommodation in the seventeenth century. There is also illustrative value derived from the historical development of the building. The aesthetic value of the building has been maintained through the lack of alterations to the exterior of the building, particularly the front elevation.
- 7.4.4 The immediate setting of the heritage asset is quite extensive, including the gardens immediately to the west, and the farm buildings which surround it to the north, east and south. The stone built farm buildings which are older and possess some architectural and historic value, contribute to the farmhouse through demonstrating the historic setting and the style of corresponding farm buildings at

the time. The twentieth-century farm buildings also contribute to the listed building's historic interest, through providing evidence of the continued use of the Site for farming purposes. Architecturally, they do not contribute to the significance of the asset. The gardens of the property appear as domestic gardens, which contribute to the aesthetic value of the building, rather than to the understanding as a historic farmhouse. The gardens are marked on the Tithe map and therefore show the continued use of this space as gardens since at least the mid-nineteenth century.

- 7.4.5 The wider setting of the asset is made up of the surrounding agricultural fields, as well as St Laurence's Church to the north-east, Caversfield to the south-east, and the new development which has taken place to the north-west, west and south-west of the farm. The farmhouse has lost much of its connection to the surrounding agricultural land due to later residential development, however those parts immediately surrounding it do still allow for some understanding of the building in its rural and agricultural context. These fields include the Site, which was historically functionally connected to the Farmhouse through forming part of the land associated with the farm. There is very limited experience of this from the Farmhouse, with the Site being physically divorced from the farmhouse by a dense tree belt. The high level of vegetation surrounding the farmhouse, some of which is historic planting presumably designed to separate the domestic building from its historical agricultural surrounds, means that there is very limited experience of these fields from the asset, and from the Site there are only glimpses of the roof of Home Farmhouse. Whilst historically there was a functional connection, the understanding of this is now relatively limited, and therefore the contribution this makes is lessened. The development which has taken place around the asset has reduced the contribution that the wider setting makes to the significance of Home Farmhouse, through making the farmhouse appear as part of a larger settlement. Therefore, whilst the understanding of the functional link between the Site and the Farmhouse has been eroded by the surrounding modern development, the farmhouse and its farm buildings do still share some remnant functional connection to the Site. This lacks legibility due to the clear visual separation, and the domestic function that the building now serves.

The Church of St Laurence

- 7.4.6 The Church of St Laurence was designated as a Grade II* listed building in 1966. The building originally dates to the tenth/eleventh century, with alterations in the twelfth and thirteenth centuries, and a restoration and rebuilding programme in 1874. The building is formed of a number of gabled elements, covered with a mix of Stonesfield-slate and concrete plain tile. The Church consists of a simple plan, with a chancel, aisled nave and west tower.
- 7.4.7 The importance of the listed building is principally embodied within its historic fabric, which provides the building with special architectural and historic interest. The development of the building over time demonstrates changing architectural styles and provides the building with a high level of evidential value. There is also the potential for further elements to be uncovered, which may have been obscured by later alterations. The building also has a high degree of illustrative value, showing the value of the church within society throughout its history, with continued investment and changes. The aesthetic value of the church is, unlike many other churches, appreciated more from the immediate surrounds. This is not apparent at greater distance due to the relatively small tower, and the flat surrounding landscape preventing long reaching views of the Church. There is also a high level of vegetation screening surrounding the churchyard which limits views. Viewpoint six in the LVIA demonstrates that the views of the Church are limited to those from only a small part of the Site due to surrounding vegetation and the level topography. There is still a high level of aesthetic value derived from the architectural quality of the Church. The Church has served as a community place of worship since the tenth century and as such it has a high level of communal value. Further communal value is derived from the 25 Commonwealth War Graves in the Churchyard connected with RAF Bicester dating to before and during the Second World War.

- 7.4.8 The immediate setting of the Church is made up of the small churchyard which surrounds it. This has a number of Commonwealth Graves, as mentioned above, which contribute to the significance of the Church through demonstrating its relationship to RAF Bicester. The churchyard is heavily treed which provides an enclosed and verdant character, contributing to the character of the Church as an isolated rural Church. As mentioned above, this is evidenced in viewpoint six of the LVIA.
- 7.4.9 The wider setting extends to Caversfield House and the associated buildings to the north-west and north-east. These, whilst not contemporary with the Church, demonstrate the historic setting of the Church because, whilst Caversfield House itself is a late nineteenth-century structure, it replaced an earlier house, and illustrates the relationship between the Church and the Manor House in Caversfield. The wider setting also extends to include the wider agricultural landscape, including the Site. From some parts of the Site there are some views of the Church, however from ground level of the Church there is limited experience of the Site. Whilst the Site forms part of the open agricultural landscape, any contribution to the Church has been heavily reduced by the development to the east of the Site and the busy B4100 which separates the asset from the Site. Any contribution made to the overall importance of the asset is limited.

Complex of Buildings at Caversfield House

- 7.4.10 Caversfield House is located to the east of the Site, to the north-east of the Church of St Laurence. It dates to 1842-5, replacing an earlier manor house in the same location. The House itself shares no visual or apparent functional connection to the Site; however the buildings to the south-west of the house, some of which are older than the house itself, do share some visual link with the Site. Caversfield House is not visible from the Site or publically accessible locations. There is a description within Pevsner (1974), however, from map imagery it appears that the building has changed dramatically in planform since the 1970s, and therefore it is likely that this description is outdated. Due to sharing no functional or visible link with the Site no description is attempted here, with this assessment focussing on those buildings associated with Caversfield House which do share a visible link with the Site.
- 7.4.11 To the south-west of the House there is a courtyard of buildings. These are glimpsed from parts of the Site, with their rooflines being visible. The building at the north-eastern side of the yard is the oldest part of the complex, dating to pre-1854. The building is formed of a stone built outbuilding with a red tiled gable roof, and a large central double height carriage way. The other buildings in the courtyard were constructed between 1881 and 1899. They are constructed from a combination of stone and red brick and also have tiled roofs. The north-western front appears from glimpses to be residential in nature and it is likely that this was built as some form of accommodation, either to supplement the main house or to form a rectory for the Church. The south-western front is a single storey outbuilding, converted for residential use. This is stone built, with a gabled red tile roof. It also has lead capped pinnacles on the roof which were likely built as ventilation for the building prior to its conversion.
- 7.4.12 The low importance of the building is derived from its architectural and historic interest. The development of the complex of buildings over time shows changing architectural and social practices. There is also aesthetic value derived from the architectural quality of the buildings, which can be seen even in the outbuildings. Any value of the building is considered to be of local value and this is reflected in its lack of statutory designation.
- 7.4.13 The complex of buildings has a large immediate setting, with this being formed of the grounds that surround it. These grounds are made up of a variety of different areas, all used as gardens. They are heavily treed and this creates an isolated and secluded character, contributing to the significance of the assets as a self-contained complex. The wider setting extends to include the Church of St Laurence, in addition to the wider agricultural surroundings, including the Site. From the Site there are some

glimpses available of parts of the complex, which allows for some understanding of the history of the buildings. These fields also place the complex within its rural surrounds and show the relative isolation. It is considered however that the Site itself only makes a limited minor positive contribution, with visual and functional connection between the Site and the assets being limited.

Archaeology

- 7.4.14 The archaeological DBA determined that there are no designated archaeological assets (World Heritage Sites, Scheduled Monuments, Protected Wreck Sites or Registered Battlefields) either within the Site or the study area. As a result, the Development will have no impact on any designated archaeological assets or their settings.
- 7.4.15 Furthermore, there are no known undesignated assets within the Site. In the light of this, professional judgement has been applied to determine the likely potential for buried archaeological remains within the site, based on the evidence from the surrounding study area. The Archaeological DBA has established that there is a very low or negligible potential for prehistoric and Romano-British remains within the Site based on the scarcity of evidence of this date within the study area.
- 7.4.16 The Site lies some 300m to the south-west of the deserted medieval village of Caversfield, which is mentioned in the Domesday Book as a moderately sized settlement of 21 dwellings. Oxfordshire County Council's Pre-Application Advice included the suggestion that low earthworks on the eastern edge of the Site may have been related to this deserted settlement. Analysis of the LiDAR data for the Site, the map regression exercise and the site visit suggests that these earthworks within the Site comprise the remnants of a filter bed shown on 20th century mapping and the line of a relatively modern tree line. Other earthworks evident on the ground are absent on aerial photographs of the Site, supporting the interpretation that these are modern. The Site appears likely to have formed part of the agricultural hinterland of the medieval settlement at Caversfield, although no traces of the characteristic medieval open field 'ridge and furrow' agriculture were noted, and the potential for the Site to contain previously unknown medieval remains was considered to be very low or negligible.
- 7.4.17 In the post medieval and modern period, the land appears to have been agricultural land, peripheral to the nearby Caversfield House estate. Although post medieval fishponds belonging to the estate are recorded nearby, there is no evidence for the Site having been used as anything other than agricultural land. The map regression exercise has determined that the Site was agricultural land throughout the 19th and 20th centuries, apart from the insertion of a rectilinear filter bed evident on the Ordnance Survey Map of 1900. In the light of this, the potential for the site to contain remains of this date has been judged to be very low/negligible.
- 7.4.18 Previous use of the land for agriculture throughout the 19th and 20th century is likely to have truncated any archaeological features or deposits on the Site through the action of the plough. In the light of this, and using the criteria set out above, the likelihood of encountering previously unknown remains of any period within the site is considered **low**.

