Himley Village
Outline Application

Environmental Statement – Volume 3
Technical Appendices

December 2014

Himley Village, Bicester

Environmental Statement, Volume 3 – Technical Appendices

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Bicester Eco Development - Masterplan Site Application 1 (North of Railway)

Environmental Impact Assessment

Scoping Report

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Bicester Eco Development - Masterplan Site Application 1 (North of Railway)

Environmental Impact Assessment

Scoping Report

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Report No	5000511-UA001881-UA31R-01
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1 INTRODUCTION

1.1 Background

This request is made on behalf of A2Dominion in relation to the proposed development of circa 159 ha of land to the north west of Bicester to provide for residential led development, comprising residential dwellings, commercial floorspace, leisure facilities, social and community facilities, a primary school, extra care housing, water treatment plant and energy centre, amenity space and service infrastructure.

The NW Bicester site is identified in the Local Plan submission (January 2014) as falling within an area to provide for circa 5000 new homes, and related social and community facilities. The allocation of the site in the emerging Local Plan follows the identification of land at north-west Bicester as a potential eco-town in the supplement to PPS1 (July 2009): 'Eco-Towns' a supplement to PPS1 Delivering Sustainable Development'. The PPS1 supplement includes requirements relating to sustainability, affordable housing, low and zero carbon technologies and public transport.

The emerging Local Plan identifies a broad area to the north west of Bicester within which the site falls. A Masterplan has been submitted to the Council in response to the requirements of the supplement to PPS1 in March 2014. It is understood that the Council is minded to adopt the Masterplan, following consultation and review (and amendment as appropriate) as non-statutory policy.

The Masterplan area comprises some 406 ha and sets out the strategy for the development of the site.

Planning permission was granted in 2012 for the development of some 21 ha of land within the Masterplan area as an 'exemplar phase'. This permission will be implemented shortly and provides for 393 new homes, land for a new primary school, together with social and community facilities, business and retail accommodation.

A2Dominion intend to bring forward further applications for planning permission as follows:

- Application 1 (North of Railway) - comprising some 159 ha of land, to provide for circa 2,600 residential dwellings, land for new primary schools, associated open space, recreation and play space, social and community facilities and employment land, access and infrastructure works;
- Application 2 (South of Railway) - comprising some 51 ha of land, to provide for circa 900 residential dwellings, land for a new secondary school, new primary schools, associated open space, recreation and play space, social and community facilities and employment land, access and infrastructure works;
- Application 3 (Infrastructure) – comprising some 20 ha of land for the provision of new highway and crossings below the existing railway

Scoping Reports and Environmental Statements (ES) would be prepared for the three applications.

This Scoping Report is being prepared in relation to Application 1 (North of Railway) site, to be referred to in this document as the Site.

1.2 Need for an Environmental Impact Assessment (EIA)

Environmental Impact Assessment (EIA) is a procedure for ensuring that the likely environmental effects of a new development are properly understood by the public and relevant competent authorities before a decision is made to grant planning consent. Under The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 as amended) (hereafter, the EIA Regulations), the proposal is considered to be a "Schedule 2" development which will require a formal EIA due to its scale and proximity to sensitive areas. Each outline planning application will therefore be accompanied by an ES.

1.3 Purpose and Structure of this Document

While there is no statutory requirement to undertake or report on scoping of an EIA, it is considered that defining the scope of the EIA is one of the an important part of the planning process in that it sets the context for the detailed assessment that follows and ensures that it conforms to the requirements of the EIA Regulations. Consequently, the objectives of the scoping process undertaken for the development and reported in this document are to:

- Identify the topics and issues that are proposed to be the focus of the EIA
- Eliminate any topics and issues not requiring further consideration and which would therefore not be taken further in the EIA
- Define the scope of the study for each of the topics and issues to be considered
- Identify the methodologies being followed for conducting baseline studies
- Identify the methodologies being followed for predicting environmental effects and for evaluating the significance and severity of environmental effects
- Identify the methods to be adopted for incorporation of mitigation and other environmentally driven modifications into the design, as it develops
- Identify consultees to be included in the data collection and the EIA process

Following this Introduction, the report is structured as follows:

- Chapter 2 briefly describes the site and its context, including project nature and purpose
- Chapter 3 outlines the main environmental topics to be considered, the key issues and the further data collection required. For each topic, a definition of the study area, summary of existing site description, potential impacts, potential mitigation measures, proposed methodologies and consultations have been included
- Chapter 4 provides a summary of the Scoping Report and Next Steps

2 THE PROJECT

2.1 Site Description

The town of Bicester lies approximately 24km to the northeast of Oxford, and 28km to the southeast of Banbury. The M40 runs approximately 2km to the southwest, with Junction 9 providing access to the town via the A41.

Bicester is served by two railway stations; namely Bicester North and Bicester Town. Chiltern Railways operate services from Bicester North between Birmingham Snow Hill and London Marylebone. Branch line services to Oxford (via Islip) operate from Bicester Town. This lies to the south of the town and uses the old Varsity Line track between Oxford and Cambridge.

The Masterplan development area lies to the north west of Bicester, approximately 1.5km from the town centre, and the Masterplan site comprises an area of approximately 406 ha, which covers the whole area within the red boundary in Figure 2-1. The railway line runs in a north west to south east direction through the middle of the Masterplan site.

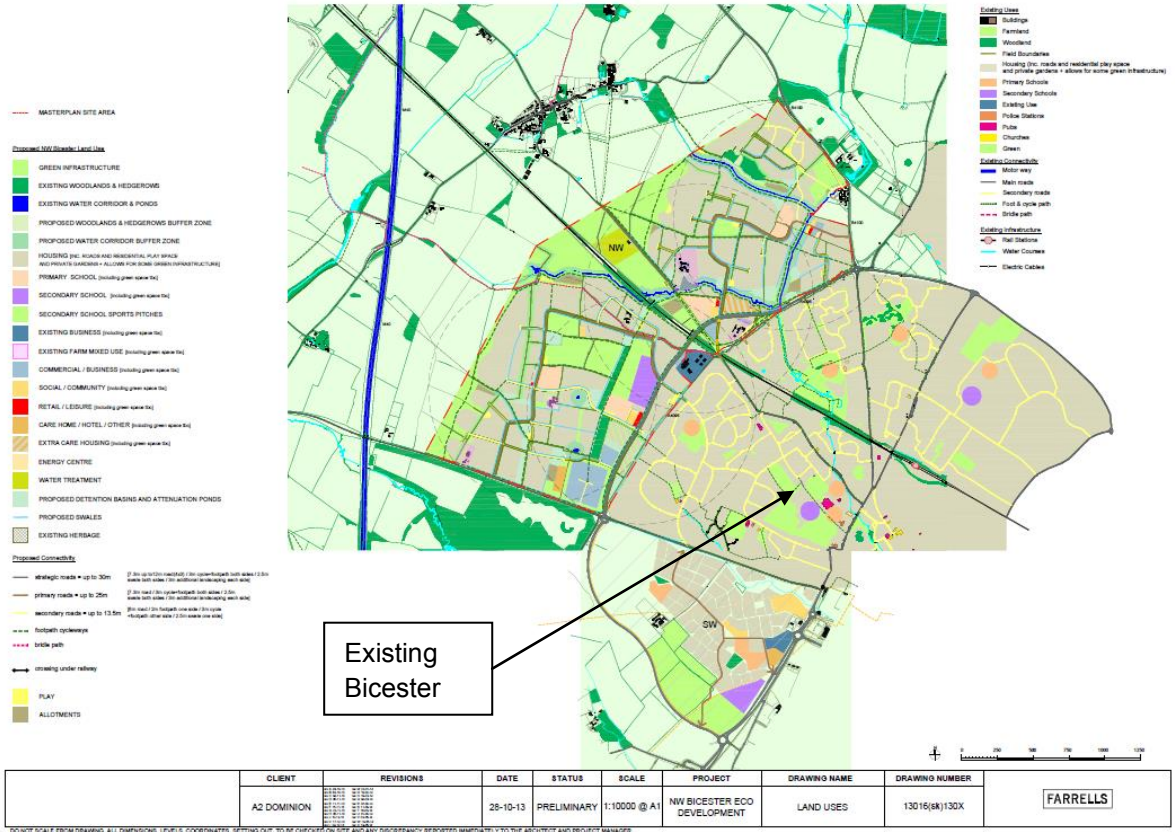

Figure2-1 NW Bicester Masterplan Area

The Application 1 Site covers approximately 159 ha. The land currently comprises Grade 3 agricultural land and contains a number of farmhouses and other buildings, as well as a small area of employment land along the A4095. The villages of Bucknell and Caversfield are located to the north and east of the site respectively

Error! Reference source not found. illustrates the boundary for the Site. The Site lies north west of Bicester town, between the B4030 and the B4100. The Site's southern boundary runs alongside the A4095 (Lords Lane), the western boundary runs along the railway line and northern boundary runs briefly along the B4100 before connecting with the Exemplar Site boundary. The Exemplar Site, located on the north eastern edge of the Masterplan area is the first phase of the Masterplan Area development. Construction is to commence shortly and will provide for 393 residential units, energy centre, a primary and a nursery school.

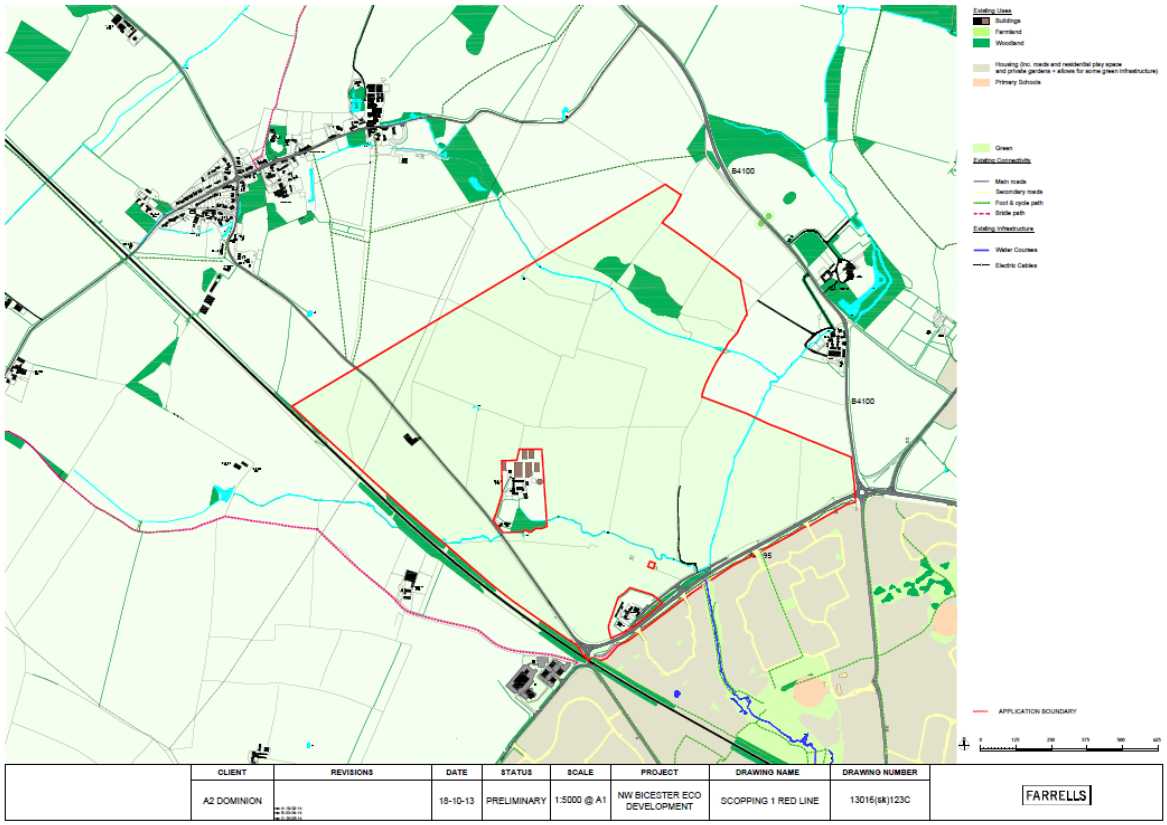

Figure 2-2 Application 1 (North of Railway) Site Plan

The location of Application 2 (South of Railway) and Application 3 (Infrastructure) are included in Appendix A of this Scoping Report for information.

2.2 Background to the Development

The emerging Cherwell Local Plan Submission draft (2014) identifies land at north-west of Bicester as a strategic site for the provision of an eco-development under Policy Bicester 1: North West Bicester Eco-Town.

This comprehensive policy seeks substantial home (at least 1,793 homes to be delivered within the plan period) and job (about 1,800 to be delivered within the plan period) creation set within the context of an eco development.

2.3 Application 1 (North of the Railway) Site Proposals

Application 1 comprises land within the NW Bicester eco-development area. The development proposals for the Site include provision for the following:

- Demolition of existing buildings and structures
- Circa 2,600 Residential dwellings (Class C3)
- Commercial floor space (Class A1, A2, A3, B1 and B2)
- Leisure facilities (Class D2)
- Social and community facilities (Class D1)
- A new Primary School (Class D1) and extension of exemplar primary school
- Extra Care Housing (Class C3)
- Green Infrastructure
- New Vehicular, cycle and pedestrian routes
- Water Treatment Plant and Energy Centre
- Bus only routes direct and fast links to the Bicester Town Centre and train stations
- Amenity space, including formal and informal play and recreation
- Service infrastructure

The Site planning application will be submitted in outline with all matters reserved. All such development shall accord with the Application Plans and Development Parameters Schedule.

2.4 Development Programme

The key planning and development milestones associated with the Masterplan site development proposals have been set out in Table 1 below:

Table 1: Development Programme

Development Programme	Planned Programme
Submission of Application 1 Outline Planning	July 2014
Planning Committee (Site)	Winter 2014
Submission of an Outline Planning Application 2 (South of Railway) and Full Planning for Application 3 (Infrastructure)	July 2014
Construction Start of Site (anticipated)	2018
Construction Period	Approximately 16 years

3 PROPOSED EIA SCOPE

3.1 EIA Approach

The EIA will be carried out in accordance with the legal requirements of the EIA Regulations, which implement EC Directive 85/337/EEC and its amendment 97/11/EC.

Several guideline documents have been used in defining the scope of the EIA and the assessment methodology to be used. The scoping exercise has also been based on experience of EIA for similar projects. In addition to observing the formal requirements of the EIA Directives and the EIA Regulations further formal guidance will inform the assessment. Examples include the National Planning Policy Framework, Practice Guidance on Environmental Impact Assessment (March 2014), Guidelines for Environmental Impact Assessment (IEMA, 2004), and Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM, 2006).

In accordance with relevant guidelines, the EIA will incorporate the following elements:

The Baseline: Baseline environmental conditions, including those that are predicted to exist immediately prior to construction and operation of the development as well as those currently existing, will be identified through a number of means. They can be determined through the use of existing data or through undertaking additional surveys, studies and modelling. Each environmental discipline will identify resources and receptors that will need to be taken into account during the assessment process.

Assessment Scenarios: For all topics, assessments are made of the impacts with (Do-Something) and without (Do-Minimum) the proposed development. The Do-Minimum scenario represents a baseline against which the environmental effects of the development can be measured. This takes account of the likely future baseline conditions, allowing for planned future development that has not yet been implemented.

Spatial Scope: The area over which impacts could occur could be wider than the area of land directly taken by the proposals. It is inappropriate to define a single study area for the assessment, since the spatial scope varies depending on the topic under consideration. The study areas allow for the assessment of indirect as well as direct effects, including off-site works such as spoil disposal and routes for construction traffic.