Summary of Receptors and Sensitivity

- 7.4.19 The cultural heritage receptors are summarised below, and their level of sensitivity assigned.

Table 7.4: Summary of Receptor Sensitivity

Receptor	Sensitivity (Value)
BH1: Home Farmhouse (Grade II, NHL: 1200170)	High

Receptor	Sensitivity (Value)
BH2: Church of St Laurence (Grade II*, NHL: 1046533)	High
BH3: Caversfield House and Associated Buildings	Low
BH4: Below Ground Archaeology	Low

7.5 Scheme Design and Management

7.5.1 A full description of the development can be found in Chapter 5: Description of Development. This application is for outline permission only, and therefore there is the potential for further mitigation measures to be built in to the reserved matters stage. There are however a number of mitigation measures which have already been built in to the outline development in order to reduce the potential significance of effect on heritage assets.

7.5.2 The principal mitigation strategy for the Development in relation to built heritage is to maintain a large area of open space in the eastern and southern parts of the Site. This will ensure a separation between the Development and the listed buildings. A vista to the Church of St Laurence will also be maintained through the Development in order to ensure a view of the tower of the Church. In addition, it is proposed that there will be an area of orchard planting on the eastern plot of the Development which sits directly adjacent to Banbury Road and supplementary tree planting within the remainder of the Site as appropriate. Access will be from the adjacent Exemplar development to the west of the Site via Charlotte Avenue, which will therefore mitigate indirect impacts from increased traffic along Banbury Road.

7.6 Construction

Assessment of Effects

Home Farmhouse

7.6.1 The construction phase will result in an impact on the importance of Home Farmhouse. This will result in a further loss of the rural setting within which the farmhouse was once located. The contribution made by this rural setting has been reduced due to the construction of the Exemplar Site to the south and west, and although the Site does provide a remnant part of this rural setting which contributes to the understanding of the asset to some degree, this makes a limited contribution to the significance of the asset. In addition, the connection between the Site is limited both visually and functionally, with dense tree screening preventing clear views between the two, and also providing for a clear functional separation between the rural landscape and the farmhouse itself. The loss of rural setting will be initiated as soon as construction begins. In addition, there is also the potential for impacts through construction light and noise, which would further reduce the rural nature of the asset.

7.6.2 It is considered that impact arising from the construction of the development of Home Farmhouse will be temporary in nature, lasting the duration of the construction process and therefore is likely to be short term. The construction will result in a direct, low, adverse impact, resulting in a marginal compromise of the importance of the asset. When considered against the high importance of the asset, as a Grade II listed building, this will result in a temporary minor adverse significance of effect, which is not significant in EIA terms.

Church of St Laurence

- 7.6.3 There will be an impact to the Church of Laurence resulting from the construction phase of the Development due to the loss of some of the rural setting which surrounds the Church. This will however be limited due to the isolated nature of the Church in its grounds, which will be maintained, and due to the current separation by the busy Banbury Road. In addition, the Site makes only a limited contribution to the overall significance of the heritage asset, particularly as the rural setting has already been removed by the construction of the Exemplar Site. Noise will have some impact on the Church, and will impede on the tranquil nature, as will some degree of light spill.
- 7.6.4 Any impact will be temporary in nature, resulting in short term impacts during the construction process. The result will be a direct, low, adverse impact which will be derived from the marginal compromise of the importance of the asset, through some change to the heritage asset's setting. This will result in a temporary minor adverse significance of effect which is not significant in EIA terms.

Complex of Buildings at Caversfield House

- 7.6.5 The buildings at Caversfield House will see some degree of impact from the construction of the Development, due to the loss of a small part of the rural setting. As with the Church, this is already compromised by the busy Banbury Road which separates the Site and the asset and by the Exemplar Site which has already been constructed. Noise and light spill will increase and this will further reduce the isolated nature of the assets.
- 7.6.6 The construction impacts will be temporary in nature with the impacts being short term for the duration of construction. Resulting impact will be a direct low, adverse impact. Given the low importance of the heritage asset, this will result in a negligible significance of effect which is not significant in EIA terms.

Archaeology

- 7.6.7 Assessment of the archaeological assets likely to be impacted by the Development has established that no receptors beyond the limits of the Site will be affected by the Development. Within the Site, the potential for archaeological remains has been judged to be low. Construction of the Development has the potential to impact negatively on any buried archaeological remains present, particularly in the western half of the Site where building foundations will be required. The impact that this would have on buried archaeological remains would be low, resulting in a negligible significance of effect.

Mitigation and Residual Effects

Built Heritage

- 7.6.8 Mitigation during the construction phase is possible for built heritage through adherence to good site practice measures, as set out in the CEMP. These are likely to include site hoarding, a construction logistics plan, incorporation of a construction lighting strategy and provision of time limits on construction work to reduce the impacts of noise and light pollution on the nearby heritage assets. These measures have already been assumed in the above assessment and as such the residual effects of the Development would remain as stated above.

Archaeology

- 7.6.9 The Development limits most impacts to the western half of the Site by limiting the built form to this area, with only low level impacts elsewhere. There are no predicted impacts on the settings of designated or undesignated archaeological assets beyond the Site, and the archaeological potential of the Site for all periods is considered low. It is considered that the Development will have a residual impact of negligible significance of effect on buried archaeological remains as stated above. In the light of this, no specific mitigation has been proposed for archaeological remains. Should the archaeological

advisors to Oxfordshire County Council consider that additional work is required, this could be secured by an appropriately worded planning condition.

7.7 Completed Development

Assessment of Effects

Home Farmhouse

- 7.7.1 The completed Development would result in some impact on the overall importance of Home Farmhouse. The loss of rural setting from the construction phase will be continued, with development further enclosing the rural setting of the asset. This impact is largely to the remnant functional connection between the Site and farmhouse, with visual connection being limited by vegetation. In addition, the contribution made by the rural setting has already been impacted by the development of the Exemplar Site, and as such the contribution that the Site makes to the significance of the asset is limited. A large area of open space is present to the north of the farmhouse as part of the Development proposals, which would reduce the level of impact, through allowing for some continued separation from the built development. In addition, the south-eastern Site boundary will be strengthened by supplementary planting to provide visual screening. Increased noise from inhabitation of the Development will have an impact on the isolation of the farmhouse, as will light spill from the housing and street lighting.
- 7.7.2 Due to the visual separation of the Site and the Farmhouse, and the fact that the functional connection is only legible to a degree, it is considered that the completed Development will result in a direct, low, adverse impact. This will be permanent and long term in nature. When considered against the high importance of the asset this will result in a **minor adverse** significance of effect.

Church of St Laurence

- 7.7.3 The Church of St Laurence will be physically separated from the Development by both Banbury Road and the area of open space built in to the proposals. This will ensure that impact is reduced. In addition, whilst there are some views available of the tower of the Church, the Development has allowed for a vista to the church along the residential avenue through the Development which reduces the impact on the Church, as shown in viewpoint six of the LVIA. There will be a high level of planting at the eastern edge of the Site and within the Eastern Plot associated with the community orchard which will provide separation between the Church and will reinforce its generally secluded nature. The addition of orchards at the east of the development will provide further screening between the asset and both the Site and development already taking place at the Exemplar Site. Whilst the Development will remove some of the wider rural setting of the Church, this makes very little contribution to the overall importance of the Church of St Laurence.
- 7.7.4 It is considered that whilst there will be some impact through the loss of open space surrounding the asset, this will result in only a minor, direct, adverse impact, which will be permanent and long term in nature. When considered in relation to the high importance of the asset as a listed building this will result in a **minor adverse** significance of effect.