Temporal Scope: In considering the environmental effects of the development, it is necessary to identify impacts that may occur during construction or operation. Construction extends from the commencement of site works to the date immediately prior to opening of the development. Operation extends from immediately after opening of the development for the remainder of its life. In addition, it is recognised that some environmental design measures would take time to become established and effective. The assessment therefore considers impacts in Year 1 (Opening Year) and in Year 20 (Design Year), where appropriate. It is also recognised that some effects would be of a permanent nature whereas others would be temporary.

Assessing Impacts: Impacts associated with the construction and operational stages of the proposed development will be identified during the course of the EIA process. These will be considered in terms of their nature, the physical extent of their influence and the magnitude of their effects. In considering the nature and significance of the impacts, the effects will be assessed on the basis of whether they will be:

- Direct or indirect
- Temporary, short, medium or long term
- Reversible or irreversible
- Beneficial or adverse

- Cumulative

Qualitative and quantitative techniques will be used to assess these impacts.

The EIA will also identify those elements of the development that have been introduced to mitigate potential adverse effects and will assess the significance of the impacts that remain after mitigation measures have been put in place (the “residual impacts”).

Determining Significance: Determining the severity of an effect and deciding whether or not it is significant is an important step in the formal EIA process and is necessary in order to satisfy statutory reporting requirements. In general, the severity of an impact reflects the importance or value of the affected resource or receptor, its sensitivity to change, and the magnitude of the predicted impact. The criteria for determining significance will vary from topic to topic but the general principle will be that higher magnitude impacts on important resources will be regarded as significant. Lower magnitude impacts on less important resources will not generally be regarded as significant.

Cumulative Impacts: Cumulative impacts result from the incremental impacts of the development when added to other past, present and reasonably foreseeable future actions. The impacts from a single development may not be significant on their own but when combined with other impacts and other developments, these effects could become significant.

Cumulative effects will be considered by describing and assessing the following:

- Interaction of impacts from the development with those from other plans or activities, including the various phases of the redevelopment of this site
- Interaction of different impacts of the development, which affect the same resource or receptor

Consultation: During the EIA process statutory and key non-statutory consultees will continue to be, engaged both as a part of the scoping process and during ES preparation. They will include: English Heritage, Natural England, the Environment Agency, and Cherwell District Council.

3.2 EIA Topics

With regard to the EIA guidelines, a number of EIA topics have been identified which are considered to warrant assessment. Our proposed approach to assessment for each of these topics is described in the Table 2 overleaf.

Table 2: EIA Topics and Scope

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
3.2.1 Air Quality	In accordance with the Institute of Air Quality Management (IAQM) 'Guidance on the assessment of dust from demolition and construction' (2014), the construction dust study area would comprise an area within 350m of the boundary of the site and 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). The air quality study area for vehicle and energy centre emissions would be determined upon analysis of the traffic and energy centre data, respectively.	A review of the 2013 CDC Air Quality Updating and Screening Assessment and Progress Report has been undertaken. CDC has declared one Air Quality Management Area (AQMA) at Hennef Way. CDC has also identified an additional three other areas where an AQMA should be declared (at Horsefair/North Bar, Banbury; Kings End/Queens Avenue, Bicester; and Bicester Road, Kidlington) in the district. The proposed AQMA at Kings End/Queens Avenue, Bicester is the closest AQMA to the proposed site at a distance of 1.5km south-east of the development. All other pollutants have been found to be below the Air Quality Strategy (AQS) Objectives. CDC has one continuous automatic monitor but this is located in Banbury, a significant distance from Bicester. CDC operates a network of 38 diffusion tubes in the district, including nine in the Bicester area. This monitoring data suggests that exceedences of the annual average NO_2 objective has occurred at six of the nine sites where monitoring was undertaken in 2012. Tamarisk Gardens' monitoring location is closest to the proposed development; on the edge of Bicester with the diffusion tube located approximately 30 metres back from the A4095. This indicates that at background locations away from roads, the concentrations are significantly below the annual average objective for NO_2. In order to establish baseline conditions in the vicinity of the proposed development, a six month NO_2 diffusion tube survey has been undertaken in agreement with the Environmental Health Officer (EHO) at CDC. This has been undertaken to establish background concentrations in the area. Results from the monitoring indicated that the annual mean NO_2 concentration at all diffusion tube monitoring locations was below the annual mean AQS Objective of 40µg/m^3.	No further data collection has been proposed for this ES.	The development has the potential to impact air quality in a number of ways, namely: ▪ dust and vehicle emissions from the construction/demolition phase; and ▪ vehicle and energy centre emissions from the operational phase. Construction/demolition phase impacts will primarily be related to dust emissions that can result in enhanced dust soiling and may, without adequate mitigation, temporarily affect amenity use and, potentially, commercial operations. Exhaust emissions from on-site plant and vehicles accessing the works may also affect local air quality. Operational impacts may be negative and/or positive and will arise from changes in exposure to traffic pollutants in response to new patterns of traffic flows on local road networks. In addition, emissions from the proposed energy centre may impact upon existing and future receptors.	The main operational phase impact on air quality will be from the increase in road vehicle exhaust emissions associated with traffic from the development. It will be important in terms of air quality and the overall sustainability of the site to implement sustainable travel measures, ensure the site is designed with travel minimisation in mind and ensure access to local transport facilities is facilitated. For example, there are proposals for a new rail link between Bicester and Oxford allowing direct links to London. It will be essential to minimise car travel to Bicester Town station by ensuring that fast and efficient public transport links are established between the Eco-Town and the station. Mitigation through design, such as siting sensitive receptors away from pollution sources, for example busy roads and the energy centre, should be taken account of in the Masterplan. Any necessary mitigation measures required for the energy centre will be identified as part of this assessment. Mitigation measures for potential construction phase impacts, such as dust and vehicle exhaust emissions, will be proposed in the ES following best practice guidance. A Construction Environmental Management Plan (CEMP) will identify mitigation measures to mitigate impacts.	Construction impacts would be assessed in accordance with the methodology outlined within the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction' (2014) and the Environmental Protection UK (EPUK) guidance 'Development Control: Planning for Air Quality' (2010). Operational impacts would be assessed in accordance with the EPUK Development Control: Planning for Air Quality (2010). The impacts of road vehicle emissions on existing and future receptors would be modelled using the dispersion model ADMS (Roads). Results would be compared with the relevant AQS Objectives. The impacts of the proposed energy centre emissions on existing and future receptors would be modelled using the using the United States Environmental Protection Agency (US EPA) dispersion model, AERMOD. Results would be compared with the relevant AQS Objectives.	The EPO at CDC has been consulted previously for the Exemplar ES and it will be necessary to continue to consult with the EHO throughout the Site EIA process.

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
3.2.2 Noise	To assess the operational impact due to road traffic noise associated with the Masterplan Site, the study area will consider the local road network where the Traffic Assessment indicates a change in traffic flows. The effects upon traffic flows on the road network within this study area will form the basis for the noise impact upon existing receptors from road traffic noise. The criteria set out in The Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7 will be considered. In order to establish if the Masterplan Site would be suitable for residential use the extent of the study area would cover all of the land within the boundary of the site. This is to ensure that noise levels across the site would comply with The National Planning Policy Framework (NPPF) and Planning Policy Guidance Note 24: Noise (PPG 24). The NPPF does not present fixed criteria against which to assess the suitability of the site for the proposed development, so the assessment will consider the criteria in PPG24 as well. The study area for construction noise will be defined by the nearest sensitive receptors to the boundary of the sites. It is usual to include all sensitive receptors within 100m of the boundary. The study area will however change as different phases of the development are constructed. It was requested by the EHO for Cherwell District Council that noise and vibration impacts from the Chiltern Railway Line on the	An aerial overview of the site indicates that road traffic noise would be the dominant noise source across the site. This would include road traffic on the local road network as well as the M40. Noise and vibration impacts are also likely from the Chiltern main railway line, although this would be confined to a corridor in proximity to the railway line. There are no dominant sources of industrial noise in close proximity to the site.	None A full noise survey was agreed with in consultation with the EPO for Cherwell District Council. The noise survey monitoring locations were selected to consider the full Development Site and consider any cumulative noise impacts from the respective developments. It was agreed with the EPO that the $L_{Aeq,T}$; L_{A90}; L_{A10}; L_{Amin} and L_{Amax} would be measured at all locations. It was agreed that long-term noise monitoring would be carried out at 6 locations. The long-term monitoring would be carried out over a period of 4 days, allowing for data to be collected on a typical weekday, a Friday and a weekend. It was agreed with the EHO that 2 of the long-term monitoring locations would be along the Chiltern main railway line. Vibration measurements were also requested at these 2 locations by the EHO to consider any vibration impacts from rail movements. Short-term monitoring during the daytime	Potential increase in local ambient noise levels due to increases in traffic flows on surrounding road network. Operational noise impacts may arise from plant and equipment related to the commercial component of the development on the adjacent Exemplar site. It will also be assumed that once the Bicester Eco Town is occupied, background noise levels will be similar to those measured in adjacent residential areas. These noise levels will be used to recommend design noise limits for plant to be installed on site. Potential for construction noise to cause a nuisance for sensitive receptors in the vicinity of the site. The type and extent of noise impact will be dependent upon the contractor's chosen methods of working. Examples of potential noise sources include traffic noise from haulage vehicles, excavators, piling and movement of materials. Vibration levels from any construction plant on site will be discussed in a qualitative nature. At this stage in the planning process it is unlikely that sufficient information would be available to allow vibration levels to be predicted at identified receptors.	▪ Across the site mitigation measures will be recommended to ensure that all residential dwellings will fall into noise exposure category A or B as defined in PPG 24. A number of measures can be introduced to control the source of, or limit exposure to, noise. Such measures will be proportionate and reasonable and may include one or more of the following: ▪ Lay-out: If there are any proposed residential dwellings which will be close to existing roads, then site layout should be considered with non-critical rooms (kitchens & bathrooms) designed to face the roads. The design or layout of the site could also be utilised in order for buildings to act as noise screening for the development ▪ For the operational aspect of the development any increases of over 3dB due to road traffic noise which would occur 15 years after opening will be mitigated against if possible. Different forms of mitigation could include the use of noise barriers or the implementation of low noise surfacing on affected road links ▪ Noise control measures consistent with good working practices would be implemented during the construction phase. The noise control measures would be developed within a Construction Environmental	The operational impacts will arise from increased road traffic and from fixed plant and similar installations to be constructed on site. Operational traffic will be assessed using the provisions in the Design Manual for Roads and Bridges (DMRB) Volume 11, Part 7, Section 3 – Noise and Vibration. Noise from operational plant will be assessed according to the provisions in BS 4142: 1997 'Method for rating of industrial noise affecting mixed residential and industrial areas' (BS4142). Noise from the railway line will be modelled in IMMI to indicate noise impacts on the Site immediately adjacent to the railway. The assessment of whether the proposed site would be suitable for residual use will be undertaken in accordance with the National Planning Policy Framework (NPPF), which has replaced PPG24 and the NPPG, which informs implementation of NPPF . BS8233: 2014 'Guidance on sound insulation and noise reduction for buildings' will be used to provide an indication acoustic performance that would be required from the façade of residential dwellings to ensure the indoor amenity of building occupants. Potential vibration impacts from rail movements on the Chiltern main railway will be assessed in accordance with BS 6472-1: 2008 'Guide to evaluation of human exposure to vibration in	Consultation with EHO for Cherwell District Council has been undertaken.

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
	development site be considered.		and night-time was also agreed at 2 locations in response to discussions with the EHO. The EHO raised the issue of possible noise impacts from the M40 motorway to the north of the site. The EHO indicated that the relatively light traffic volumes on Bucknell Road did not warrant long-term noise monitoring, but it was decided to carry out short term monitoring during the daytime and night-time along Bucknell Road.		Management Plan (CEMP), which would be prepared prior to construction commencing	buildings Part 1 Vibration sources other than blasting.' Construction noise impacts will be assessed in accordance with BS 5228: 2009 +A1: 2014 (Code of practice for noise and vibration control on open and construction sites – Part1: Noise). BS 5228-2009 Part 2 - Vibration deals with vibration control on construction and open sites. BS5228 also provides guidance concerning methods of predicting and measuring noise and assessing its impact on those exposed to it. BS 5228: 2009 +A1: 2014, Annex E, sets out criteria for significance based upon noise change. The ABC method describes a threshold of significant effect at dwellings when the total noise level, rounded to the nearest decibel, exceeds a listed category value. If the total noise level (construction plus ambient pre-construction) exceeds the appropriate category value, then a significant effect is deemed to occur.	
3.2.3 Landscape and Visual Impact	The Study Area is defined by the Zone of Visual Influence (ZVI) of the development. Given the relatively flat topography, vegetation cover and adjacent urban area, the ZVI is not anticipated to extend greater than 1km beyond the site boundary.	The existing site is not covered by any landscape designations. Landscape Character is defined by the transition between Natural England National Character Areas 107 and 108, the 'Cotswolds' and 'Upper Thames Clay Vales', respectively, and more locally by the 'Wooded Estatelands' landscape character type identified in the Oxfordshire Wildlife and Landscape Study (2004). The site is largely made up of mixed farmland with landscape elements/features including copses, hedgerows and isolated properties/ farmsteads. Key visual receptors, within and adjacent to the site, include local Public Rights of Way, residential	Identification of landscape receptors (local landscape character/ characteristics); and visual receptors.	Potential loss of local landscape elements potentially resulting in impacts on landscape character. Potential disturbance to views resulting in impacts on visual amenity.	Given the wooded character of the landscape, green infrastructure/structural planting proposals have the potential to offer mitigation (replacement for any vegetation removal/respond to settings of visual receptors) and positively contribute to local landscape character – potentially resulting in enhancement.	The assessment will be undertaken in accordance with 'Guidelines for Landscape and Visual Impact Assessment: 3rd Edition', produced by the Landscape Institute and Institute of Environmental Management and Assessment (2013).	Viewpoints have been agreed with the Landscape Officer and Case Officer at the Local Planning Authority. There may be a need to confirm consultation comments.

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
		properties at the northern edge of Bicester, and outlying small settlements/properties including Listed Buildings at Home Farm, the Church of St. Lawrence and Himley Farm. See 3.2.4 below.					
3.2.4 Archaeology & Cultural Heritage	The Study Area is defined by a 500m radius from the site boundary. For the Historic Landscape assessment a wider study area influenced by the Zone of Visual Influence will be used where appropriate.	There are no Listed Buildings within the existing site boundary. However just outside the site boundary are the listed buildings of Home Farmhouse and St Lawrence's Church. These have been considered within the Cultural Heritage Assessment for the Exemplar Site. Aerial Photograph Analysis, Geophysical Survey and Archaeological Evaluation have already been carried out within the existing site. The aerial photograph analysis and geophysical survey identified a number of archaeological features across the site including a complex and extensive area of buried ditches, pits, probable tracks and enclosures. These features show as distinctive marks in crops at Hawkswell Farm. The archaeological evaluation tested the findings of the aerial photograph analysis and geophysics and confirmed their results and indicated that the area of activity around Hawkswell Farm was related to Roman settlement activity. A number of trenches across the site also contain evidence for Iron Age activity including possible enclosures. A potential burnt mound, of possible Bronze Age date, a rare feature in Oxfordshire, was also recorded during the evaluation.	Update Historic Environment Records (HER) data and designated assets	Potential impacts to the setting of designated assets. Impacts to the archaeological remains recorded during the fieldwork. Impacts on the Historic Landscape.	Archaeological excavation and recording of areas where fieldwork to date has identified archaeology. Screening and sympathetic design in vicinity of the listed buildings. Preservation of historic landscape features such as field boundaries and hedgerows within the design.	The assessment will be undertaken in accordance with the Institute for Archaeologists Code of Conduct and Standards and Guidance for Desk-based Assessment (2012). The assessment will also be produced in accordance with the NPPF and in the absence of any methodology for impact assessment will use a modified version of the impact assessment methodology presented in Volume 11 of the Design Manual for Roads and Bridges (2007).	The Planning Archaeologist for Oxfordshire Richard Oram and the Conservation Officer at Cherwell District Council Claire Sutton have been consulted over the lifetime of this project. The Planning Archaeologist for Oxfordshire was also consulted during the archaeological field evaluation carried out at the site and made a number of monitoring visits. Consultations with these will continue going forward.
3.2.5 Human Health	The study area for the human health assessment is closely related to that used for other environmental topics as human health is a cross-cutting topic that influences and is influenced by a number of other environmental factors. To understand existing health status, a study area covering Cherwell DC will be used with a focus upon the wards in	The assessment of effects on human health will utilise baseline data collated for other environmental topics including: ▪ Details about the demographic profile and the provision of community and social infrastructure e.g. schools and community centres. ▪ Location of Public Rights of Way and cycle routes that traverse and lie within the vicinity of the site as well as details of the Bicester Walkability	Further statistics about the health status of those communities that could be affected including incidence of mortality from key diseases such as cancer, coronary heart disease and respiratory disease, as well as health	The following impacts from the development could affect human health and will be considered during the assessment: ▪ Changes to noise and vibration ▪ Changes to air quality ▪ Generation of waste during construction and waste management techniques	Connections to nearby footpaths, bridleways and cyclepaths should be provided as part of the development. The design should be informed by the Bicester Walkability and Cyclability audits as well as the Oxfordshire County Council Rights of Way Improvement Plan 2014-2024 (RoWIP). Although various stakeholders have been engaged in the	A standalone Health Impact Assessment (HIA) is not being undertaken for this Scheme, rather the assessment of effects on human health is being integrated into the ES to ensure that the interrelationships between health and other environmental topics are considered holistically. The methods proposed within	During the preparation of the assessment, consultation will be undertaken with the Oxfordshire Clinical Commissioning Groups, Oxfordshire County Council and Cherwell District Council to obtain baseline data. Consultation will occur with the Director of Public Health as part of the masterplanning exercise to determine the

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
	which the Site is situated (Caversfield, Ambrosden and Chesteron, Bicester West and Bicester North), as well as those within the immediate vicinity. This is to ensure that existing health patterns for the communities surrounding the site are characterised. Reference will also be made, where necessary, to trends reported for Oxfordshire to provide appropriate contextual information and comparative statistics. The assessment will utilise the results of other topics. These topics may use different study areas to that defined above and this will be acknowledged in the ES. The study area, therefore, will vary depending upon the health determinants being considered as part of the assessment.	audits and cyclability audits. ▪ Details of existing and potential areas of land contamination presented within the geology and soils assessment ▪ Existing air quality and noise issues presented as part of the air quality and noise and vibration assessments ▪ Existing green space infrastructure presented in both the socio-economic and landscape assessments The health status of the population living in Cherwell district is generally good with life expectancy above the England average. Over the past ten years there have been health improvements with the rates of death from all causes combined and of early death from heart disease having improved. Despite there being good levels of health overall, there are health inequalities with significant differences in health outcomes for those living in the more affluent wards to those residents who live in the more deprived communities. The closest GP Practice to the Site will be the health facility proposed as part of the planning application for LSRL. A review will be undertaken to determine the accessibility to other health facilities in Bicester including time to travel by the main transport modes.	conditions linked to lifestyles, including incidence of obesity and type II diabetes where this is available. It may only be possible to obtain borough level data and comparative statistics for the county and the South East region. Accessibility indicators which demonstrate current accessibility to facilities including primary schools, secondary schools, GPs, hospitals, further education, and the means of access available, e.g. walking, cycling, public transport, will be collated. Further details will be obtained about the provision and capacity of local healthcare facilities. Data will be sourced from the South East Public Health Observatory and Cherwell DC as necessary.	employed at the site ▪ Changes to the landscape and the built environment and the effects upon the ability to pursue healthy lifestyles ▪ Changes to the transport network including cycle routes and PRoW. ▪ Access to healthcare facilities and services. ▪ Access to community facilities including schools. ▪ Changes to community dynamics and feelings of community spirit and engagement. ▪ Creation of employment opportunities and access to employment centres.	design process, further opportunities should be sought to maximise engagement and collaboration with local residents such that they feel engaged in the process and can actively contribute to the urban space that will be created. This could help contribute to a greater sense of belonging and place. Consultation events should consider the types of open space that are needed and the types of public art that could be incorporated into them to help create a sense of place and ownership. Informal sport and recreation facilities have already been incorporated in the design with direct benefits on health in the long-term Issues including natural surveillance and perceptions of safety should also be integral to the detailed design of areas of open space. The design of the site should ensure that cyclists and pedestrians are given priority over vehicular traffic. The design of and facilities provided at the site in the Eco-town need to meet the requirements of all sectors of society.	the Merseyside Guidelines for HIA[1] will be used to guide the assessment of effects on human health although they will be adapted to reflect the integration of human health considerations into the ES. The assessment will use a broad definition of health which recognises that health is affected by more than simply the presence or absence of disease and is influenced by a range of health determinants. The assessment will consider the following determinants: ▪ Employment and Economy ▪ Safety and Security ▪ Air quality ▪ Noise and Vibration ▪ Physical Environment (focussing on built form and urban design) ▪ Transport and Access (including consideration of issues relating to PRoW and cycle routes) ▪ Waste Management and Contamination ▪ Community and Social Infrastructure ▪ Community Spirit and Engagement ▪ Access and provision of healthcare and facilities and services There is no widely accepted significance criteria used in the assessment of health effects. The assessment will report whether health impacts are positive or negative i.e. a potential health gain or loss, drawing upon professional	existing capacity of healthcare facilities and to determine the additional facilities that will be needed to support the Masterplan site. Consultation utilising focus groups and workshops specific to human health issues will not form a specific part of the EIA methodology. However, stakeholder events are to be held as part of the site design process and the information from these events will be used to inform the assessment where appropriate.

[1] Alex Scott-Samuel, Birley, Martin and Ardern, Kate (May 2001) The Merseyside Guidelines for Health Impact Assessment

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						judgement and evidence in health literature. The likelihood of the effects being realised will be documented. The cross-cutting nature of the human health assessment will require the use of results presented in other environmental topics to determine the potential effects of the Site on health outcomes.	
3.2.6 Agriculture & Land Use	The study area comprises the Masterplan site. However, the potential impacts will need to be put into a Regional and national context, in particular in relation to the loss of agricultural land.	The soils are mapped as belonging to the Aberford Series across the whole site. These are described as shallow, locally brashy well drained calcareous fine loamy soils over limestone. These soils are relatively freely draining, but are identified as having a high leaching potential and thus little ability to retain non-adsorbed pesticides, which may therefore leach out of the soils and into surface or groundwater. It is not considered that the soils present any significant constraints with the exception of the high leaching potential and thus the need to ensure the protection of any groundwater resources. The land is predominantly under arable production with some grazing. The ground appears to have a low topography. The land is shown as being Grade 3 (under the Agricultural Land Classification (ALC) scheme) on provisional mapping. ALC surveys are on-going and this detailed mapping is confirming that the site is likely to be predominantly Grade 3b, with small areas of both Grade 3a and Grade 4 land. Grade 3a land would fall within the 'Best and Most Versatile' category (BMV). There are a number of farm buildings within the main site area (but excluded from the development area). These comprise a dairy farm and a number of industrial units, both with their associated services.	Existing soil information has been collated through published soil maps and a Soils Site Report obtained from the National Soil Resources Institute. In addition, a specific ALC survey is on-going (approximately 50% of the site has been surveyed to date). The landowners have been interviewed (in April 2011) to gain an understanding of the farm businesses. These interviews will be repeated to ensure any changes to the businesses since 2011 are captured.	The total site area is approximately 154.82ha in area and therefore has the potential to affect a significant area of existing agricultural land. Current site information indicates that around 8% of the land will be Grade 3a (i.e. BMV), which would equate to approximately 14ha. Development of this area also leads to the potential risk of effects on soil and water quality, resulting from compaction, poor soil handling and silt-laden runoff. The impact on farm viability will depend predominantly on the phasing of the development and how the loss of land affects operations, potentially resulting in parts of a land holding becoming unviable for a period of time. There is also the potential for construction activities to result in disturbance to livestock, and for the development during the operation phase to bring the urban fringe closer to areas which have currently been further from potential vandalism effects.	The soil handling methodologies as set out in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009) should be followed. This should include the development of a Soil Resources Plan. This can have significant benefits in terms of reducing the environmental impacts of transporting and disposing of surplus materials. This should be tied in with the Site Waste Management Plan. The phasing of the development will take account of the farm businesses which would be affected. A considerate construction approach would be used to minimise potential impacts on the agricultural enterprises during the construction phase There may be opportunities for enhancements under the following headings: **Use of Sustainable Drainage Systems (SuDS)** Within the SuDS opportunities should be taken to maximise the use of soils won from site to both attenuate and treat flows during both the construction and operational phases. **Local food production** Opportunities to promote local	There are no legislative requirements governing the assessment of agricultural matters, and the framework of any assessment is derived from a combination of EU and national agricultural and land use policies and measures. The key elements of these can be summarised as: 1. The conservation of the BMV resources of agricultural land; 2. Retention of a competitive and sustainable agricultural industry; 3. The diversification of individual farm businesses into supplementary non-agricultural activities; 4. The more positive engagement of individual farm businesses with the delivery of environmental benefits Current best practice and professional judgement will be used to define significance criteria in relation to both agricultural land and farming businesses.	Consultation with Natural England and the landowner(s) will be undertaken.

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					food production, and to maximise the ability of the soils to support this, should be taken. Advice should be provided to home and allotment growers on how best to handle and care for the soil resource. This may go some way to mitigating for the overall loss of agricultural productivity across the site. **Biodiversity** Within the Soil Resources Plan specific soils should be identified for use in habitat creation areas. These soils have the potential (depending on nutrient status in particular) to support species-rich grassland and woodland communities and inclusion of such habitats would enhance the biodiversity of the site.		
3.2.7 Ecology	The study area for the field surveys comprises the Masterplan Site. Desk information relating to protected species and non-statutory designated sites has been obtained for land that is within and up to 5km from the Masterplan Site boundary. For statutory designated sites of international and national importance for nature conservation the search area has been increased to 10km from the Masterplan Site boundary.	The Site predominantly comprises arable land and fields supporting improved grassland. Most of the hedgerows are species-rich. There are three blocks of mature broad-leaved woodland in this area comprising native and no-native tree species with species-poor ground floras. The River Bure and one of its tributaries converge within the Site before entering Bure Park. These watercourses are winterbournes. Water quality within these watercourses is good. The active railway line on the site boundary is raised on a scrub and tree covered embankment. There is one small pond within the Masterplan site, to the north of Hawkwell Farm. The ecological surveys undertaken include: Phase 1 habitat and protected species walkover surveys; assessment of hedgerows; breeding and wintering bird surveys; terrestrial and aquatic invertebrate surveys, including white-clawed crayfish; reptile surveys; great crested newt surveys; otter and water vole surveys, dormice surveys; and bat	No further ecological data collection is anticipated.	The following impacts from the proposed development could affect ecology and will be considered during the assessment: ▪ Loss of arable land and pasture, thus the loss of habitat that is used by nesting farmland birds and foraging barn owls. ▪ Loss of open watercourse and/or fragmentation of the stream corridor with potential impacts on foraging bats. ▪ Hedgerow loss and/or fragmentation of the hedgerow network with potential impacts on terrestrial invertebrates, breeding birds and foraging bats. ▪ Loss of mature trees. ▪ Loss of trees that may support roosting bats. ▪ Disturbance of bats using	Large areas of open space will be created with scope to offset any adverse effects on terrestrial invertebrates, reptiles, birds and bats. The larger areas of open space will be situated close to existing countryside to decrease the likelihood of disturbance to species in retained areas of farmland. Green networks will be provided to allow for the movement of species in particular Species of Principal Importance under the NERC Act (2006). The fragmentation of the hedgerow and stream networks and loss of trees will be kept to a minimum. Hedgerows, stream corridors and the pond will be retained within suitable buffer zones to maintain their value for wildlife. These features will be incorporated into green	The 'Guidelines for Ecological Impact Assessment in the United Kingdom' (IEEM 2006) will be followed with respect to the assessment of impacts.	The consultees listed below have been consulted with respect to the scope of the Ecological Surveys and will continue to be consulted throughout the assessment process: ▪ Cherwell DC Biodiversity/Countryside Officer and Eco town Project Manager ▪ Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust Conservation Officer ▪ Natural England's Lead Environmental Planning Officer; ▪ Oxfordshire County Council's Ecologist and Natural Environment Manager ▪ Environment Agency's Biodiversity and Planning Officers ▪ the NW Bicester Eco Town

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		surveys; and badger surveys. These surveys were undertaken at an appropriate time of year and following best practice guidance, using suitably qualified (and licensed, where necessary) ecologists. [redacted] Smooth newts were recorded in the pond at Hawkwell Farm. Great crested newts do not breed in this pond and any confirmed or potential breeding sites for great crested newts are sufficient distance from the Site boundary or separated from the site by significant barriers so that it is unlikely that the Site would be of value to great crested newts. Small numbers of common pipistrelle bats were confirmed to be roosting within a mature Ash tree on the edge of the woodland to the west of Home Farm. The hedgerows and riparian corridors provide suitable foraging and commuting habitat for bats. Brown hairstreak butterfly eggs were identified within the Site, and the hedgerows, scrub and woodland within the site is suitable for this species. There are records of white-letter hairstreak butterflies nearby, and this species is likely to be present in the hedgerows. Several Nationally Scarce invertebrates were identified within or in close proximity to the Site, including Shaded Pug Moth, a bark beetle, and Roesel's bush cricket (now generally considered to be a Nationally Local species rather than Nationally Notable). No rare or uncommon aquatic invertebrates have been recorded in the Site. Fish species recorded incidentally during the aquatic invertebrate surveys include		known roosts during construction. ▪ Lighting has the potential to affect wildlife using retained habitats, in particular invertebrates, foraging bats and future potential use by species such as otters. ▪ Loss of habitat that is used by reptiles. ▪ Loss of habitat that is used by brown hare and potentially hedgehogs. ▪ Disturbance of breeding birds arising from noise and visual disturbance during construction. ▪ Incidental mortality of amphibians, reptiles and breeding birds during construction. ▪ Disturbance to badgers during construction and/or damage to setts. Loss of foraging habitat. ▪ Once built, there is the potential that the residents and their pets could have adverse effects on wildlife present within the retained habitats. ▪ Domestic pets associated with new residents may also lead to an increase in predation affecting ground-nesting birds using the adjacent farmland	corridors and green space that provide for the movement of wildlife across the site, including brown hairstreak and white-letter hairstreak butterfly species. The badger setts will all be retained within a suitable buffer to protect them from damage during construction and to avoid/reduce disturbance impacts. Scheme design will ensure the retention of known bat roosts within an appropriate buffer. Dark corridors will be provided to benefit nocturnal species such as bats. The layout of the footpaths and cycles paths has sought to minimise impacts on valuable habitats (the woodlands and stream corridors). The implementation of standard mitigation techniques will prevent adverse impacts on water quality on site and downstream. The Masterplan includes SUDS to protect habitats on site and downstream. It also provides the opportunity to create habitats of value to wildlife. Landscape planting provides the opportunity to create habitats of value to wildlife. Measures to protect and enhance the retained and newly created semi-natural habitats within the development would be secured through a Biodiversity Strategy. Habitats of value to nesting and foraging birds such as the hedgerows and woodlands would be retained within suitable buffers of semi-natural habitat, this together with the creation of large areas of open space on the edge of the		BioRegional Development Co-ordinator ▪ Bicester Town Council ▪ Thames Valley Police