Complex of Buildings at Caversfield House

- 7.7.5 The complex of buildings at Caversfield House will lose some of their rural setting and outlook with the Development, although this has already been largely altered by the new development to the west and north-west of the Site. The buildings are separated from the Site by the Banbury Road, which is a busy highway, and this therefore reduces the contribution that the Site makes to the assets. There will be

some loss of views of the upper storeys of the buildings from the Site; however these make very limited contribution to the importance of these assets.

- 7.7.6 It is therefore considered that whilst there will be some low level of impact through the loss of the rural surroundings, this will result in only a minor, direct, adverse impact. This will be permanent and long term in nature. When considered in relation to the low importance of the asset this will result in a **negligible** significance of effect.

Archaeology

- 7.7.7 This assessment has established that there will be **no impacts** on archaeological assets during the post-construction phase.

Mitigation and Residual Effects

- 7.7.8 There has already been mitigation built-in to the Development by way of planting and screening at the eastern edge of the Site and through providing a vista through to the tower of the Church of St Laurence. This has reduced the effect on heritage assets and has been taken into account within the assessment of effects above. Furthermore, orchard planting and screening on the south-eastern boundary of the Site would serve to further mitigate against potential effects between the heritage assets and the Development by providing a more physical separation and would allow the proposed open space to retain a more isolated character, although would not lower the assessed level of significance of effect.
- 7.7.9 Proposed housing will not rise above three storeys in height (13m to ridge height), with the majority not to exceed two storeys, and should be designed to be sympathetic to the local materials and style as defined in the supporting Design and Access Statement and Development Specification. This will be detailed during the reserved matters stage.
- 7.7.10 Whilst these mitigation measures would assist in reducing impacts to some degree, this would not be to such an extent that the overall impact, and significance of effect would be reduced, with impacts to Home Farmhouse and the Church of St Laurence remaining at a minor adverse significance of effect, and at a negligible significance of effect to the complex of buildings at Caversfield House. These are not significant effects in EIA terms.
- 7.7.11 In the light of the low potential for archaeological remains on-site, no specific mitigation measures are proposed. The Development has been assessed to have a negligible significance of effect, and the only potential impacts would be during the construction phase. No residual effects are anticipated.

7.8 Cumulative Effects

Built Heritage

- 7.8.1 The majority of cumulative schemes identified will have no cumulative impact on heritage due to distance and sharing no visual or functional connection and have therefore been discounted from further discussion below. It is considered that only two of the identified schemes have the potential to have cumulative impact on heritage. These are number 1: Bicester Eco Town Exemplar Site (10/01780/HYBRID) and 3: Bicester Eco Town Exemplar Site ('SGR2' Site) (14/01384/OUT). As these have already received planning consent and development has commenced in some locations and been completed in others, the baseline has been written based on the impact of the Development in conjunction with these, as these represent the current situation.

- 7.8.2 If these proposals had not received planning consent and had not been commenced, impact from the Development would be greater, as the farmhouse and church would be read more in a rural context. However, given that this has already been largely removed by the approved developments, the impact from the Development is lessened. As such, when the cumulative impact of the Development and the consented development is considered, the impact on the Church of St Laurence and Home Farmhouse will remain at a minor impact, resulting in a minor adverse significance of effect.

Archaeology

- 7.8.3 This assessment has determined that the only potential for the Development to impact upon archaeological assets would be impacts on previously unknown buried archaeological remains within the Site itself. In the light of this, no cumulative effects have been identified.

REFERENCES

- ¹ Her Majesty's Stationary Office (HMSO), 1979 as amended. *Ancient Monuments and Archaeological Areas Act (1979, amended by the National Heritage Act 1983 and 2002, and updated in April 2014)*
- ² HMSO, 2012. *National Planning Policy Framework*, March 2012
- ³ Cherwell District Council, 2015. *Cherwell Local Plan 2011-2031 Part 1*, July 2015
- ⁴ HMSO, 2017. *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. The Stationary Office. May 2017.
- ⁵ Historic England, 2017. *Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets published by Historic England (revised 2017)* <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/>
- ⁶ English Heritage, 2008. *Conservation Principles, Policies and Guidance*, April 2008
<https://historicengland.org.uk/advice/constructive-conservation/conservation-principles/>

8 Cumulative Effects

8.1 Introduction

8.1.1 This Chapter considers the likely significant cumulative effects of the Development as required by the EIA Regulations. The assessment of 'inter-project' cumulative effects for Transport, Cultural Heritage and Landscape and Visual Effects are presented in each of the technical chapters (i.e. chapters 6 & 7 and Volume 2 of the ES). Inter-project effects are the effects of the Development in combination with other (cumulative) schemes.

8.2 Legislation, Planning Policy and Guidance

Legislation Context

8.2.1 European Commission (EC) Directive 2011/92/EU¹ requires assessment of "the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent or temporary, positive and negative effects of the project".

8.2.2 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017² state the following:

- Schedule 3(1): "*the characteristics of development must be considered with particular regard to... b) with other existing development and/or approved development*"; and
- Schedule 4(5) "*A description of the likely significant effects of the development on the environment resulting from, inter alia... the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*".

8.3 Methodology and Assessment Criteria

8.3.1 As discussed in Chapter 3: EIA Methodology, the majority of technical topics have been scoped out of full assessment within this EIA. However, to allow full and robust consideration of cumulative effects, the cumulative assessment evaluates the potential for significant cumulative effects across all topics (as outlined in Table 3.1) during construction and as a result of the completed Development. This assessment draws upon the conclusions of technical studies supporting the application, as well as relevant ES Chapters.

8.3.2 The schemes included within the cumulative assessment are identified in Figure 8.1 and described in Table 8.1 (subsequently referred to as 'cumulative schemes'). These are based on the criteria defined within Chapter 3: EIA Methodology. Images of illustrative masterplans for each of the schemes considered are provided in Appendix 8.1 for reference.