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		bullhead; a species associated with good water quality. Small numbers of common lizards have been recorded in suitable habitats across the Site, grass snake have been recorded nearby. Twelve bird species of conservation concern were recorded as either breeding or probable breeding within the Masterplan site, including farmland specialists such as skylark, linnet and yellowhammer. Low/moderate numbers of bird species of conservation concern were recorded during wintering bird surveys within the Masterplan site. The distribution of wintering birds reflected the field and hedgerow management, with stubble fields and the less heavily trimmed hedgerows supporting higher numbers. In 2010 a pair of barn owls was confirmed to be breeding within a nest box north of the Site boundary. In 2012 this nest box was relocated to a tree on the edge of woodland to the west of Home Farm, within the Site boundary. Small numbers of brown hare were recorded within the Site. Hedgehog are likely to forage within the Site. No white-clawed crayfish, dormice, otters or water voles were recorded within the Site. There are three Sites of Special Scientific Interest (SSSIs) and one Local Nature Reserve (LNR) within 5km of the Masterplan site, and a further nine SSSIs within 10km. There are also two Conservation Target Areas (CTAs), sixteen Local Wildlife Sites (LWS) (two of which include proposed extensions), and four proposed LWSs, located within 5km.			Masterplan site that includes a Country Park and woodland cemetery, would reduce the scale of the impact on certain species. Funds would be provided to enhance local habitats for farmland birds through appropriate, proven management regimes to increase the carrying capacity of local habitats. Compensating for the loss of habitat for farmland birds. This offsite compensation would also provide habitat suitable for other farmland specialist species such as brown hare and harvest mice. Nest boxes would be provided in advance of site clearance to compensate for habitat loss and/or disturbance. New nest/roost sites would be provided for wildlife in the areas of open space (bats, birds, invertebrates and herpetofauna). New woodland would be created on the western edge of value to biodiversity. The hedgerow buffers would be enhance through habitat creation and managed to benefit fauna (invertebrates, birds and reptiles).		
3.2.8 Socio-economics & Community	Consideration of socio-economic and community effects for the Site will be focused within two defined spatial areas, namely a Central	The site is located north of Bicester town, between the B4030 and the B4100. Bicester is a rapidly expanding historic	The following data collection is proposed as part of the assessment:	During the construction stage the following impacts have been identified: ▪ The potential to generate	Potential mitigation measures may include a local employment and training strategy and a communications and consultation strategy to	The methodology for assessing temporary (construction) socio-economic effects will be based on the standard English Partnerships methodology,	During the preparation of the assessment, further consultation will be undertaken as appropriate with individuals relating to key socio-economic

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	Impact Zone (CIZ) and a Wider Impact Zone (WIZ). The CIZ is defined by the four electoral wards that form Bicester settlement (Bicester North, West, East, South and Bicester Town), plus the electoral ward of Caversfield (within which the majority of the site is located). Potential impacts in this area will be more direct in nature and more significant in scale. The WIZ will consider the site in the wider region, focusing on the District of Cherwell, the Local Authority area of Oxfordshire and the wider East Midlands region within which it sits. Potential impacts in this area are more indirect in nature and less significant in scale. Selection of these two spatial areas allows consideration of both local and regional potential impacts of the proposed development. The CIZ will be the focus for the consideration of impact to include an appreciation for social infrastructure and community facility capacity and provision.	market town and now has a population of approximately 43,000[2] (Census 2011). The Demographic Profile Report (November 2013) prepared by Barton Willmore aims to further understand the demographic structure of the NW Bicester Eco-Town proposals and uses the Chelmer Model to forecast population change, using two agreed scenarios for NW Bicester (a baseline and upper range trajectory). The model forecasts a total change in population across the overall study area of approximately 19,000 between 2011 and 2052 (based on either the NW Bicester baseline or upper range scenario), with the population of NW Bicester set to grow to 14,000 over this period (13,425 based on the 'upper range scenario'). Bicester's economy is focused on defence activities at the Ministry of Defence Bicester, storage and distribution, food processing, engineering and publishing. Its proximity to and close relationship with Oxford helps the town by creating opportunities for economic development.. In terms of planned future development of the settlement, it is important to note the following significant developments: ▪ Graven Hill - a strategic housing site of 1,631 homes at south west Bicester, including a health village, sports provision, employment land, a hotel, a new secondary school, a community hall and a 'local centre' ▪ Permission has also been granted for another site of 500 homes at Gavray Drive, including a new primary school, open space and a local wildlife site ▪ The first phase of Bicester town centre redevelopment has opened, including a superstore, cinema and	▪ Utilisation of population modelling prepared as part of the Eco-Town proposals. Reference will be made to both the Chelmer and Popcalc modelling that has been undertaken (the latter by Oxfordshire County Council), noting that , although there are differences in detail between the two models arising from the way in which they forecast future population, the population output for both models broadly corresponds. For the purposes of population, the study area comprises each of the Census wards making up the central area of the town as well as the wards immediately surrounding it. Further breakdown of employment and unemployment statistics including employment by sector ▪ Understanding	direct and indirect employment ▪ The potential impact on accessing key services and amenities such as health facilities, care services, schools and transportation hubs ▪ The potential impacts on local leisure and recreation During the functional stage of the site the impacts are envisaged to include: ▪ The contribution to housing supply in terms of affordability and variety ▪ The contribution to the broader amenity and open space provision for the Bicester area ▪ The contribution to community facility and service provision including health care facilities, potential community meeting venues and accommodation for possible outreach projects ▪ The impact on education facilities – primary, secondary and tertiary ▪ The potential impact on crime and anti-social behaviour. In this instance there is the potential to engage with a Police Crime Prevention Design Advisor ▪ The long-term contribution to local business capabilities and local economy ▪ The impact of the proposals on existing recreation sites and Public Rights of Way	ensure the community is informed in advance of planned works and disruption. For the functional phase of the development, mitigation measures are likely to also include ensuring adequate provision of social and community infrastructure, a local employment and training strategy, provision of access routes and communication routes between the new and existing community, and development of a community integration strategy.	supplemented by a qualitative assessment of secondary disruption effects from traffic and other primary construction impacts. The methodology for assessing the 'functional' effects of the development mixes both quantitative and qualitative assessments as follows: ▪ Analysis of proposed land use and floor space provision to determine employment generation potential from the new development, coupled with an assessment of the likely effect on the employment availability for the existing economically active population ▪ Comparison of the provision of new social and community infrastructure with identified needs and existing under provision within the existing community ▪ Consideration of cumulative effects, for example development of the site alongside other developments in the locality ▪ Recommendation of mitigation measure, where appropriate Assessment of residual effects following implementation of mitigation measures	themes: ▪ Tourism Officer, Cherwell District Council ▪ Public Rights of Way Officer, Oxfordshire County Council ▪ Healthcare Officer, Oxfordshire Clinical Commissioning Groups ▪ Bicester Town Council ▪ Local Constabulary, Banbury Constabulary ▪ Education Services, Oxfordshire County Council ▪ Leisure and Recreation Officer, Cherwell District Council ▪ Social Services, Oxfordshire County Council Stakeholder events are to be held as part of the site design process and the information from these events will also be used to inform the assessment where appropriate.

[2] North West Bicester Eco Town, Demographic Profile Report, Barton Willmore, November 2013

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		smaller retail units. Phase 2 is proposed in the emerging Local Plan	the provision of existing community facilities and their capacity within the area ▪ Baseline data will be used from published sources including the Office of National Statistics, the Annual Business Inquiry, and consideration for Cherwell DC Annual Monitoring Reports. This will also be supplemented by consultations with representatives of key themes being considered and by information prepared as part of the wider Masterplan proposal (for example the NW Bicester Draft Economic Strategy). ▪ Some of the socioeconomic datasets gathered will also provide the evidence base for the Health Impact Assessment In terms of social nuisances resulting from either the construction or functional stages of the Masterplan Site, this will draw on the research findings of other				

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			disciplines including 'air quality', 'noise' and 'landscape and visual' themes				
3.2.9 Waste - Operation & Construction	As Cherwell DC is the waste collection authority, the Study Area will comprise Cherwell District and any waste facilities that will receive waste arising from the Construction and Excavation, and Operational phases, of the development.	**Construction waste** The existing site is largely undeveloped land. It is anticipated that there will be little or no demolition materials which would need to be considered for incorporation into the new-build phase of the project. Berkshire, Buckinghamshire and Oxfordshire have an estimated total Construction, Demolition and Excavation (C,D&E) waste arisings of 4,233,432 tonnes (2005) (Reference: C,D&E Waste: Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005). Of this total: ▪ 29% was recycled to produce graded and ungraded aggregates and soil (excluding topsoil) by the regions 25 recycling crushers; ▪ 41% entered licensed landfill sites (of this 28% was used for engineering and capping and 72% was waste); and ▪ 30% was used on exempt sites. PPS: Eco-Towns – A supplement to PPS1 requires that Eco Towns ensure that no construction, demolition and excavation waste is sent to landfill, except for those types of waste where landfill is the least environmentally damaging option. **Operational waste** Cherwell DC recycling rates are already well above the average for Authorities in England. According to WasteDataFlow 57,378 tonnes of Municipal Waste was generated in Cherwell District in 2012/13 of which 31,300 tonnes was sent for recycling/composting/reuse. This equates to a recycling rate of 54.55%, compared to 60% in Oxfordshire and	Further data collection is proposed for the following: ▪ Location of all treatment and disposal facilities for wastes generated during Construction and Excavation and Operational stages ▪ Any updated waste targets set by Cherwell DC ▪ Details of Cherwell DC waste and recycling collection systems (materials collected, receptacles provided, frequency of collection etc.) ▪ Details of any new preferred treatment/ disposal option for the region and implications on collections from new build developments	The following potential impacts have been identified: At a local level: ▪ Waste collections and management – whether the local infrastructure has the capacity to receive and manage any likely waste arisings from the development. At a regional level: ▪ Waste capacity – whether the regional infrastructure has the capacity to manage or dispose of any residual waste arising from the development. It is anticipated that construction material waste likely to arise from the new-build phase will consist of hard and inert materials, soils and stones, plastics, packaging (wooden and plastic), insulation material, miscellaneous metals, canteen and office waste. As a worst case scenario, it is anticipated that types of waste generated during operation will be similar to those already generated by residential/commercial activities within Cherwell District and the quantities of domestic household waste remain in keeping with existing wastage rates (measured as 'kg per household') Recycling rates will be at least equivalent to Cherwell District. However it is anticipated that wastage and recycling rates (Kg produced per household) are likely to be	**Construction waste** Against the context of the previously mentioned requirements of PPS1, the Eco Town has the opportunity to deliver Best Practice construction waste minimisation and management in accordance with the WRAP (Waste and Resources Action Programme) definition. **Operational waste** Against the context of the existing high recycling rates in the District and the requirements of PPS1, there is opportunity to design a showcase waste management system at the Eco Development. The waste management system (including waste storage and collection) should be designed to mitigate against potential local impacts and achieve maximum recycling and landfill diversion, thus mitigating against the potential impact of not meeting targets. It is anticipated that wastage and recycling rates (Kg produced per household) are likely to be considerably improved to meet project specific targets: an initial recycling rate of 70% and an initial residual waste level of 300kg/household(set in response to the requirements of PPS: Eco-Towns – A supplement to PPS1). It is assumed that any impacts	In order to assess the residual effects that the construction and operational waste produced by the new development two separate criteria will be used. Construction and operational waste will be assessed separately. These are detailed below: **Potential waste impact classification**: This will be determined by the level of wastes volumes likely to arise during the construction and operational phases of the development. **Waste Management impact classification**: This will assess the proposed waste management measures (mitigation) for the project, in conjunction with the capacity of the local and regional infrastructure to manage these wastes. Together this will be used to assess the residual impact of waste generated from the development. **Significance of impacts**: This will be determined by combining the two impacts (potential waste generated and waste management measures) in an assessment matrix.	Informal correspondence with the Head of Environmental Services at Cherwell District Council. Formal consultation required to: ▪ Discuss waste management aspirations for the Eco Town; ▪ Determine a formal position with regards to any future waste facilities in the region and implications on waste management at the development;

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
		45% in England. Most dry recyclables are currently delivered to M&M Materials Recovery Facility (MRF) in Witney, Oxfordshire (approximately 90%). The other 10% to Cheshire transfer station from where it is transferred to UPM MRF in Deeside. Cherwell District Council rolled out food collection services in October 2009, with everyone in the district being served by April 2010. The mixed garden waste and food waste goes to an in vessel composting facility (IVC) at Ardley (operated by Agrivert). This is in year three of a 15 year agreement. Most residual waste goes to Ardley Landfill. Residual waste generated in the north of the district goes to Banbury Waste Transfer station and then to Calvert in Buckinghamshire. In March 2011, Oxfordshire County Council awarded a 25 year contract for residual waste treatment to Viridor Oxfordshire Ltd. From 2014/15 all residual waste will be burnt to produce electricity at the new £200m energy from waste facility being built at Ardley in north Oxfordshire which will: ▪ have capacity to treat 300,000 tonnes of waste per year – sufficient to treat all of Oxfordshire's residual municipal waste; and ▪ divert at least 95% of Oxfordshire's residual municipal waste from landfill		considerably improved to meet project specific targets: an initial recycling rate of 70% and an initial residual waste level of 300kg/household(set in response to the requirements of PPS: Eco-Towns – A supplement to PPS1) Environmental impacts of waste within treatment/ disposal facilities will not be included within this EIA.	of operational waste within treatment and disposal facilities will be addressed in the facility EIAs and covered by their license/permit conditions.		
3.2.10 Flood risk & Hydrology	The study area for the water environment consists of the site, along with the wider catchments of the two tributaries of the River Bure that flow through the site and the Bure itself to theA4095. The study area extends downstream of the site boundary to ensure that the assessment of the potential for flood risk impacts includes downstream third party lands.	Surface water runoff across the site flows largely at greenfield rates to the Bure and its tributaries, with the potential for localised ponding to occur in small low lying areas. There are also a number of ponds within the site boundary. Baseline flood risk within the site has been confirmed using a hydraulic model, which has been constructed to confirm flood plain extents. These are confined to the watercourse corridors and at the confluences between the River Bure and its two tributaries that flow through the	Consultation with the Environment Agency and Lead Local Flood Risk Authority is proposed to ensure that existing baseline data sets are up to date for the Site.	The development could lead to degradation of the water quality of surface and groundwater receptors during construction and operational phases of the development. Surface water runoff rates could be increased leading to an increase in flood risk elsewhere. Flooding of the development could occur should buildings be	Proposed mitigation and opportunities of enhancement are considered to be: ▪ Implementation of a surface water drainage strategy utilising SuDS measures to ensure that surface water runoff from the site is maintained at greenfield rates and good water quality standards are promoted. ▪ Site master-planning to	A standalone Flood Risk Assessment (FRA) will be undertaken for this Scheme, and will be appended to the ES. The ES will consider the impacts of the proposed development upon the water quality and flow regimes of surface and groundwater receptors within and immediately downstream of the site using the methodology set	Consultation is ongoing with the Environment Agency and the drainage engineers at Cherwell DC.