Figure 8.1: Map of Cumulative Schemes

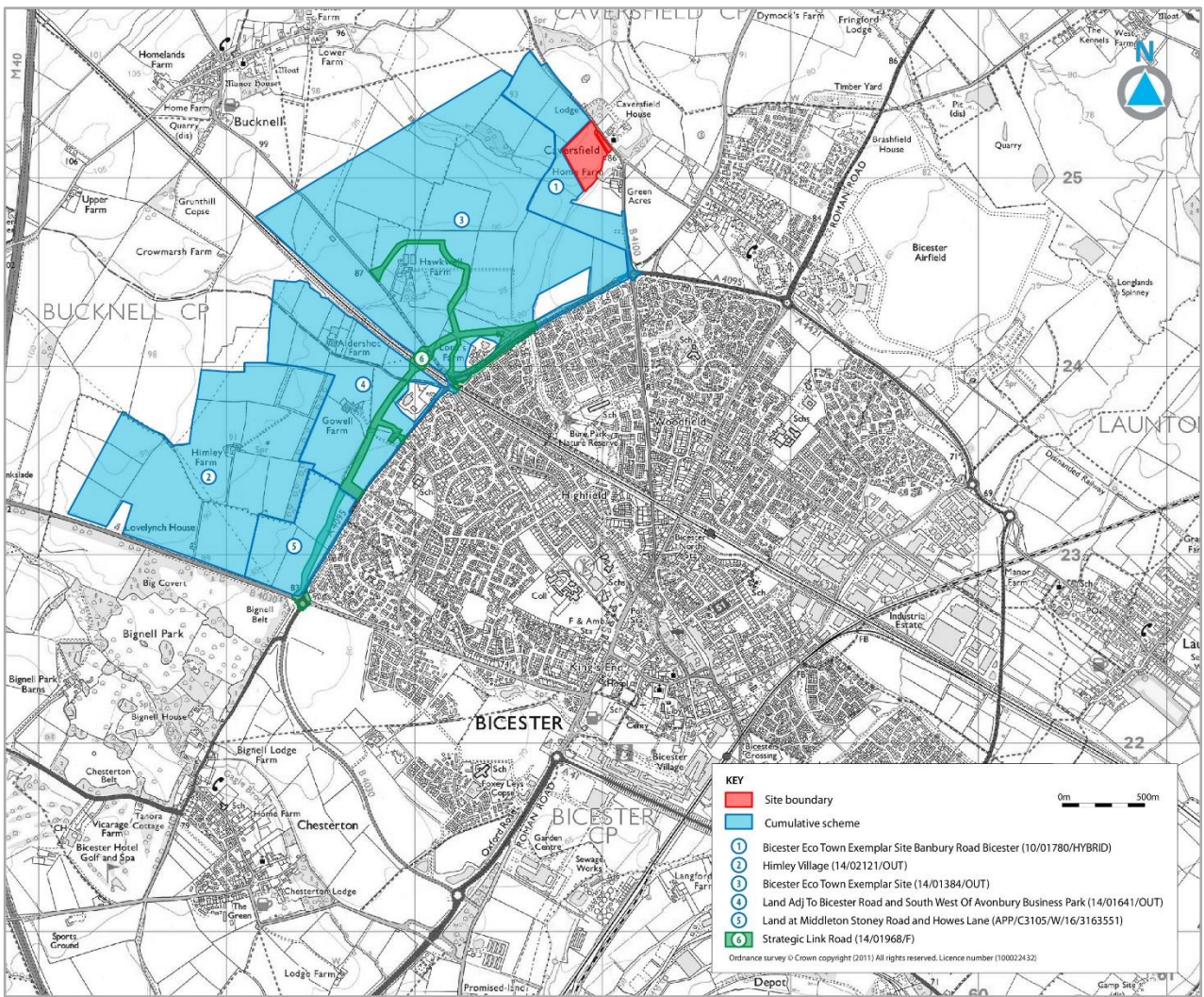


Table 8.1: Schedules of Cumulative Schemes

Scheme ID	Cumulative Scheme	Distance from Site Boundary	Construction Programme and Information
1	<p>Bicester Eco-Town Exemplar Site (Ref: 10/01780/HYBRID) – Development of Exemplar phase of NW Bicester Eco Town to secure full planning permission for 393 residential units and an energy centre, access, car parking, landscape, amenity space and service infrastructure and outline permission for a nursery of up to 350m² (use class D2), a community centre of up to 350m², 3 retail units of up to 770m² (use class A1)), an Eco-Business Centre of up to 1,800m² (use class B1), office accommodation of up to 1,100m² (use class B1), an Eco-Pub of up to 190m² (use class A4), and a primary school site measuring up to 1.34 hectares with access and layout to be determined. Approved July 2012.</p>	Adjacent to western boundary	<p>Construction: Construction commenced in 2014, with planned delivery of 50 units in year one, and 100 units per year thereafter.</p> <p>Operational: The date of completion and occupation is stated as 2016 in planning application documents, however it is understood from CDC’s informal scoping response (see Appendix 3.4) that the construction programme is likely to run beyond 2018.</p>
2	<p>Himley Village (ref: 14/02121/OUT) – Outline proposal for development to provide up to 1,700 residential dwellings, a retirement village (Use class C2), flexible commercial floorspace (Use classes A1, A2, A3, A4, A5, B1, C1 and D1), social and community facilities (Use class D1), land to accommodate one energy centre and land to accommodate one new primary school (up to 2 Form Entry (FE)). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure and other operations (including demolition of farm buildings on Middleton Stoney Road). Granted March 2017.</p>	1.7km south-west	<p>Construction: Construction was due to commence in 2016, with completion by 2031. However, this has been delayed as planning permission was granted in early 2017. It is assumed that construction would commence in 2018.</p> <p>Operational: It is assumed that the development will be operational post-2031.</p>
3	<p>Bicester Eco-Town Exemplar Site (‘SGR2’ Site) (Ref: 14/01384/OUT) – Development comprising redevelopment to provide up to 2,600 residential dwellings (Class C3), commercial floorspace (Class A1 - A5, B1 and B2), social and community facilities (Class D1), land to accommodate one energy centre, land to accommodate one new primary school (Up to 2FE) (Class D1) and land to accommodate the extension of the primary school permitted pursuant to application (reference 10/01780/HYBRID). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure, ancillary engineering and other operations. Resolution to Grant.</p>	30m east (at closest point)	<p>Construction: According to the ES, the development has an estimated 25-year construction period, due to commence in 2018.</p> <p>Operational: The estimated date for completion of the development is 2044, provided approval is granted by CDC in 2018.</p>

Scheme ID	Cumulative Scheme	Distance from Site Boundary	Construction Programme and Information
4	<p>Land Adjacent To Bicester Road And South West Of Avonbury Business Park (ref: 14/01641/OUT) – Outline application to provide up to 900 residential dwellings, commercial floor space, leisure facilities, social and community facilities, land to accommodate one energy centre and land to accommodate one new primary school (up to 2 FE), secondary school up to 8 FE. Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure, ancillary engineering and other operations. Resolution to Grant.</p>	1.3km south-west	<p>Construction: According to the ES, construction works are anticipated to commence in 2018 with an estimated construction period of 20-years. However, the assumptions were based on gaining planning approval in 2017.</p> <p>Operational: The estimated date for completion of the development is 2038.</p>
5	<p>Land at Middleton Stoney Road and Howes Lane (14/01675/OUT) – Erection of up to 53,000 m² of floor space to be for B1, B2 and B8 (use classes) employment provision within two employment zones covering an area of 9.45 ha; parking and service areas to serve the employment zones; a new access off the Middleton Stoney Road (B4030); temporary access off Howes Lane pending the delivery of the realigned Howes Lane; 4.5 ha of residential land; internal roads, paths and cycleways; landscaping including strategic green infrastructure; provision of sustainable urban systems (SuDS) incorporating landscaped areas with balancing ponds and swales; associated utilities and infrastructure. Granted June 2016.</p>	2km south-west	<p>Construction: It is anticipated that the development will be built-out over an approximate 3-year period, with construction expected to commence in Q4 2018/Q1 2019 and completed by Q1 2022.</p> <p>Operational: It is expected that the development will be operational by early 2022.</p>
6	<p>A4095 Strategic Link Road (SLR) (ref:14/01968/F) – Construction of new road from Middleton Stoney Road roundabout to join Lord's Lane, east of Purslane Drive, to include the construction of a new crossing under the existing railway line north of the existing Avonbury Business Park, a bus only link east of the railway line, a new road around Hawkwell Farm to join Bucknell Road, retention of part of Old Howes Lane and Lord's Lane to provide access to and from existing residential areas and Bucknell Road to the south and associated Infrastructure. Resolution to Grant.</p>	650m south-west	<p>Construction: According to the ES, construction is expected to take 2-3 years. The date of commencement was predicted to be 2016, however due to a delay in gaining planning consent this has been deferred. A worst-case scenario has been assumed for construction commencing in Q4 2018 with the development being built out at the same time as the Development.</p> <p>Operational: The estimated date for completion of the development is 2021.</p>

Table 8.2: Estimated Construction Programme for Cumulative Schemes

	2017				2018				2019				2020				2021			
	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Proposed Development																				
1) Bicester Eco-Town Exemplar Site																				
2) Himley Village																				
3) Bicester Eco-Town Exemplar Site ('SGR2 Site')																				
4) Land Adjacent to Bicester Road and South West of Avonbury Business Park																				
5) Land at Middleton Stoney Road and Howes Lane																				
6) A4095 SLR																				

* NB. Timelines presented only extent to 2021 as this is the predicted year of completion and occupation of the Development. Hatched areas are indicative of estimated construction programme where no definitive one is provided within the planning application or where there is likely potential for overrun. These are inferred from details of start/finish dates and adopting a worst-case scenario policy.

8.4 Construction Cumulative Effects

- 8.4.1 It is anticipated that the Development will be built-out over an approximately 18–30 month period. Commencement of construction works on-site is expected in Q4 2018 and Q2 2021 is nominally assumed as the year of completion, although this may be subject to change. Any change to the year of full occupation is unlikely to result in significantly different effects from those presented in the ES.
- 8.4.2 Table 8.2 shows the anticipated construction programmes for the cumulative schemes. Any cumulative schemes that have an unknown timescale (i.e. no start date for construction or defined construction programme) are included within the assessment with a construction commencement date of Q4 2018 to represent a worst-case scenario.
- 8.4.3 A review of the cumulative scheme’s construction programmes and details of the development being delivered has been undertaken, in order to assess the potential for likely significant cumulative construction effects in-combination with the Development. Estimated annual housing delivery rates for each scheme is provide below. The delivery rates are not definitive, and do not include a detailed breakdown of all works/infrastructure to be delivered by each scheme, but are provided for context.
- Bicester Eco-Town Exemplar Site – approximate four-year construction programme and once complete will deliver 393 homes alongside community facilities, at an average of approximately 100 homes a year;
 - Himley Village – 15-year construction programme and once completed will deliver up to 1,700 dwellings, at an average of 113 dwellings a year;
 - Bicester Eco-Town Exemplar Site (Plot SGR2) – 25-year construction programme and once completed will deliver up to 2,600 dwellings, averaging 104 dwellings per year;
 - Land Adjacent to Bicester Road and South West of Avonbury Business Park – 20-year construction programme and once complete will deliver up to 900 dwellings, at an average of 45 dwellings per year;
 - Land at Middleton Stoney Road and Howes Lane – three-year construction programme and once complete will deliver 150 units, at an average of 50 units per year; and
 - A4095 SLR – three-year construction programme and will deliver a new road.
- 8.4.4 This review demonstrates that the cumulative construction works being undertaken each year, over the duration of the Developments construction programme, is a small percentage of the total development that has been approved by the CDC as part of the Eco-Town and Bicester area. Excluding the Development, the cumulative schemes would deliver approximately 412 dwellings with associated infrastructure and community facilities each year.
- 8.4.5 All of the cumulative schemes have committed to adhering to Construction Environmental Management Plans (CEMPs) on their sites, either directly through the planning application or through a planning condition imposed by CDC.
- 8.4.6 The Development will provide 75 units over a period of 18–30 months. This would generate an average of 30–50 homes per year. When considered in the context of the combined annual housing delivery rate of the cumulative schemes (412 homes) and given that all developments would implement measures to

minimise construction traffic and environmental effects, it is considered unlikely that significant cumulative effects would occur during the construction of the Development with the other schemes.

8.4.7 The Development would also implemented a CEMP and Construction Transport Management Plan (CTMP). It is therefore assumed that both the Development and the cumulative schemes would adhere to good practice site management and mitigation measures would be in place to minimise construction effects.

8.4.8 The potential for the cumulative effects during the construction of the Development is discussed by topic below.

Transport

8.4.9 See Chapter 6: Transport of this ES for the inter-project cumulative assessment of this topic.

Air Quality

8.4.10 Best practice dust and emission control measures will be detailed in the CEMP and implemented during construction of the Development.

8.4.11 Construction of the cumulative schemes and the Development will overlap, although not all cumulative schemes have the potential to give rise to cumulative effects with the Development due to their distance from the Site. All cumulative schemes will be required to develop and implement CEMPs, manage construction traffic and implement measures to minimise vehicle, plant and fugitive dust emissions.

8.4.12 Whilst there will be some additional construction traffic from the Development in combination with other cumulative schemes, the level of traffic generated by the Site (10 two-way Heavy Goods Vehicle (HGV) movements per day) will represent a small contribution to traffic in respect of other cumulative schemes. The Development is therefore not likely to generate significant construction traffic cumulative effects on air quality.

8.4.13 Fugitive emissions of dust during earthworks and construction is likely to be localised (i.e. within 350m) and with mitigation measures in place, together with wheel cleaning/road sweeping, it is unlikely that the Development in-combination with the cumulative schemes would result in significant effects associated with fugitive dust emissions.

Noise and Vibration

8.4.14 The ambient noise conditions for the Site are primarily influenced by vehicular movements on the surrounding road network, particularly the B4100.

8.4.15 The cumulative schemes considered within this assessment for noise and vibration are those closest (within 100m) to the Site that would have the potential to result in likely significant cumulative residual effects during construction. Therefore, the Bicester Eco-Town Exemplar Site (ID Nos. 1 and 3) are the only cumulative schemes considered as it they the only schemes located within a 100m radius of the Site boundary.

8.4.16 Accounting for the CEMPs that would be implemented at both the Site and on the Exemplar site, assuming works be undertaken concurrently and provided that mitigation measures are implemented correctly, the likely cumulative effects in relation to construction noise are not expected to increase the existing ambient noise conditions by more than 5dB (a 5dB increase is the point at which a significant effect has been deemed to occur if the total noise level, including construction, exceeds the threshold level for the

Category appropriate to the ambient noise level). As such, it is not expected that the construction of the Development would result in any significant cumulative noise and vibration effects in combination with this scheme.

- 8.4.17 Cumulative effects resultant from construction traffic would have the potential to cause cumulative effects on noise and vibration, should the construction phases of each development overlap. However, it can be assumed that each cumulative scheme would implement its own CTMP or equivalent best practice measures to minimise traffic. Routing of vehicles would also be agreed with CDC.
- 8.4.18 Whilst there will be some additional construction traffic from Development in combination with other cumulative schemes, the level of traffic generated by the Site (10 two-way HGV movements per day) will be represent a small contribution to traffic from other cumulative schemes. The Development is therefore not likely to generate significant construction traffic cumulative effects on noise and vibration.

Biodiversity

- 8.4.19 Site preparation and construction of the Development will not itself result in any significant residual adverse effects on important ecological features and as such will not contribute significantly to any that may result from other Developments in the North-West Bicester area. Planning and legislative controls will ensure that, in combination with inherent design measures incorporated within the Development, potential significant ecological effects will be managed or mitigated. Therefore, no significant adverse cumulative ecological effects are expected.
- 8.4.20 The Northwest Bicester SPD acknowledges that the wider eco-town development is likely to have an overall adverse effect on farmland birds which cannot be adequately mitigated within the masterplan area, and that this potential effect is likely to be significant at a county level. The SPD therefore proposes that off-site mitigation measures should be provided to which all applications within the masterplan area should contribute. Despite the limited extent of the site, it currently provides approximately 5ha of arable habitat considered to be contributing to the overall foraging resource in the masterplan area used by farmland birds. Although this 5ha loss is not significant in its own right the Development will make an appropriate financial contribution in accordance with the SPD at the relevant stage, thereby ensuring there is no significant adverse cumulative effect on farmland birds.

Water Resources, Flood Risk and Drainage

- 8.4.21 Cumulative effects on water resources during construction works tend to be associated with the generation of sediments and their release into the drainage network, spillage and leakage of oils and fuels. It is not considered that construction works would have a significant cumulative effect on flood risk.
- 8.4.22 Only cumulative schemes within 100m of the Site have the potential to give rise to significant cumulative effects in combination with the Development, i.e. the Bicester Eco-Town Exemplar Site (ID Nos. 1 and 3). All other cumulative schemes are considered to be a sufficient distance from the Site that cumulative effects would not occur.
- 8.4.23 Effects on surface water flow and drainage during construction activities would be controlled by a CEMP both on the Site and within the adjacent sites. The CEMPs would also manage other potential effects like oil spillages, which could affect water quality, through standard management practices and measures. Consequently, there are not considered to be any potentially significant cumulative effects to water resources, drainage network, or flood risk as a result of construction processes.

Ground Conditions and Contamination

- 8.4.24 The Site and surrounding land currently under development has historically been in agricultural use and therefore significant contamination is considered unlikely. It is assumed that all cumulative schemes, would be required to investigate, remediate and validate their sites as required by the statutory contaminated land regime. Collectively, the cumulative schemes should therefore lead to a reduced level of contamination risk, if present, which would be a minor beneficial effect to all receptors.
- 8.4.25 In addition, adherence to a CEMP would ensure that all construction works are carefully managed to avoid contamination of sites (e.g. through spills and leaks). As such, no significant cumulative effects are predicted in relation to ground conditions and contamination.

Archaeology and Built Heritage

- 8.4.26 See Chapter 7: Cultural Heritage of this ES for the inter-project cumulative assessment of this topic.

Socio-Economics

- 8.4.27 The Development, together with the cumulative schemes would be expected to generate employment opportunities during construction works, as well as spending by the construction workforce. This is considered to be a beneficial effect at local levels. In the absence of detailed, commercially sensitive, information, it is not possible to make a quantitative assessment of the employment generated from the construction stages of the cumulative schemes. However, due to the limited size of the proposed Development, it is not expected that it will significantly contribute to the cumulative beneficial effects at any spatial levels during construction.

Landscape and Visual Impacts

- 8.4.28 See Volume 2: Landscape and Visual Impact Assessment of this ES for the inter-project cumulative assessment of this topic.

Soils and Agricultural Land

- 8.4.29 During construction, the management of soil resources will be implemented through the CEMP to make reuse of soil within the Site boundary. There would therefore be no significant cumulative effects in combination with other schemes.

Wind

- 8.4.30 During construction, there would be no cumulative effects as a result of wind.