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
		site. The Bure achieves Moderate Ecological Potential with regard to water quality and receives several consented discharges of effluent. Groundwater fed springs are likely to support baseflow to the tributaries of the Bure that flow through the site and feed the existing ponds within the site.		placed within the flood plain.	ensure that there is no loss of floodplain storage up to and including the 100 year event ▪ Construction works in accordance with a CEMP to avoid water quality degradation ▪ Enhancement of water features to provide increased value for biodiversity and recreation. Minimised water consumption through both demand reduction and water use efficiency methods. The development will aspire to meet the water consumption requirement of Level 5 of the Code for Sustainable Homes	out in the paper 'Practical Methodology for Determining the Significance of Impacts on the Water Environment' (Mustow et al, 2005) and guidance provided in the Design Manual for Roads and Bridges.	
3.2.11 Contaminated Land	The study area for the contaminated land assessment is defined by the site boundary. Consideration will be given to factors outside the boundary which may have an influence on the site, such as landfill sites (gas generation). The assessment will address the potential risks to human health and controlled waters that the development may represent.	Since the earliest available historical map (1881) to the present day, the site has been dominated by agricultural activity with the railway to the south. Geologically, the Site is underlain by a thin cover of superficial deposits. At rock head, this is represented by the Cornbrash Formation, which is underlain by the Forest Marble Formation. This geological sequence is generally confirmed by the ground investigations undertaken. The bedrock is designated as a Secondary A aquifer. The site is not located with a Source Protection Zone and there are no major potable water supplies (such as public water supply wells) within 5 km of the Site centre. A historic landfill is recoded as present at Gowell Farm which is located to the south of the site boundary. This is currently part of Avonbury Business Park. Records suggest that this location may have been previously quarried for limestone. We understand that a ground	Further data collection is not proposed at this stage.	If contamination is present, the development could lead to mobilisation of contaminants which could pose a risk to receptors. If contamination is encountered this is likely to be mitigated via remediation prior to construction, so operational impacts will be negligible.	If unacceptable risks are identified, a remedial strategy will be prepared which will detail the work required to ensure that the site is suitable for proposed use. Mitigation measures during construction are considered to be ▪ Dust suppression (damping down, wheel washing etc.) to minimise airborne dust ▪ Water mitigation – appropriate stockpiling of material to ensure controlled waters are not put at risk Spillage mitigation – use of spill kits, drip trays. A CEMP will be produced to mitigate potential impacts.	Site investigation information (chemical results) will be used to assess the risk to human health and controlled waters. Appropriate screening values will be used such as published Soil Guideline Values and Water Quality Standards.	Environment Agency and Local Authority Contaminated Land Officer will be contacted to ensure that the baseline data previously obtained is still appropriate

	Proposed Study Area	Existing Site Description	Further Data Collection Proposed	Potential Impacts	Mitigation and Opportunities for Enhancement	Proposed Assessment Methodology	Consultation
		investigation is going to be done on this area to determine the nature of the fill and any impact this may have on the surrounding proposed development.					
3.2.12 Transport	The study area will include links where traffic flows are forecast to increase by more than 10%. In order to ensure that the extent of these impacts is considered, the study area will include the entirety of Bicester for the purposes of initial assessment in order to be able to identify links where traffic levels are increased. This area encompasses the road network of Bicester within the twelve cordon locations (which are the points of entry/ exit to Bicester).	The site currently has access from the A4095 Lord's Lane from the south and is crossed by Bucknell Road east of the railway line. Other access would be via the proposed junctions on Banbury Road for the Exemplar development. The A4095 currently forms part of the ring road around Bicester and in the vicinity of the site has key roundabout junctions with the B4100 Banbury Road and Bucknell Road and links under the railway to the A4095 Howes Lane. Bucknell Road provides access to Bicester town centre to the south and the village of Bucknell to the north.	Further data collection is not proposed. Baseline traffic data has been obtained from the Bicester Saturn Model for the Masterplan submission. Accident data has also been obtained for the Masterplan submission.	The development could lead to a change in severance due to difficulties in crossing roads with additional traffic volumes, or benefits of providing new routes and crossing. There may be delay to drivers from congestion on the road network and pedestrian delay in crossing roads. The levels of personal injury accidents may increase due to volumes of traffic or be benefitted by new link proposals and junction improvements. In addition, there may be increased fear and intimidation caused by traffic. Increased traffic levels experienced within sensitive areas such as existing residential areas of the town will be a particular concern. They will be a concern in terms of leading to intrusion/fear and delays to pedestrians crossing the roads. Derived air and noise impacts will be assessed in the relevant Air And Noise chapters.	Mitigation measures include: ▪ Comprehensive proposals for walking, cycling and public transport ▪ Strategy for construction traffic management ▪ Provision of new link road and junctions to replace existing A4095 Howes Lane and part of Lords Lane ▪ Travel Plan to demonstrate how sustainable travel will be maximised Agreed junction mitigation strategy for off- site locations	A standalone Transport Assessment and separate Framework Travel Plan will be produced for the scheme. The environmental impacts of traffic will be assessed using the 'Guidelines for the Environmental Assessment of Road Traffic', Institute of Environmental Assessment, 1994. The base year is 2012 and the future year is 2031. The 'do minimum' scenario in 2031 includes all planned developments in Bicester except for the NW Bicester development (only the Exemplar is included). The 'do something scenario' includes all development including the proposed development of NW Bicester.	The organisations listed below have been consulted with respect to the Exemplar development and will continue to be consulted throughout the assessment process for the Masterplan development: ▪ Cherwell District Council ▪ Oxfordshire County Council ▪ Highways Agency

4 SUMMARY AND NEXT STEPS

4.1 Summary

Section 3 of this Scoping Report provides an outline of the existing site description and highlights potential impacts that may arise as a result of the proposed development of the Site. Following this initial review, it is proposed to consider the following environmental topics in the EIA for the Application 1 (North of Railway) eco development site:

- Air Quality
- Noise
- Landscape and Visual Impact
- Cultural Heritage
- Human Health
- Agriculture and Land Use
- Ecology
- Socio-Economics and Community
- Waste (Construction and Operation)
- Flood Risk and Hydrology
- Contaminated Land
- Transport

Further data collection is required in order to inform the EIA. As part of this exercise, it is proposed to contact the following statutory and non-statutory organisations:

- Cherwell District Council
- Environment Agency
- English Heritage
- Natural England
- Oxfordshire County Council
- Local landfill operators
- Local waste management facilities
- Thames Valley Environmental Records Centre
- Parish Councils
- Oxfordshire Clinical Commissioning Groups
- Bicester Town Council
- Banbury Constabulary
- Thames Water

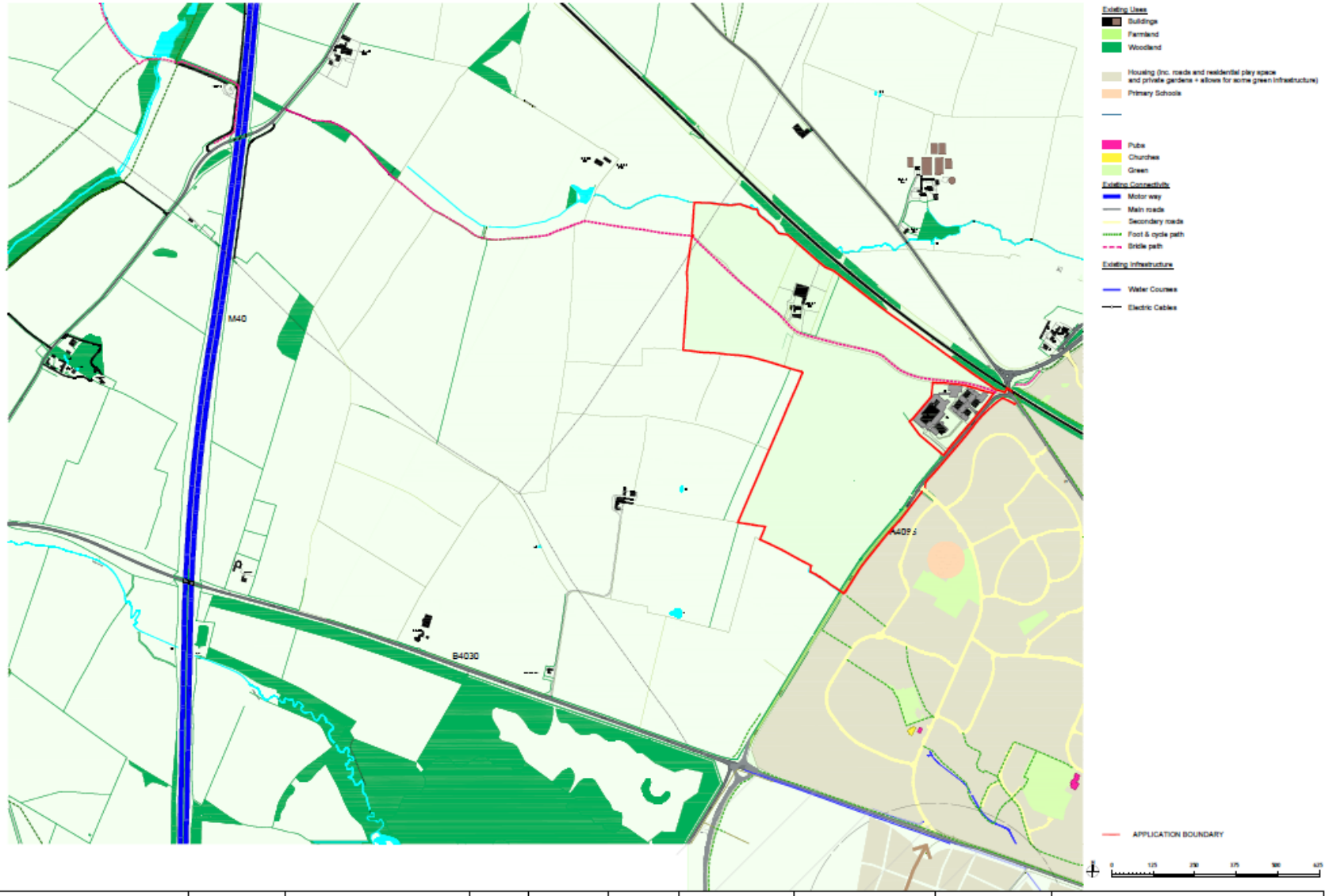
4.2 Next Steps

This Scoping Report sets out our proposed approach to the Site EIA, in terms of study areas, data collection, proposed methodologies and potential for mitigation and enhancement. The Report also sets out our proposed approach for consultation with Cherwell District Council and relevant consultees. These consultees have been identified for each topic, and are summarised in Section 4.1 above.

Following receipt of comments regarding our proposals for the Site, the EIA will be progressed, as agreed with Cherwell District Council. An Environmental Statement will be prepared and will be submitted with the Planning Application for the Site.

Appendix A-1

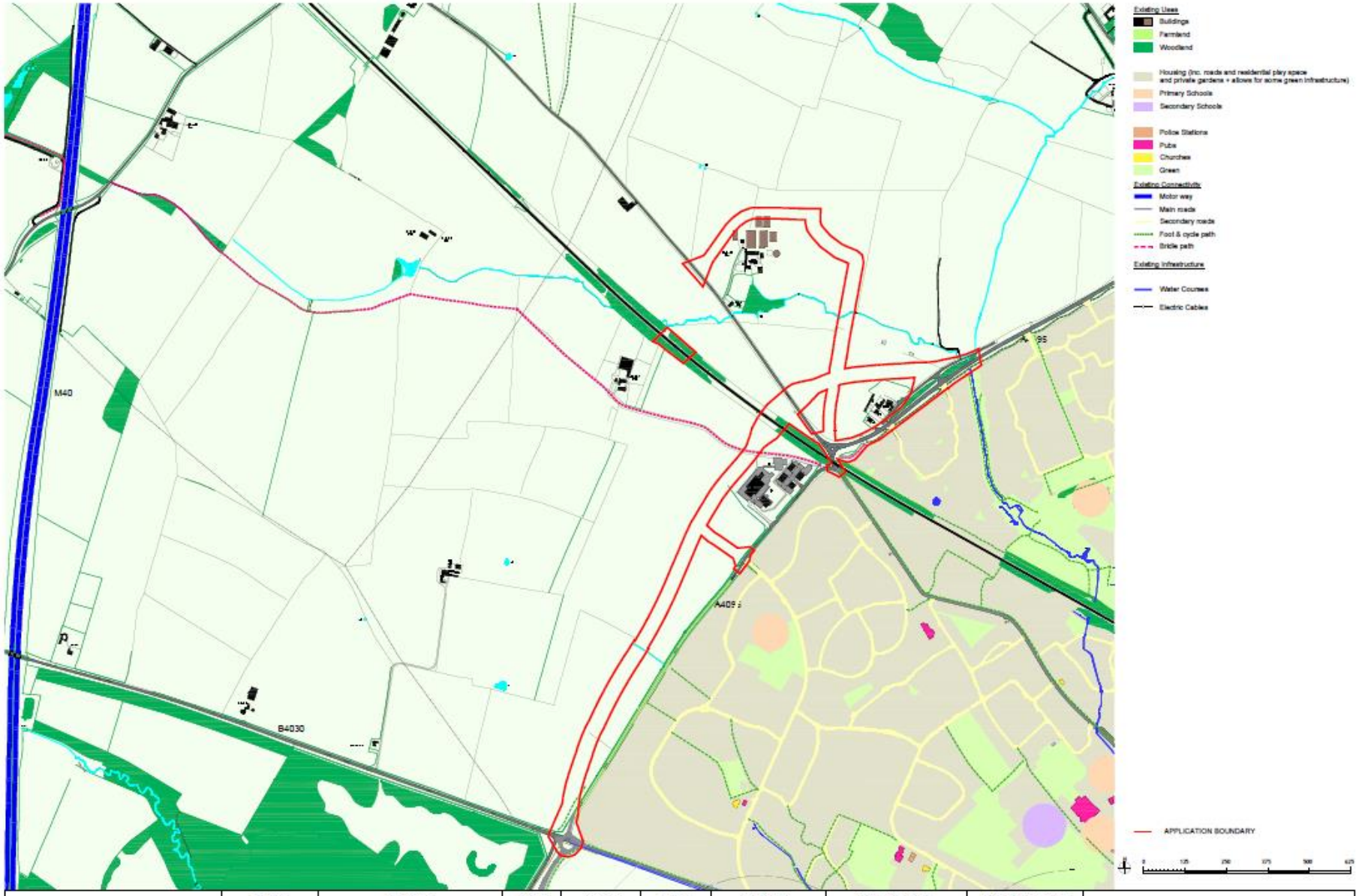
Application 2 (South of the Railway) Site Location



CLIENT	REVISIONS	DATE	STATUS	SCALE	PROJECT	DRAWING NAME	DRAWING NUMBER	
A2 DOMINION		18-10-13	PRELIMINARY	1:5000 @ A1	NW BICESTER ECO DEVELOPMENT	APPLICATION 2 RED LINE	13016(sk)122B	FARRELLS

Appendix A-2

Application 3 (Infrastructure) Site Location



CLIENT	REVISIONS	DATE	STATUS	SCALE	PROJECT	DRAWING NAME	DRAWING NUMBER	
A2 DOMINION		18-10-13	PRELIMINARY	1:5000 @ A1	NW BICESTER ECO DEVELOPMENT	APPLICATION 3 RED LINE	13016(sk)124D	FARRELLS

APPENDIX 2.2:
CHERWELL DISTRICT COUNCIL SCOPING OPINION FOR THE NW BICESTER APPLICATION 1 (NORTH OF THE RAILWAY)

Public Protection & Development Management

Andy Preston – Head of Public Protection & Development Management

Cherwell DISTRICT COUNCIL NORTH OXFORDSHIRE

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Bodicote
Banbury
Oxfordshire
OX15 4AA

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Hyder Consulting (UK) Ltd
Ms Petya Georgieva
Manning House
22 Carlisle Place
London
SW1P 1JA

Please ask for:	Caroline Ford	Direct Dial:	01295 221823
Email:	Caroline.ford@cherwell-dc.gov.uk	Our Ref:	14/00005/SCOP

14 July 2014

Dear Ms Georgieva

TOWN AND COUNTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) (ENGLAND AND WALES) REGULATIONS 2011 – REQUEST FOR SCOPING OPINION

Application: 14/00005/SCOP

Applicant: Hyder Consulting (UK) Ltd

Proposal: Scoping opinion for development to provide residential dwellings, commercial floorspace, leisure facilities, social and community facilities, a primary school, extra care housing, water treatment plant and energy centre, amenity space and service infrastructure

Location: Various Parcel of Land North of Lords Farm and South of Hawkwell Farm, Bucknell Road, Bicester

I write to you in response to your request for a Scoping Opinion which was validated on 29 May 2014. I have consulted with relevant colleagues within the Council, at Oxfordshire County Council and with statutory consultees. Their responses are set out below together with the Council's view on what the Environmental Statement should address; therefore please accept this letter as the Council's formal Scoping Opinion made under Regulation 13 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

We agree that the development falls within Schedule 2 10 (b) and that due to its size, significance and potential to affect sensitive areas, it constitutes EIA development as indicated in the scoping report. The Environmental Statement to accompany the planning application needs to include all the necessary information outlined in Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011.