Light Pollution

- 8.4.31 Light emitting machinery and plant would be management via the CEMPs for each development, as a result there would be no cumulative effects with other schemes.

Daylight, Sunlight and Overshadowing

- 8.4.32 The scale of the Development and the surrounding schemes is such that it would not give rise to cumulative effects.

Utilities

- 8.4.33 All development sites would be required to compile with the Construction Regulations (2015) and supplied appropriate utilities and welfare facilities for construction staff. No significant effects are therefore likely.

Waste and Recycling

- 8.4.34 The Development will not generate significant volumes of waste as there is no demolition and no significant earth re-modelling required. In accordance with Local Policy, all cumulative schemes, as well as the Development, would be required to aspire to achieve zero waste to landfill and reused, recycled or composted construction waste generated on site. This would be implemented through the CEMPs or Site Waste Management Plans (e.g. Himley Village) across all sites, and given the proximity of the recycling and recovery centre at Ardley, it is considered unlikely that any significant cumulative effects will result from waste.

In-combination Effects

- 8.4.35 Individual effects that have the potential to interact are largely related to effects from the construction works. When these effects are combined they could potentially create adverse (albeit temporary) combined nuisance effects on the identified receptor groups.
- 8.4.36 Based on the methodology described previously and receptors identified within the other chapter of the ES and supporting technical reports submitted with the planning application, a review of the potential for effect interactions during the construction phase of the Development has concluded that there is no potential for in-combination effects for the identified receptors

8.5 Completed Development

- 8.5.1 As discussed in Section 9.4, the cumulative schemes would deliver in the order of 412 dwellings per annum. At the point at which the Development would be completed and occupied, Q2 2021 (at a worst case), it is estimated that the cumulative schemes would have delivered approximately 1,133 dwellings.
- 8.5.2 The Site is predicted to be completed and occupied in advance of the majority of cumulative schemes, with the exception of the Bicester Eco-Town Exemplar Site and the SLR. Based on construction programmes of the other cumulative schemes, it is estimated that in Q2 2021 when the Development is complete and occupied, approximately 80% of the housing provision allocated for the Eco-Town would still need to be delivered.
- 8.5.3 As a worst case however, the assessment below considers all cumulative schemes completed and occupied at Q1 2021. It should be noted that this is an unrealistic scenario, as this would reflect the latest completed development year of 2044, given the likely construction programme for the Bicester Eco-Town Exemplar Site (14/01384/OUT).
- 8.5.4 The Site is directly adjacent to the Bicester Eco-Town Exemplar Site (10/01780/HYBRID). It is considered that this proposal has the closest relationship to the completed Development along with the nearby Bicester Eco-Town Exemplar Site ('SGR2' Site) (Ref: 14/01384/OUT) to the west and greater focus is given to these schemes in this section where appropriate.

Transport

- 8.5.5 See Chapter 6: Transport of this ES for the inter-project cumulative assessment of this topic.

Air Quality

- 8.5.6 The Development would provide up to 75 homes, which equates to 1.25% of the accommodated planned growth for the Eco-Town under local policy³. This would give rise to a limited number of car movements. While the cumulative schemes would bring forward a significant number of new homes once completed and increase the overall number of cars in the area, the cumulative input of the Development is negligible. As such, there are not considered to be any cumulative air quality effects associated with the operation of the Development.
- 8.5.7 The principles of good practice would be applied to the Development, as set out in chapter 5 of the EPUK & IAQM guidance⁴. The Development will be designed to minimise public exposure to pollution sources. Such measure would include locating habitable rooms away from the primary road (i.e. the Avenue). These measures would be further defined during Reserved Matters for the Development and ensure the cumulative effects of the operational developments do not affect future residents. Increases in air quality levels are not considered to be significant, especially in relation to allocated development considered under local policy.
- 8.5.8 As part of a 'zero-carbon' commitment for the Eco-Town the Development would have potential to connect to the forthcoming District-wide Heating System as it is brought forward within the Eco-Town. As such, there are not expected to be any cumulative effects in relation to plant emissions.

Noise and Vibration

- 8.5.9 The Development would provide up to 75 homes and would give rise to a limited number of car movements compared to the cumulative schemes. While the cumulative schemes would bring forward a significant number of new homes once completed and increase the overall number of cars in the area, the contribution of the Development is considered negligible. As such, there are not considered to be any cumulative noise and vibration effects associated with the operation of the Development.
- 8.5.10 Noise from fixed plant associated with adjacent development would be subject to a standard planning condition issued by the CDC based upon guidance provided in BS4142⁵. Such a planning condition would limit noise generated by fixed mechanical plant and building services so as not to cause cumulative effects. As such, noise from fixed plant from cumulative schemes and the Development would be negligible.

Biodiversity

- 8.5.11 The completed Development will not result in any significant residual adverse ecological effects and will not make a significant contribution to any cumulative ecological effects arising from the cumulative schemes.
- 8.5.12 The inclusion of green spaces and corridors within the Development, is intended to deliver biodiversity enhancement and has been designed to connect to and enhance to adjacent developments' green infrastructure. This approach can be expected to deliver a beneficial cumulative effect relevant to numerous ecological features, including farmland birds.

Flood Risk and Drainage

- 8.5.13 The majority of the Site is located in Flood Zone 1 (less than 0.1% annual probability of flooding), although the southern boundary of the Site is located within Flood Zone 3 (1% or greater annual probability of fluvial flooding). The south-eastern boundary of the Site is bordered by a small tributary which flows in a south-westerly direction to the River Bure.

- 8.5.14 It is anticipated that all local developments will be required by CDC to reduce site run-off rates through the use of SuDS, in line with planning policy. Given the above, it is not considered that there would be any significant cumulative effects once the Development and the other cumulative scheme developments are complete.

Ground Conditions and Contamination

- 8.5.15 It is assumed that all cumulative schemes, would be required to investigate, remediate and validate their sites as required by the statutory contaminated land regime. Collectively, the cumulative schemes should therefore lead to a reduced level of contamination risk, if present, which would be a minor beneficial effect to all receptors. Therefore, the cumulative schemes in combination with the Development would not give rise to significant cumulative ground conditions of contaminative effects once completed.

Soil and Agriculture

- 8.5.16 The ES for the adjacent Exemplar site identified that approximately 95.1% of its site and neighbouring Plot SGR2 site were classed as Grade 3b land, with the remainder (4.9%) classed as Grade 3a (see Table 3.1 for further information). Within the wider Eco-Town area, Defra's online Magic map service (www.magic.defra.gov.uk) demonstrates that a portion of the Bicester 1 area to the south-west is also defined as Grade 3b land.
- 8.5.17 Whilst no Agricultural Land Classification is available for the Site on the Magic Map portal, assuming a worst case, it is not considered that the Development would have a significant effect as the relative loss is a small area.
- 8.5.18 The cumulative schemes will result in additional loss of agricultural land. However, the Development will not increase the significance of effect of the loss of all the land designated under Policy Bicester 1⁴. Given the allocation of the cumulative schemes land for development under Bicester 1 and the phasing of the various developments, it is expected that farmers currently using the land will be able to forecast the operations and seek alternative land over the course of the Eco-Towns development. Therefore, the loss this land for agricultural use is not considered to have a significant cumulative effect.

Archaeology and Built Heritage

- 8.5.19 See Chapter 7: Cultural Heritage of this ES for the inter-project cumulative assessment of this topic.

Socio-Economics

- 8.5.20 The Development proposes up to 75 new homes. In the context of the 6,000 new homes of the Eco-Town, it is not considered that this number of residents are of a quantity that would result in significant cumulative socio-economic effects as a result of the Development.
- 8.5.21 The cumulative schemes along with the Development would make a significant contribution to the housing delivery locally, and to the District, making a significant contribution to the Local Plan target. Therefore the cumulative effect on housing provision is assessed to moderate beneficial at the local and district levels and minor beneficial at the regional level.
- 8.5.22 While new community facilities (e.g. schools, General Practitioners (GPs)) are not proposed within this application, the adjacent Exemplar site west would bring forward new community facilities including a nursery, primary school and community centre that could be utilised by the occupants of the Development. There would be a temporary minor increase in local demand once the Development is complete and occupied whilst the Exemplar site facilities are constructed.

- 8.5.23 All developments would be subject to Section 106 / Community Infrastructure Levy (CIL) requirements to mitigate impacts in line with local policy requirements. Planned facilities within the cumulative schemes include new open space and other infrastructure. It is expected that any effects not mitigated through on-site physical provision will be delivered through CIL/Section 106 contributions. Following appropriate contributions, the cumulative effect in terms of demand for social infrastructure is expected to be negligible.
- 8.5.24 Overall the cumulative schemes, together with the Development, would deliver new housing, generate new employment and provide community and amenity facilities. There would also be positive impact on the local economy through increased spending. These effects together would have a beneficial effect in terms of socio-economics.

Landscape and Visual Impacts

- 8.5.25 See Volume 2: Landscape and Visual Impact Assessment of this ES for the inter-project cumulative assessment of this topic.

Wind

- 8.5.26 Once the Development is completed and operational, there would be no significant cumulative effects as a result of wind.

Light Pollution

- 8.5.27 All schemes would be required to be designed in accordance with industry best practice and with consideration of environmental receptors. Provided that appropriate design to mitigate light pollution is implemented across all sites, it is not considered that there would be any significant cumulative effects. Measures would include:

- Keeping glare to a minimum by ensuring that the main beam angle of all lights directed towards any potential observer is not more than 70°;
- Ensure higher mounting heights which allow lower main beam angles that can assist in reducing glare;
- Careful consideration of the positioning and aiming of lighting equipment will be required; and
- Lighting to be designed in line with the Guidance Notes for The Reduction of Obtrusive Light⁶.

Daylight, Sunlight and Overshadowing

- 8.5.28 As outlined in Parameter Plan 1 (see Appendix 5.1), residential development is to be focussed in the western third of the Site, with the remainder of the Site reserved for green infrastructure and a small area of car parking, none of which would have daylight, sunlight or overshadowing effects.
- 8.5.29 As indicated by Parameter Plan 3 (see Appendix 5.1), the proposed built form of the Development would not exceed three storeys in height, with the majority of development not exceeding two storeys in height. The taller development zone will be focussed along the Residential Avenue and is located away from the peripheries of the Site in the majority. As such, it is not considered that the scale of the Development and the surrounding schemes would give rise to significant cumulative effects.
- 8.5.30 The listed assets of Home Farm and the Parish Church of St Laurence are located 150m north-east and south-east of the residential development zone boundary respectively and are of a distance from the proposed built form to not have significant effects.

8.5.31 The Exemplar site, adjacent to the west and north of the Site and currently under construction proposes to bring forward a mixed-use development, including 393 residential units. Of these, 13 properties are proposed to be located within 20m of the Site boundary according to the planning drawings associated with the Exemplar planning application, as illustrated in Figure 5.1. Of these properties, eight would be located within proximity to the proposed residential development zone to be brought forward by the Development. However, through the detailed design of the Development, to be further defined through Reserved Matters Application(s), it would be ensured that there would be no significant daylight, sunlight and overshadowing effects on these properties.

Utilities

8.5.32 All developments would be subject to S106 and CIL requirements to mitigate impacts in-line with local policy requirements. It is expected that any effects not mitigated through on-site physical provision will be delivered through CIL/Section 106 contributions. Following mitigation, where required, the cumulative effect in terms of demand for utilities infrastructure is therefore not expected to be significant.

Waste and Recycling

8.5.33 On the basis that the Oxfordshire Joint Municipal Waste Strategy and Oxfordshire Mineral and Waste Local Plan has accounted for the growth within Cherwell District and all developments are designed in accordance with relevant waste policies, it is not expected that the Development in combination with the cumulative schemes would result in any significant cumulative effects associated with waste management.

Combined Effects of Individual Effects

8.5.34 Based on the methodology described previously and receptors identified above, a review of the potential for effect interactions during the completed and occupied phase of the Development has been undertaken and it has been concluded that there is no potential for in-combination effects to take place once the Development is completed.

REFERENCES

¹ European Commission, 2011. *Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the Assessment of the Effects of Certain Public and Private Projects on the Environment*. Available online at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:026:0001:0021:En:PDF>

² Her Majesty's Stationery Office (HMSO), 2017. *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*, The Stationary Office.

³ Cherwell District Council, 2015. *Cherwell Local Plan 2011-2031 Part 1*, July 2015

⁴ The Stationery Office Limited, 2007. *Statutory Instrument 2010 No. 64 Environmental Protection – The Air Quality Standards Regulation 2007*

⁵ British Standards Institute, 2014. *BS 4142:2014 Methods for rating and assessing industrial and commercial sound*, October 2014

⁶ The Institution of Lighting Engineers, 2011. *Guidance Notes for The Reduction of Obtrusive Light*

9 Mitigation Measures, Monitoring and Residual Effects

9.1 Introduction

- 9.1.1 Tables 9.1 and 9.2 provide a summary of the likely significant effects, mitigation measures and residual effects of the Development as detailed in Chapters 6: Transport and Chapter 7: Cultural Heritage for the construction phase and the completed Development, respectively. Table 9.3 provides a summary of the cumulative effects of the Development.
- 9.1.2 As stated previously, a Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) would be secured by appropriate planning conditions prior to the commencement of any works for the Development and mitigation measures have been designed-in to the Development where possible to reduce potentially significant effects where possible.

Table 9.1: Summary of Construction Effects

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
Transport	Multiple (Low)	Severance; Driver delay; Pedestrian delay; Pedestrian amenity; Fear and intimidation; and Accidents & Safety as a result of movements of construction traffic.	Negligible	Implementation of the CTMP	Planning Condition	Negligible
Cultural Heritage	Grade II Home Farmhouse (High)	A loss of some of the open rural space associated with the farmhouse, in addition to sound and light pollution from the construction works.	Low	Implementation of the CEMP	Planning Condition	Minor adverse
	Grade II* Church of St Laurence (High)	Some loss of the rural setting within which the Church is appreciated, as well as increased light and noise pollution from the construction works.	Low			Minor adverse
	Caversfield House and Associated Buildings (Low)	The loss of some of the rural setting which contributes to the rural character of the non-designated asset.	Low			Negligible
	Below Ground Archaeology (Low)	Potential for the loss of below ground archaeology assets.	Low			Negligible
Landscape and Visual Impact	Wider Landscape Character (Medium to low)	Change of existing land use, soil stripping, removal of grassland, localised reprofiling of topography. Construction works would be contained within the Site boundary and existing vegetation would be retained except for small access breaches.	Low	None required	N/A	Minor adverse to negligible
	Site Landscape Character (Low)	Construction works would be temporary and contained within the Site boundary. Existing vegetation would be retained except for small access breaches.	High	Implementation of the CEMP	Planning condition	Moderate adverse
	Tranquillity (Low)	Changes will include increased noise and movement from site traffic and construction activity within the Site.	High	Implementation of the CEMP and CTMP	Planning condition	Moderate adverse
	Public Amenity/ Access (Low)	During construction there would continue to be no public access to the Site.	Neutral	None required	N/A	Neutral

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
	Site Landscape Elements (Low)	Removal of surface vegetation and soil stripping and storage. Creation of one small access breach in the boundary hedgerow. Protection of the retained hedgerows and trees.	Low	None required	N/A	Negligible
	Viewpoint 1 (High)	Once completed the Exemplar development would screen the Site from view from the footpath.	Negligible	None required	N/A	Negligible
	Viewpoint 2 (Low)	Once completed the Exemplar development would screen the Site from view from this location.	Negligible	None required	N/A	Negligible
	Viewpoint 3 (Low)	The roadside hedgerow would be retained and therefore filtered views of construction activity would be visible in the Site beyond.	Low	None required	N/A	Negligible
	Viewpoint 5a and 5b (VP5a – Low & VP5b - High)	Views of construction activity will be experienced behind the roadside hedge. The magnitude of change will be higher from the roadside outside the church than within the churchyard.	High (VP5a) Low (VP5b)	None required	N/A	Moderate adverse (VP5a) Moderate adverse (VP5b)
	Viewpoint 6 (Low)	Initial construction activity, soil and vegetation stripping and house building will occupy foreground of view and progressively screen views beyond.	Very High	None required	N/A	Major to moderate adverse
	Viewpoint 7 (Low)	Construction activity would clearly be noticeable by roads users although it would be set back behind the corridor of retained open space adjacent to the road.	High	None required	N/A	Moderate adverse
	Viewpoint 8 (Low)	Open space would be retained between the B4100 and houses on the eastern side of the Site. The view to the north and east (including of St Laurence Church) would be unaltered. Construction activity will be readily noticeable on the higher ground to the north-west of the Site.	Very High	None required	N/A	Major to moderate adverse
	Viewpoint 9 (High)	Most of the Site visible in this narrow slot view would be retained open space. Filtered views of construction activity may be visible for a small section of the field to the west.	Low	None required	N/A	Moderate adverse
	Viewpoint 10 (Low)	Filtered views of construction activity above the boundary hedgerow in front of the existing dwellings on the Exemplar site.	Medium	None required	N/A	Minor adverse
	Viewpoint 11 (Low)	Limited potential for narrow and heavily filtered glimpses of construction activity.	Low	None required	N/A	Negligible