In terms of site constraints, this part of the wider site is situated adjacent to Principal roads and within an area where protected species have been recorded within the vicinity. The site has a high potential for archaeological interest, it has potential to be contaminated and is situated within a zone 2/3 flood plain.

The general scope of the topic areas to be considered within the Environmental Statement are considered to be appropriate as well as the broad approach to the assessment. However, please ensure that the characteristics of the potential impact (set out at point 3 of Schedule 3) and the information for inclusion in environmental statements (set out at Schedule 4) of the Town and County Planning (Environmental Impact Assessment) Regulations 2011 are included and fully considered through the Environmental Statement.

Turning to each topic area, please see attached detailed comments:

Air Quality
The Anti-Social Behaviour Manager has not provided specific comments in relation to this topic area and comments are still awaited from the Environmental Protection Officer, therefore these comments will be provided separately.

Noise
CDC Anti-Social Behaviour Manager has provided the following comments:
Considering first the road traffic noise implications I would consider it appropriate for the road traffic noise from the three proposals to be dealt with as one showing the cumulative effect. Each development will need to be assessed separately and then the cumulative effect determined. This reflects the interrelated nature of the three proposals. He has spoken with the applicant's noise consultants in advance of this response and has agreed this approach and data presentation with them. In relation to proposals 14/00005/SCOP and 14/00006/SCOP reference needs to be made to the potential the commercial elements of the proposed development will have on the existing and proposed dwellings within the developments scope itself.

Landscape and Visual Impact
CDC Landscape Architect has provided the following comments:

- Both landscape visual impact assessments are to be implemented in accordance with the current *Guidelines for Landscape and Visual Impact Assessment, Third Edition, 2013, published by the Landscape Institute and Institute of Environmental Management and Assessment.*
- The quality of the landscape character to be evaluated and tested against the *restoration and repair* description of *Cherwell District Council Landscape Assessment 1995*
- Consider landscape mitigation of development proposals and enhancement of landscape/urban/POS character for amenity, legibility, wildlife habitat, buffer zones and public surveillance, etc.
- An explanation of the aforementioned mitigation and enhancements through the use of photomontage techniques (i.e. the highway alignment/Lords Lane)
- An Arboricultural survey of existing individual trees, woodland, water corridor and hedgerows along with landscape management objectives, influence on mitigation, enhancement and visual amenity
- Viewpoint proposals/locations: a photographic representation of current site conditions in accordance. Current Landscape Institute guidelines on photographic representation to be consulted.

CDC Arboricultural Officer has provided the following comments:
At this stage, the main Arboricultural requirement would be the need to provide 1 No Arboricultural survey and Impact Assessment in accordance with BS5837:2012.

Archaeology and Cultural Heritage
No comments have yet been received from the Council's Conservation Officer.

English Heritage has provided the following comments:
This development could, potentially have an impact upon designated heritage assets and their settings in the area around the site. We would expect the Environmental Statement to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets.

We would also expect the environmental statement to consider the potential impacts which the proposals might have upon those heritage assets which are not designated. These should also be included as heritage assets, designated or otherwise as they are valued components of the historic environment. This information is available via the Local Authority Historic Environment Record (www.heritagegateway.org.uk) and relevant local authority staff.

The assessment should also take account of the potential impact which associated activities (such as construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments.

OCC Archaeologist has provided the following comments:
The site is located in an area of archaeological interest identified through a desk based assessment, geophysical survey and a trenched evaluation. The archaeological evaluation recorded a range of features across the site dating to the Neolithic through to the Roman period. A programme of mitigation will be required ahead of any development.
The Environmental Impact Assessment will need to contain this desk based assessment as well as the reports for the geophysical survey and trenched evaluation.

Human Health
Sport England
The site is not considered to form part of, or constitute a playing field as defined The Town and Country Planning (Development Management Procedure) (England) Order 2010 (Statutory Instrument 2010 No.2184).

Therefore, Sport England would assess a forthcoming application for planning permission against its adopted planning policy objectives. The focus of these objectives is that a planned approach to the provision of facilities and opportunities for sport is necessary in order to meet the needs of local communities. The occupiers of any new development, especially residential, will generate demand for sporting provision. The existing provision within an area may not be able to accommodate this increased demand without exacerbating existing and/or predicted future deficiencies. Consequently, Sport England considers that new developments should be required to contribute towards meeting the demand they generate through the provision of on-site facilities and/or providing additional capacity off-site. The level and nature of any provision should be informed by a robust evidence base such as an up to date Sports Facility Strategy, Playing Pitch Strategy or other relevant needs assessment.

This requirement is supported by the Governments National Planning Policy Framework (NPPF). Paragraph 17 sets out 12 land-use planning principles that should underpin both plan-making and decision-taking. One of the 12 principles is a requirement to:

“Take account of and support local strategies to improve health, social, and cultural wellbeing for all, and deliver sufficient community and cultural facilities and services to meet local needs.”

Paragraph 70 states:

“To deliver the social, recreational and cultural facilities and services the community needs, planning policies and decisions should:

- Plan positively for the provision and use of shared space, community facilities (such as local shops, meeting places, sports venues, cultural buildings, public houses, and places of

worship) and other local services to enhance the sustainability of communities and residential environments…
- Ensure an integrated approach to considering the location of housing, economic uses and community facilities and services."

The population of the proposed development will generate additional demand for sports facilities. If this demand is not adequately met then it may place additional pressure on existing sports facilities, thereby creating deficiencies in facility provision. Sport England will therefore seek to ensure that the proposal meets any new sports facility needs arising as a result of the development.

You may be aware that Sport England's Sports Facilities Calculator (SFC) can help to provide an indication of the likely demand that will be generated by a development for certain facility types. Details can be found at:
http://www.sportengland.org/facilities-planning/planning-for-sport/planning-tools-and-guidance/sports-facility-calculator/

Any new facilities should be built in accordance with Sport England's design guidance notes, copies of which can be found at:
http://www.sportengland.org/facilities-planning/tools-guidance/design-and-cost-guidance/

Sport England would expect any forthcoming application for planning permission to demonstrate how the above requirements of the NPPF have been met. This should be clearly set out in an environmental assessment or within other documents submitted formally as part of the application (e.g. Design and Access Statement, Planning Statement etc.)

Agriculture and Land Use
Comments awaited from the Environmental Protection Officer in relation to land contamination issues. Drainage and ecology comments are included elsewhere within this response. In relation to the loss of agricultural land, you will need to ensure that it is clear why this land has been chosen and what the implications are of the loss of best and most versatile agriculture land.

Ecology
CDC Ecologist:
The EIA scoping report proposes no new ecological data collection. Since development on the site is not expected to commence until 2018, I would expect updated bat roosting and badger surveys to have been included, since these species are mobile and frequently move between sites, and this could affect the planned mitigation strategies. Therefore bat roosting and badger surveys should be carried out no more than a year before the expected development starts, and the results of these and any consequent changes to the mitigation that are necessary need to be submitted for approval.

BBOWT:
Impact of proposed development
The EIAs should assess the impacts on Priority Habitats and Species, in addition to protected species (in line with paragraph 117 of the National Planning Policy Framework). The EIAs should also assess impacts on Local Wildlife Sites as well as statutory sites. Impacts at Local and Site level should be assessed in addition to those at District level and above.

The applicant would need to demonstrate that a net gain in biodiversity would be delivered (in line with the National Planning Policy Framework) using an accepted biodiversity metric in the EIAs.

The EIAs should be prepared following the CIEEM 'Guidelines for Ecological Impact Assessment in the United Kingdom' (2006). A data search from the Thames Valley Environmental Records Centre (TVERC) should be included as part of the desktop study to inform the scope of the EIAs.

The EIAs should take into account indirect impacts of development at this site on biodiversity in the wider area, including hydrological and air pollution impacts.

The EIAs must show how lighting across the whole site is designed to minimise the impact on wildlife, and in particular so as not to shine into wildlife corridors.

Appropriate management and monitoring of the site is crucial to whether the proposed development is able to succeed in delivering a net gain in biodiversity. The public areas of the site would need to be managed for biodiversity in perpetuity to avoid the loss of potential benefits from the mitigation and enhancement measures. Ecological monitoring is important to ensure that the management is successful in meeting its objectives for biodiversity and to enable remedial action to be identified, if necessary. The EIAs should provide an outline of the proposed management and monitoring.

All EIAs should include an assessment of cumulative impacts on ecology, both direct and non-direct impacts within the site and off-site.

Delivery of biodiversity enhancements
Enhancements in biodiversity should be built into the design from an early stage on various scales, including individual house design. Features for biodiversity within the site should be planned to link up to habitats and features in the surrounding landscape. The EIA should demonstrate whether best practice has been followed, as suggested in the Oxfordshire Biodiversity & Planning Guidance.

Opportunities to include biodiversity within the built development should be maximised. In addition to green spaces this should include as many as possible of the following:

- SUDS schemes/balancing ponds to be designed so as to maximise their biodiversity value
- Bat and/or bird boxes within the fabric of buildings
- Green rooves on buildings where possible
- Street trees, and fruit trees in gardens
- Native wildflower meadows and other wildlife habitats within the street environment, ideally within gardens and also within the grounds of any public buildings.

Contribution to ecological networks (see NPPF paragraph 109)
The outcomes of the ecological surveys should be used to inform and develop appropriate biodiversity enhancements, in addition to any compensation that is necessary. One source of information that should be used to inform the location of any off-site biodiversity compensation and enhancements is the Conservation Target Areas (CTAs). In Oxfordshire CTAs have been identified by the Biodiversity Partnership. These are considered to be the most important areas for wildlife conservation in Oxfordshire Keynes where targeted conservation action will have the greatest benefit. The main aim within CTAs is to restore biodiversity at a landscape-scale through the maintenance, restoration and creation of priority habitats. CTAs provide a key focus for delivery of the Oxfordshire Biodiversity Action Plan (BAP).

The proposed development lies close to several CTAs. Further details and maps are available from: http://www.oncf.org.uk/biodiversity/cta.html

Scope of Surveys
The selection of appropriate surveys should be informed by a desk-top survey, including a request for existing records from the Thames Valley Environmental Records Centre (TVERC), and other local groups who may hold existing information (BBOWT submits all its records to TVERC). The phase 1 habitat survey, which we understand has already been undertaken, should also inform the need for further survey work.

The scope of surveys should not only include features receiving statutory protection, but should also pick up on species and habitats listed by the Secretary of State as being of principal importance under section 41 of the NERC Act 2006. As such, botanical surveys should identify habitats of principal importance. Further assessment may be needed to determine the value of some habitats on site, especially any habitat where the defining features are not only botanical.

Species surveys should be designed to identify species of principal importance using the site, in addition to protected species. The need to conserve species and habitats of principal importance is stated in paragraph 117 of the NPPF as follows:

"promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets"

Timing of surveys: it is important that all potential biodiversity impacts and enhancement opportunities are informed by full survey information. Surveys should be undertaken at the optimal time of year for each species using the best practice methodology. It would be particularly useful for surveys to identify any existing wildlife corridors connecting to features within the wider countryside, for example watercourses, ditches, hedgerows and railway embankments so that these can be taken into account in the design of the restoration and aftercare schemes.

Environment Agency (Ecology):
The 'existing site description' suggests that there is only one pond on the Masterplan site. This is not correct.

- It is suggested that no great crested newts were recorded on the site and that any breeding sites are sufficiently far removed to the minimise risk of their presence. However, they do breed in other ponds on the Masterplan site and we would suggest it is not correct to assume that they may not use other terrestrial habitats.

- The presence of bullhead on the site suggests that the watercourses do not quite fit the ephemeral description given to them.

- With respect to further data collection, it is suggested that none is planned. It should be clarified whether this refers to the preparation stage for the EIA and Environmental Statement only. There will be a requirement for further monitoring and assessment to inform stages of development over time.

- The 'mitigation and opportunities for enhancement' section suggests that new areas of open space will offset any adverse effects on invertebrates, reptiles and birds etc. This cannot be the case for all species. All of these mitigation proposals, which have been discussed in principle for some time, will need to be demonstrated in the outline and detailed designs at the appropriate times to show that they are achievable within the context of the infrastructure and uses of the site.

- The proposed assessment methodology makes no mention of the measures to demonstrate the achievement of a net gain for biodiversity. This is a requirement of the Eco Town Planning Policy Statement supplement and subject to considerable discussion with the developers. We are surprised that it has not been included as a measure of assessment and suggest that it should be included.

Natural England:
Advice related to EIA Scoping Requirements
1. General Principles

Schedule 4 of the Town & Country Planning (Environmental Impact Assessment) Regulations 2011, sets out the necessary information to assess impacts on the natural environment to be included in an ES, specifically:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases.
- Expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.
- An assessment of alternatives and clear reasoning as to why the preferred option has been chosen.

- A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.
- A description of the likely significant effects of the development on the environment – this should cover direct effects but also any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects. Effects should relate to the existence of the development, the use of natural resources and the emissions from pollutants. This should also include a description of the forecasting methods to predict the likely effects on the environment.
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
- A non-technical summary of the information.
- An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.

It will be important for any assessment to consider the potential cumulative effects of this proposal, including all supporting infrastructure, with other similar proposals and a thorough assessment of the 'in combination' effects of the proposed development with any existing developments and current applications. A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

2. Biodiversity and Geology

2.1 Ecological Aspects of an Environmental Statement

Natural England advises that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance on such matters. Guidelines for Ecological Impact Assessment (EcIA) have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) and are available on their website.

EcIA is the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. EcIA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal.

The National Planning Policy Framework sets out guidance in S.118 on how to take account of biodiversity interests in planning decisions and the framework that local authorities should provide to assist developers.

2.2 Internationally and Nationally Designated Sites

The ES should thoroughly assess the potential for the proposal to affect designated sites.

Sites of Special Scientific Interest (SSSIs) and sites of European or international importance
The development sites are adjacent to the following designated nature conservation site:

- Ardley Cutting and Quarry Site of Special Scientific Interest (SSSI)
- Further information on the SSSI and its special interest features can be found at www.natureonthemap.naturalengland.org.uk. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within Ardley Cutting ad Quarry SSSI and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects.
- It should be noted that Great Crested Newts are a feature of the SSSI. This should be taken into account when considering protected species (see section 2.4 below)

2.3 Regionally and Locally Important Sites

The EIA will need to consider any impacts upon local wildlife and geological sites. Local Sites are identified by the local wildlife trust, geoconservation group or a local forum established for the purposes of identifying and selecting local sites. They are of county importance for wildlife or geodiversity. The Environmental Statement should therefore include an assessment of the likely impacts on the wildlife and geodiversity interests of such sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures. Contact the local wildlife trust, geoconservation group or local sites body in this area for further information.

2.4 Protected Species - Species protected by the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2010

The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law, but advises on the procedures and legislation relevant to such species. Records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment.