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
	Viewpoint 12 (High)	Construction activities on the Site are predicted to be screened from view.	Negligible	None required	N/A	Negligible

Table 9.2: Summary of Completed Development Effects

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
Transport	Residential (Low) Primary school (High)	Severance; Driver delay; Pedestrian delay and amenity; Fear & intimidation; Accidents & safety and severance on Charlotte Avenue	Negligible	Reducing development traffic impacts through travel planning	N/A	Negligible
Cultural Heritage	Grade II Home Farmhouse (High)	Residential development of further fields surrounding the asset which contribute to its isolated character, which will have both a visual and functional impact.	Low	None required	N/A	Minor adverse
	Grade II* Church of St Laurence (High)	Built development will be brought in closer proximity to the Church, which will erode some of its isolated rural character.	Low	None required	N/A	Minor adverse
	Caversfield House and Associated Buildings (Low)	The loss of open space in close proximity to the non-designated asset will result in some loss of rural character.	Low	None required	N/A	Negligible
	Below Ground Archaeology (Low)	No effect.	N/A	N/A	N/A	N/A
Landscape and Visual Impact	Wider Landscape Character (Medium to low)	Permanent change of land use from rural and agricultural to residential with open space. Reduction in openness and tranquillity of landscape. Basic profile of site topography with sloping ground would be unaltered. Site forms small part of wider Wooded Estatelands LCT	Low	None required	N/A	Minor adverse to negligible

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
	Site Landscape Character (Low)	Permanent change of land use from rural and agricultural to residential with open space. Reduction in openness although a buffer of open space would be preserved allowing continued intervisibility with St Laurence Church. Reduction in tranquillity (but from a low initial baseline). The general profile of the site topography would be unchanged with land sloping north to south down to the River Bure.	High	None required	N/A	Moderate adverse
	Tranquillity (Low)	Noise levels will be lower than during construction but there will be increases from the baseline scenario resulting from operational vehicle movements.	High	None required	N/A	Moderate adverse
	Public Amenity/Access (Low)	The majority of the Site would be publicly accessible open space with several new cycle and pedestrian paths linking with the surrounding development.	High	None required	N/A	Moderate beneficial
	Site Landscape Elements (Low)	With the exception of the loss of lower value surface vegetation features and the small hedgerow breach, all of the trees and hedgerows will be retained. The Development provides significant open space provision with opportunities to create beneficial multifunctional greenspace and new tree and shrub planting.	Medium	None required	N/A	Minor beneficial
	Viewpoint 1 (High)	Once completed the Exemplar development would screen the Site from view from the footpath.	Negligible	None required	N/A	Negligible
	Viewpoint 2 (Low)	Once completed the Exemplar development would screen the Site from view from this location.	Negligible	None required	N/A	Negligible
	Viewpoint 3 (Low)	There would be an open space buffer adjacent to the B4100 and the retained hedge would continue to strongly filter views of the houses beyond.	Low	None required	N/A	Negligible
	Viewpoint 5a and 5b (VP5a - Low) (VP5b - High)	A corridor of open space will be retained between the eastern Site boundary and the residential frontage of the new development and there will be a new area of orchard planting. Filtered views of the Site would be available from the road verge outside the churchyard (VP5a) and a very narrow slot view through the gate from within the churchyard (VP5b).	High (VP5a) Low (VP5b)	None required	N/A	Moderate adverse (VP5a) Moderate adverse (VP5b)

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
	Viewpoint 6 (Low)	The wider view to the south-east including Caversfield House, the mature tree cover to the south of the church and Home Farm will be screened by houses. A sightline view of the church will be retained by the line of the proposed road with residential houses and trees either side forming an 'avenue' feature.	Very High	None required	N/A	Major to Moderate adverse
	Viewpoint 7 (Low)	A corridor of open space will be retained between the road and the residential development. There would be partially filtered views of the houses on the higher ground to the north-west seen in front of the Exemplar development.	High	None required	N/A	Moderate adverse
	Viewpoint 8 (Low)	New houses would dominate the horizon to the north-west but views to the north and east towards the church would be retained.	Very High	None required	N/A	Major to moderate adverse
	Viewpoint 9 (High)	Most of the Site visible in this narrow slot view would be retained open space. The hedgerow would heavily filter views of the houses in the north-west corner.	Low	None required	N/A	Moderate adverse
	Viewpoint 10 (Low)	The Development would extend the residential edge of houses of the Exemplar development and filtered views would be available above the boundary hedgerow. The houses would rise just above the skyline.	High to Medium	None required	N/A	Moderate to minor adverse
	Viewpoint 11 (Low)	Filtered views of small number of houses likely to be visible through gap between Exemplar and trees around Home Farm.	Low	None required	N/A	Negligible
	Viewpoint 12 (High)	The proposed houses on the Site are predicted to be screened from view.	Negligible	None required	N/A	Negligible

Table 9.3: Summary of Cumulative Effects

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
Transport	Multiple (Low)	The cumulative effect of construction impacts alongside other local development sites.	Negligible	N/A	N/A	Negligible
Landscape and Visual Impact	Wider Landscape Character (Medium to low)	The addition of an area of built development within the Site would have a minimal additional cumulative effect in combination with wider North-West Bicester development.	Low	None required	N/A	Minor adverse to negligible
	Tranquillity (Low)	The addition of the Site would slightly increase the pre-existing effects on tranquillity.	High	None required	N/A	Moderate adverse
	Public Amenity/Access (Low)	The addition of a large area of public open space in the Site's eastern section would have beneficial cumulative effects for the wider Exemplar development.	High	None required	N/A	Moderate beneficial
	Viewpoint 1 (High)	There would be no cumulative visual effect from the addition of the Site which would be screened.	Negligible	None required	N/A	Negligible
	Viewpoint 2 (Low)	There would be no cumulative visual effect from the addition of the Site which would be screened.	Negligible	None required	N/A	Negligible
	Viewpoint 3 (Low)	The addition of the Site would not extend the area from which new housing would be visible given the existing backdrop of the Exemplar development.	Low	None required	N/A	Negligible
	Viewpoint 5a and 5b (VP5a - Low) (VP5b - High)	The Site would slightly extend development further to the south-east towards the B4100 but be seen behind open space and against the backdrop of the larger Exemplar development.	High to Medium (VP5a) Low (VP5b)	None required	N/A	Moderate to minor adverse (VP5a) Moderate adverse (VP5b)
	Viewpoint 7 (Low)	The Site would slightly extend development further to the south-east towards the B4100 but be seen against the backdrop of the larger Exemplar development.	Medium	None required	N/A	Minor adverse

Topic	Receptor (Sensitivity)	Potential Effect	Magnitude	Mitigation Measures and Monitoring	Securing Mechanism	Residual Effect
	Viewpoint 8 (Low)	The addition of the Site would bring residential development slightly closer than the Exemplar development but it would be seen against the wider backdrop of existing development and behind open space.	Very High	None required	N/A	Major to Moderate adverse
	Viewpoint 9 (High)	The addition of the Site would bring residential development slightly closer than the Exemplar development but it would be seen against the wider backdrop of existing development and behind open space.	Low	None required	N/A	Moderate adverse
	Viewpoint 10 (Low)	Once fully completed, the Site would extend the residential edge further to the east to the B4100 in-combination with the Exemplar development occupying the background behind Home Farm.	High to medium	None required	N/A	Moderate to minor adverse
	Viewpoint 11 (Low)	Once fully completed, the Site would extend the residential edge further to the east to the B4100 in-combination with the Exemplar development occupying the background behind Home Farm.	Medium to low	None required	N/A	Minor adverse to negligible
	Viewpoint 12 (High)	Both the Site and the final phase of the Exemplar development to the north would be screened from view.	Negligible	None required	N/A	Negligible

9.2 Monitoring

- 9.2.1 Outside standard good practice site monitoring requirements during construction works, which will be included within the CEMP, there are no further environmental monitoring requirements that have been identified during the construction of the Development or once it is completed.