The conservation of species protected by law is explained in Part IV and Annex A of Government Circular 06/2005 *Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System*. The area likely to be affected by the proposal should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES.

In order to provide this information there may be a requirement for a survey at a particular time of year. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and where necessary, licensed, consultants. Natural England has adopted standing advice for protected species which includes links to guidance on survey and mitigation.

2.5 Habitats and Species of Principal Importance

The ES should thoroughly assess the impact of the proposals on habitats and/or species listed as 'Habitats and Species of Principal Importance' within the England Biodiversity List, published under the requirements of S41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the NERC Act 2006 places a general duty on all public authorities, including local planning authorities, to conserve and enhance biodiversity. Further information on this duty is available in the Defra publication 'Guidance for Local Authorities on Implementing the Biodiversity Duty'.

Government Circular 06/2005 states that Biodiversity Action Plan (BAP) species and habitats, 'are capable of being a material consideration…in the making of planning decisions'. Natural England therefore advises that survey, impact assessment and mitigation proposals for Habitats and Species of Principal Importance should be included in the ES. Consideration should also be given to those species and habitats included in the relevant Local BAP.

Natural England advises that a habitat survey (equivalent to Phase 2) is carried out on the site, in order to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (eg from previous surveys);
- Additional surveys carried out as part of this proposal;
- The habitats and species present;

- The status of these habitats and species (eg whether priority species or habitat);
- The direct and indirect effects of the development upon those habitats and species;
- Full details of any mitigation or compensation that might be required.

The development should seek if possible to avoid adverse impact on sensitive areas for wildlife within the site, and if possible provide opportunities for overall wildlife gain.

The record centre for the relevant Local Authorities should be able to provide the relevant information on the location and type of priority habitat for the area under consideration.

2.6 Contacts for Local Records

Natural England does not hold local information on local sites, local landscape character and local or national biodiversity priority habitats and species. We recommend that you seek further information from the appropriate bodies (which may include the local records centre, the local wildlife trust, local geoconservation group or other recording society and a local landscape characterisation document).

3. Landscape Character

Landscape and visual impacts
Natural England would wish to see details of local landscape character areas mapped at a scale appropriate to the development site as well as any relevant management plans or strategies pertaining to the area. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development, such as changes in topography. The European Landscape Convention places a duty on Local Planning Authorities to consider the impacts of landscape when exercising their functions.

The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed.

Natural England supports the publication *Guidelines for Landscape and Visual Impact Assessment*, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment.

In order to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness, Natural England encourages all new development to consider the character and distinctiveness of the area, with the siting and design of the proposed development reflecting local design characteristics and, wherever possible, using local materials. The Environmental Impact Assessment process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage. Due to the overlapping timescale of their progress through the planning system, cumulative impact of the proposed development with those proposals currently at Scoping stage would be likely to be a material consideration at the time of determination of the planning application.

The assessment should refer to the relevant National Character Areas which can be found on our website. Links for Landscape Character Assessment at a local level are also available on the same page.

4. Access and Recreation

Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.

Rights of Way, Access land, Coastal access and National Trails

The EIA should consider potential impacts on access land, public open land, rights of way and coastal access routes in the vicinity of the development. Consideration should also be given to the potential impacts on the adjacent/nearby Click here to enter text. National Trail. The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts. We also recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

5. Air Quality

Air quality in the UK has improved over recent decades but air pollution remains a significant issue; for example over 97% of sensitive habitat area in England is predicted to exceed the critical loads for ecosystem protection from atmospheric nitrogen deposition (England Biodiversity Strategy, Defra 2011). A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The assessment should take account of the risks of air pollution and how these can be managed or reduced. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk). Further information on air pollution modelling and assessment can be found on the Environment Agency website.

6. Climate Change Adaptation

The England Biodiversity Strategy published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be maintained. The NPPF requires that the planning system should contribute to the enhancement of the natural environment 'by establishing coherent ecological networks that are more resilient to current and future pressures' (NPPF Para 109), which should be demonstrated through the ES.

7. Contribution to local environmental initiatives and priorities

The development sites lie within a Green Infrastructure Zone and close to several Biodiversity Opportunity Areas. Natural England views the incorporation of Green Infrastructure, at a local and sub-regional level, as a '*multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability. Its design and management should also respect and enhance the character and distinctiveness of an area with regard to habitats and landscape types*'. Green Infrastructure should further '*thread through and surround the built environment and connect the urban area to its wider rural hinterland*'.

8. Cumulative and in-combination effects

A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

The ES should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment, (subject to available information):

a. existing completed projects;
b. approved but uncompleted projects;
c. ongoing activities;
d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
e. plans and projects which are reasonably foreseeable, ie projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

OCC Ecology:
Appropriate management and monitoring of the site could be crucial to whether the proposed development is able to succeed in delivering a net gain in biodiversity. The public areas of the site would need to be managed for biodiversity in perpetuity to avoid the loss of potential benefits from the mitigation and enhancement measures. Ecological monitoring is important to ensure that the management is successful in meeting its objectives for biodiversity and to enable remedial action to be identified, if necessary. The EIA should provide an outline of the proposed management and monitoring.

The applicant would need to demonstrate that a net gain in biodiversity would be delivered (in line with the National Planning Policy Framework) using an accepted biodiversity metric in the EIA.
All EIAs should include an assessment of cumulative impacts on ecology, both direct and non-direct impacts within the site and off-site.

EIAs should assess the impacts on Priority Habitats and Species, in addition to protected species (in line with paragraph 117 of the National Planning Policy Framework). Assessment of impacts on species and habitats should include at a site and local level. EIAs should also assess impacts on Local Wildlife Sites as well as statutory sites.

Enhancements in biodiversity should be built into the design from an early stage on various scales, from individual house design to the masterplanning work. Features for biodiversity within the site should be planned to link up to habitats and features in the surrounding landscape. The EIA should demonstrate whether best practice has been followed, as suggested in the Oxfordshire Biodiversity & Planning Guidance.

Socio Economics and Community
OCC Economy and skills
The Economy & Skills team has had significant input into the Eco Towns Economic Development Strategy that will accompany the Masterplan.

Waste – Operation and construction
No comments have been received relating to this topic area from consultees; however the general scope of this topic appears appropriate.

Flood risk and Hydrology
Environment Agency
This section should be expanded to consider the impacts of the development on water resources. The development will represent a large potable water demand and impacts of this demand on the

environment and the infrastructure required should be considered. The Eco Town Planning Policy Statement requires water demand management with an aspiration of achieving water neutrality once the development is complete.

Thames Water
The provision of water and waste water infrastructure is essential to any development.

It is unclear at this stage what the net increase in demand on our infrastructure will be as a result of the proposed development. Thames Water is concerned that the network in this area may be unable to support the demand anticipated from this development. The developer needs to consider the net increase in water and waste water demand to serve the development and also any impact the development may have off site further down the network, if no/low water pressure and internal/external sewage flooding of property is to be avoided.

It is also unclear as to how the buildings will be constructed, Thames water is concerned that water mains and sewers immediately adjacent to the site may be affected by vibration as a result of piling, possibly leading to water main bursts and or sewer collapses.

We would therefore recommend that any EIA report should be expanded to consider the following.

- The developments demand for water supply and network infrastructure both on and off site and can it be met.
- The developments demand for Sewage Treatment and network infrastructure both on and off site and can it be met.
- The surface water drainage requirements and flood risk of the development both on and off site and can it be met.

Should the developer wish to obtain information on the above issues they should contact our Developer Services department on 0845 850 2777

OCC Drainage Team
"The development is large in scale and would have a significant impact on surface water drainage. No drainage information has been given due to the nature of the application.
Should a formal application be submitted a drainage strategy should be submitted which needs to include a Flood Risk Assessment and an indicative surface water drainage proposal at the very least.
The development needs to adhere to the requirements of the Flood and water Management Act 2010".

Contaminated Land
No comments have been received from the CDC Environmental Protection Officer with regard to this topic area.
Environment Agency have provided the following comments:
In this section under the 'Mitigation and Opportunities for Enhancement' we expect that the development size could require some larger oil tanks for refueling etc. Oil storage on site may therefore need to be considered and should be in-line with best practice and if appropriate oil storage regulations.

Transport
OCC Highways:
The submitted scoping opinion is one of three (14/00005/SCOP, 14/00006/SCOP and 14/00007/SCOP) which have been submitted to the Local Planning Authority for consideration promoting the North West Bicester development site.

The submitted scoping opinion contents proposed for the northern section of the overall development site does not appear to include some of the items expected. Please see the comments below:

Transport Strategy Comments
"No key issues with this EIA scoping from a strategy point of view as long as Boundary Way is included within the assessment area. Financial contributions towards the area strategy for Bicester are to be sought".

Public Transport Comments
"There have been several discussions regarding principles of bus routing and service levels. There would appear to be outstanding issues regarding future service provision to the 'exemplar' part of the site, as there is a clear tension between the principles of direct routing and serving all parts of the site.

It should be conditional that the developer funds the agreed level of bus service provision until full commercial viability is achieved.

The developer must produce a robust plan to deliver the agreed proportion of journeys by public transport. Effective delivery of a good public transport service will reduce the number of car trips on the wider Bicester highway network.

The developer will produce a highways layout which maximises the attractiveness of the bus, through facilitating direct journeys which avoiding deviation as far as possible. High quality bus stops will be identified on the highways layout, located in places which have excellent footway connectivity to the wider site.

The delivery of an eventual commercially viable bus service is of the greatest importance. The developer will be expected to fund the cost of bus service provision until such time as the service can be operated on a fully commercial basis."

Rights of Way comments
"Unlike the EIA application for area 3 (Howes Lane) section 3.2.12, this EIA application does not appear to consider impacts in Transport for pedestrians, cyclists and equestrians. This needs to be addressed as the site includes Bicester Bridleway 4 (via Aldershot Farm) which is a key strategic walking, cycling and equestrian route.

The EIA must assess the impacts on this particular route, especially any severance caused by the new road/building construction, and proposals for mitigation and assessment should include a controlled crossing of the new road for walkers, cyclists and equestrians and means to provide an integrated network to and through the development site. Other current rights of way as well as those planned for the Eco-Town area and surrounds should also be included".

Travel Plan comments
"A framework travel plan is produce and agreed with the Oxfordshire County Council Travel plan team prior to work starting on this development and supplementary travel plans are produce in accordance with OCC's adopted guidance document, Transport for New Developments: Transport Assessments and Travel Plans (March 2014)

As part of the master plan submission a framework travel plan will be required for the whole site setting out how the Eco town travel targets will be meet and any mitigation action that will be taken by the developers if these targets are not achieved.

A supplementary travel plan and monitoring fees will be required for each of the different land use, giving details of how they will mitigate the travel impact from them and how these travel plans will be monitored".

Masterplan/Layout comments
While layout details are not expected to be within an EIA scoping opinion it is essential that as part of a future planning submission(s) the following issues are considered (not a robust list):

- Pedestrian and cyclist links both internal and external throughout the overall development site;

- Location of vehicle access points and their impact on the overall road and street hierarchy for the overall development;
- Parking levels for both car and cycle parking (all land uses);
- Location of Public Transport links/connections/infrastructure;
- Materials, street lighting requirements/design, landscaping/tree types, utility/service requirements;
- Coach dropping off areas for pupils for primary and secondary schools.

Highway Agency:
The HA is an executive agency of the Department for Transport (DfT). We are responsible for operating, maintaining and improving England's strategic road network (SRN) on behalf of the Secretary of State for Transport. In this case it relates to the M40, A34 and A43.

The HA will be concerned with proposals that have the potential to impact the safe and efficient operation of the SRN. From the information provided, we would recommend that the cumulative effects of any proposed development at this location should be considered at M40 Junction 9 and Junction 10, this would likely be in the context of Cherwell District Council's Local Plan and its supporting evidence, together with the North West Bicester Masterplan (and subsequent Supplementary Planning Document (SPD)). An assessment would be required to demonstrate the potential impact of the type and scale proposed development at this location, together with identified deliverable mitigation measures. The overall forecast demand should be compared to the existing network to accommodate traffic over a period up to ten years after the date of registration of a planning application or the end of the Local Plan.

The HA expects the promoters of development to put forward initiatives that manage down the demand of traffic proposals to support the promotion of sustainable transport and the development of accessible sites. This is particularly necessary where the potential impact is on sections of the SRN that could experience capacity problems in the short or medium term. We would be concerned if any material increase in traffic were to occur on the SRN as a result of planned growth without careful consideration of mitigation measures. It is important that the Local Plan provides the planning policy framework to ensure development cannot progress without the appropriate infrastructure in place. We are currently reviewing North West Bicester Masterplan which will inform the subsequent SPD.

Network Rail:
It is noted that the proposed development includes a proposed new road under bridge and pedestrian/cycle under pass which will affect Network Rail's operational railway line between Bicester North and Banbury. Whilst the applicant A2Dominion Group held an initial meeting with Network Rail representatives from our LNW Route and Property on 9th July 2014, further discussions will be necessary over the design and implementation of the proposed two new under bridges as they will have a material impact on Network Rail's operational railway. In this regard the applicant should contact Network Rail's Construction Manager Mike Lightwing, The Quadrant, Elder Gate, Milton Keynes Bucks MK9 1EN to discuss the design and construction of the under bridges and the Asset Protection Agreements required. In addition there will be the need for completion of a Works Agreement relating to the construction and future maintenance of the under bridge and the adoption of the roadway there under.

In addition the applicant should contact Rob Turner, Network Rail Property, Development Surveyor (North), 11th Floor, The Mailbox, 100 Wharfside Street, Birmingham B1 1RT to outline in detail the development proposals and discuss the Heads of Terms for any bridge rights/agreement required over Network Rail's property, which would be subject to railway and regulatory approvals.

This large development may impact on nearby existing level crossings due to proposed new highway movements and additional or diverted traffic. In addition if a new under bridge is proposed in close vicinity to existing level crossings then Network Rail would require the closure of the existing level crossings and the use over the railway to be transferred to the under bridge instead.

General comments

Environment Agency

We are generally satisfied with the 'EIA Topics and Scope' as set out in Table 2 of the Environmental Impact Assessment Scoping Report (Hyder, May 2014). However, we have a number of additional items we consider should be scoped into the EIA as detailed below.

Table 2 'EIA Topics and Scope'

- Given the scale and the potential impacts of the development on waterbodies on site and downstream, WFD compliance should be scoped in to the EIA assessment. A WFD Compliance Assessment would be one option to assess this. Section 3.2.10 'Flood risk and hydrology' could be expanded upon to consider the whole water environment and full WFD implications, including water quality and ecological status.
- We also recommend that a 'light-touch' Ecosystem Services Assessment is undertaken as part of the EIA. This would allow for a review and stock-take of the overall impact on the environmental services provided by the site and any resultant losses and gains.
- A further emission of the EIA scope is consideration of foul water infrastructure capacity requirements of the development needed to protect and improve the environment. The development will represent a significant increased pressure on existing foul water infrastructure and new/improved infrastructure will be required. Potential impacts of this demand on the environment should be considered and mitigation identified as required.

Overall OCC Response

In addition to the issues identified in Table 2 EIA Topic and Scopes in the submitted scoping report, the County Council would like to see the following issues addressed in the Environmental Statement:

- Transport Strategy: Boundary Way should be included within the transport assessment area
- Rights of Way: The impact on pedestrians, cyclists and equestrians needs to be assessed in relation to Bicester Bridleway 4 (via Aldershot Farm) which is a key strategic walking, cycling and equestrian route. Other current rights of way as well as those planned for the Eco-Town area and surrounds should also be included.
- Drainage: At formal application stage a drainage strategy should be submitted which needs to include a Flood Risk Assessment and an indicative surface water drainage proposal.
- Archaeology: The EIA will need to contain the already completed desk based archaeological assessment as well as the reports for the geophysical survey and trenched evaluation. A programme of mitigation will be required ahead of any development.
- Ecology: The EIA should:
    - provide an outline of the proposed ecological management and monitoring.
    - include an assessment of cumulative impacts on ecology, both direct and non-direct impacts within the site and off-site
    - assess the impacts on Priority Habitats and Species, in addition to protected species
    - assess impacts on Local Wildlife Sites as well as statutory sites.

Cumulative impacts

An assessment of cumulative impacts of the development need to take into consideration other development in Bicester and the surrounding area including South West Bicester (Kingsmere), Graven Hill, Bicester Business Park, Bicester Gateway, North East Bicester Business Park, Bicester Town Centre and at Upper Heyford.

You will note that there are outstanding comments from the Council's Conservation Officer (in relation to heritage impacts) and Environmental Protection Officer (in relation to contaminated land and air quality) and these will be forwarded when received.

I trust this information will enable you to complete a full Environmental Statement and as stated this response should be treated as the Council's formal scoping opinion made under Regulation 13 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.

Cherwell District Council
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Banbury
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OX15 4AA

Cherwell District Council

Certified a true copy

Head of Public Protection &
Development Management

APPENDIX 6.1:
LANDSCAPE AND VISUAL IMPACT ASSESSMENT METHODOLOGY

Technical Appendix 6.1 – Landscape and Visual Impact Assessment Methodology

This appendix provides details of the methodology used in the Landscape and Visual Impact Assessment (LVIA), which has been based on the recommendations in the Guidelines for Landscape and Visual Impact Assessment 3rd Edition published by The Landscape Institute and the Institute of Environmental Management and Assessment in April 2013 (GVLIA3).

Landscape Effects Assessment

Establishing the Landscape Baseline

Baseline studies for assessing the landscape effects included a mix of desk study and fieldwork to identify and record the character of the landscape and the elements, features and aesthetic and perceptual factors which contributed to it.

In order to reach an understanding of the effects of a development on a landscape resource, the following aspects of the Site were considered:

- Elements: the individual elements that make up the landscape, including prominent or eye catching features such as woods, trees, hedges, building and roads. They are generally quantifiable and can be easily described;
- Characteristics: Elements or combinations of elements that make a particular contribution to the character of an area, including experiential characteristics such as tranquillity and wildness; and
- Character: The distinct recognisable pattern of elements that occurs consistently in a particular type of landscape. It reflects particular combinations of geology, landform, land use, human settlement. It creates the particular sense of place of different areas of the landscape.

The European Landscape Convention promotes taking into account all landscapes, including ordinary or undesignated landscapes. The relative value attached to the landscape was considered at the baseline stage to inform judgements about the significance of effects, whether to areas of landscape as a whole or to individual elements, features and aesthetic or perceptual dimensions, at the community, local, national or international levels. Landscape designations are a starting point on understanding the landscape value, but the value may also be attached to undesignated landscapes.

Areas of landscape whose character is judged to be intact and in good condition, and where scenic quality, wildness or tranquillity, and natural or cultural heritage features make a particular contribution to the landscape, or where there are important associations, are likely to be highly valued. For “ordinary, everyday landscapes”, the judgement was based upon the degree to which they are representative of typical character, the intactness of the landscape and the condition of its elements, scenic quality, sense of place, and aesthetic and perceptual qualities.

The landscape baseline assessment aims to:

- Describe, map and illustrate the character of the landscape of both the wider study area and the Site and its immediate surroundings;

- Identify and describe the individual elements and aesthetic and perceptual aspects of the landscape, particularly those that are key characteristics contributing to its distinctive character;
- Indicate the condition of the landscape, including the condition of landscape elements or features; and
- Evaluate the landscape and, where appropriate, its components, aesthetic and perceptual aspects, particularly the key characteristics.

Assessing the Landscape Effects

The baseline information about the landscape was combined with the understanding of the details of the proposal to identify and describe the landscape effects. The landscape receptors were identified, that is, the components or aspects of the landscape likely to be affected, such as, overall character or key characteristics, individual elements or features, or specific aesthetic or perceptual aspects.

Interactions between the landscape receptors and the components or characteristics of the development at its different stages were considered: demolition, construction and completion and aftercare, and the different types of effect: cumulative, short, medium and long term, permanent and temporary, positive and negative.

GLVIA3 defines landscape effects as follows:

"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern…is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character…The area of landscape that should be covered in assessing the landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner".

Landscape effects considered included:

- Change in and/or partial or complete loss of elements, features or aesthetic or perceptual aspects that contribute to the character and distinctiveness of the landscape;
- Addition of new elements or features that will influence the character and distinctiveness of the landscape; and
- Combined effects of these changes on overall character.

The landscape effects were categorised as positive or negative (or neutral) in their consequences for the landscape, judged from the degree to which the Himley Village Development fits with the existing character and the contribution the development makes to the landscape in its own right, even if in contrast to the existing character.

The landscape effects were assessed to determine their significance, based on an assessment of the sensitivity of the landscape receptors and the magnitude of the change in the landscape arising from the proposal.

Sensitivity of the Landscape Receptors

The sensitivity of the landscape receptors combines judgements of their susceptibility to the type of change arising from the development proposal and the value attached to the landscape.

Susceptibility to changes means the ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and or the achievement of the landscape planning policies and strategies.

The sensitivity of landscape receptors is categorised as very high, high, medium, low or negligible. The criteria for value and susceptibility is set out in the main report and considered the following:

- The importance of the landscape, or the perceived value of the landscape to users or consultees, as indicated by, for example, international, national or local designations;
- The importance of elements or components of the landscape in the landscape character of the area or in their contribution to the landscape setting of other areas;
- Intrinsic aesthetic characteristics, scenic quality or sense of place, including providing landscape setting to other places;
- Cultural association in the arts or in guides to the area, or popular use of the area for recreation, where experience of the landscape is important;
- The presence and scale of detractors in the landscape and the degree to which they are susceptible to improvement or upgrading; and
- Conservation interests: The presence of features of wildlife, earth science or archaeological or historical and cultural interests can add to the value of the landscape as well as having value in their own right.

The criteria for establishing sensitivity considered:

- The ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the landscape character and/or the achievement of landscape planning polices and strategies;
- The degree to which the changes arising from the development would alter the overall character, quality/condition of a particular type or area;
- The degree to which the changes arising from the development would alter individual elements or features as aesthetic and perceptual aspects important to the landscape character; and
- Existing landscape studies may identify the sensitivity of the landscape type or area or its characteristics to the general type of development that is proposed.

Magnitude of Landscape Change

Effects on landscape receptors are assessed in terms of size or scale, the geographical extent of the area influenced, and its duration and reversibility.

The *size or scale* of change in the landscape was categorised on a scale of major, moderate, minor, negligible, or neutral and as either beneficial or adverse. The criteria is set out in the Landscape and Visual ES Chapter and took account of the following:

- The extent of existing landscape elements that will be lost (or added), the proportion of the total extent that this represents and the contribution of that element to the character of the landscape;
- The degree to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or addition of new ones; and

- Whether the effect changes the key characteristics of the landscape, which are critical to its distinctive character.

The *geographical area* over which the landscape would be changed was considered at the following scales:

- At the Site level, within the redline boundary itself;
- At the level of the immediate setting of the Site; and
- At the scale of the landscape type or character area within which the proposal lies.

The *duration* of the changes:

- Short term: zero to seven years (construction phases 1 to 4);
- Medium term: seven to fifteen years (construction phases 5 to 8);
- Long term: fifteen years plus (completion onwards); and
- Permanent: more than twenty-five years.

Reversibility; the prospect and the practicality of the effect being reversed post completion.

Significance of Landscape Effects

Final conclusions about significance relate separate judgements about sensitivity of the receptors and magnitude of the changes combined, to judge whether the effect is significant.

The landscape effect significance criteria are based upon the following considerations:

- Major loss or irreversible negative effects, over an extensive area, on elements and/or aesthetic and perceptual aspects that are key to the character of nationally valued landscapes are likely to be of the greatest significance;
- Reversible negative effects of short duration, over a restricted area, on elements and/or aesthetic and perceptual aspects that contribute to, but are not key characteristics of the character of landscape of community value, are likely to be of least significance and may be judged not significant;
- Where assessments of significance place landscape effects between these extremes, judgements are made about whether or not they are significant; and
- Where landscape effects are judged to be significant adverse, proposals for preventing/avoiding, reducing or offsetting or compensating for them are set out (referred to as mitigation).

The significant landscape effects remaining after mitigation are summarised as the final step in the process.

For the purposes of this assessment, the effects identified as negligible/ minor adverse, or lower, are not considered significant.

Visual Effects Assessment

Establishing the Visual Baseline

Visual effects are concerned with the effect of the development on visual amenity, defined by the GLVIA3 as:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern…is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views".

Baseline studies for visual effects establish:

- The area in which the development may be visible;
- The different groups of people who may experience a view of the development;
- The location where they will be affected;
- The nature of the views at those points; and
- Where possible, the approximate or relative number of the different groups of people who may be affected by the changes in views or visual amenity.

The people within the area who may be affected by the changes in views and visual amenity, *the visual receptors*, were identified:

- People living in the area;
- People passing through on roads; and
- People engaged in recreation of different types, including users of public rights of way, bridleways and access land.

The baseline report aims to describe, map and illustrate:

- The type of people (visual receptors) likely to be affected, making clear the activities they are likely to be involved in when enjoying the view;
- Details of viewpoints and of the visual receptors likely to be affected at each;
- The nature, composition and characteristics of the existing view, identifying any particular important components of the view;
- Elements, such as landform, buildings or vegetation which may interrupt, filter or otherwise influence views; and
- How views might be affected by seasonal or weather variation.

Visual Study Area

The area around the Site within which views of the Site might be available was established through a review of features such as landform and vegetation, locations of settlements and other features, either screening views or providing vantage points.

The visual study area of the Himley Village Development has been assessed on the basis of a desktop study followed by site survey work and professional judgement. This is less accurate than using computer-modelling to produce a ZTV however it allows existing vegetation to be taken into consideration and is thought to be sufficiently accurate to allow the identification of appropriate representative viewpoints to be included in the assessment.

The visual study area extends between 1-2km from the site boundary reflecting the comparative availability of views from the rising topography to the north and northeast and screening in the lower land nearer the Site. For this assessment, viewpoints within 1.5km of the Site boundary

have been considered based upon analysis of the likely visibility of the proposal. Refer to Figure 6.2.

Viewpoint Studies

The locations of viewpoint studies relate to the receptors, that is, residents and users of the landscape, and locations from which they may have views towards or of the site and were agreed with Cherwell Council, in association with Turley Consultants, in October 2014.

The details of viewpoint locations were mapped and catalogued, and the direction and area covered by the view recorded, sufficient to allow someone else to return to the location and record the same view. The methodology for producing visualisations is provided in **Technical Appendix 6.2.**

A number of viewpoints were considered and, in consultation with Cherwell District Council, judged not to be included in the assessment as summarised below:

- **View north-eastward from the bridge over the M40 along Middleton Stoney Road (B4030):** Views into the Site from this viewpoint are restricted as a result of the rolling topography and existing vegetation including substantial coniferous hedge and tree planting to the perimeter of Linkslade House. This view is available to road users, typically considered of low sensitivity and the nature of the view would be short in passing.
- **View north-westward from Howes Lane roundabout (A4095):** The existing structure planting along the junction of Middleton Stoney Road and Howes Lane screens views into the site. Travellers on transport routes are considered, as visual receptors, less susceptible to change as awareness of views is reduced and the views are only occasional, or glimpsed.

Other views and visual receptors considered not to require assessment include;

- **Linkslade House** located approximately 120m away from the southwest corner of the Site, along Middleton Stoney Road. This is enclosed by dense coniferous planting which screens views eastwards into the Site.
- **Lovelynch House** located within the immediate setting of the Site, along Middleton Stoney Road. However, it is enclosed by mature hedgerow planting and trees which screen views into the Site.
- **Aldershot Farm** located approximately 180m north of the Site to the north of the bridleway. Existing mature planting encloses it. The structure of hedgerow and woodland planting within the wider context screen views of the Site.
- **The residential development to the edge of Bicester**, west of Howes Lane. This is mainly screened from the Site by planting along the road and successive boundary hedgerows to the adjacent fields.
- **The police depot** located approximately 400m from the northeast corner of the Site. Well-established boundary hedgerows to the adjacent fields and woodland planting to the eastern boundary of the Site screen views.
- **Crowmarsh Farm barns** located approximately 620m from the northern Site boundary. The barns are orientated away from the Site, and established field hedgerows and hedgerow trees screen views.

- **The railway** located to the north of the Site. It is not possible to obtain a geo-referenced viewpoint from the railway due to the movement of the train. Travellers on transport routes are less susceptible to change, unless travelling along recognised scenic routes where awareness of views may be increased. Elevated views of the Site from the railway line are passing views, not of prolonged duration, available when leaving or approaching Bicester. The views are seen within the context of Bicester's current urban edge and are partially obscured by vegetation along the railways track, and within the wider landscape.

Assessing the Visual Effects

The baseline information about the visual receptors was combined with understanding of the details of the proposal to identify and describe the visual effects, considering:

- Changes in views and visual amenity arising from elements of the Himley Village Development;
- The distance of the viewpoint from the development and whether the viewer would focus on the development due to its scale and proximity or whether the development would be only a small or minor element in a panoramic view;
- Whether the view is stationary or transient or one of a sequence of views;
- The nature of the changes: changes in the skyline, creation of a new visual focus in the view, introduction of new elements, change In visual simplicity or complexity, alteration of visual scale or the degree of visual enclosure; and
- Seasonal difference in effects, arising from the varying degree of screening and/or filtering of views by vegetation in summer and winter.

The visual effects were categorised as positive or negative (or neutral) in their consequences for the views and visual amenity, judged from the degree to which the proposals affect the quality of the visual experience, nature of existing views and nature of the changes to views.

The visual effects were assessed to determine their significance, based on an assessment of the sensitivity of the visual receptors and the magnitude of visual change.

Sensitivity of Visual Receptors

The people or groups of people likely to be affected at a specific viewpoint, *the visual receptors*, are assessed in terms of their susceptibility to change in views and visual amenity and the value attached to particular views.

The visual receptors most susceptible to change include:

- Residents at home;
- People engaged in outdoor recreation, including public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views;
- Visitors to designated landscape or other attractions where views of the surroundings are an important contributor to the experience; and
- Communities where views contribute to the landscape setting enjoyed by residents in the area.

Visual receptors less susceptible to change include:

- People engaged in outdoor sport or recreation which does not depend upon the appreciation of views of the landscape;
- People at their place of work whose attention may be focused on their work or activity, not surroundings; and
- Travellers on road or other transport routes, except along recognised scenic routes, where awareness of views is likely to be high.

The sensitivity of visual receptors to change is categorised as very high, high, medium, low or negligible and the criteria is set out in the main report.

Magnitude of Visual Change

The visual effects identified are evaluated in terms of size or scale, the geographical extent of the area influenced, duration and reversibility. The criteria is set out in the main report and took account of:

The *size or scale* of change based upon:

- The degree of loss or addition of features in the view;
- The extent of changes in the composition of the view, including the proportion of the view occupied by the prosed development;
- The degree of contrast or integration of the changes with the existing or remaining landscape elements and characteristics; and
- The nature of the view of the proposed development, whether full, partial or glimpsed, and the amount of time over which it will be experienced.

The *geographical area* over which the landscape changes would be experienced. The geographical extent reflects:

- The extent of the area over which the changes would be visible;
- The angle of view in relation to the main activity of the receptor; and
- The distance of viewpoint from the proposed development.

The *duration* of the changes:

- Short term: zero to seven years (construction phases 1 to 4);
- Medium term: seven to fifteen years (construction phases 5 to 8);
- Long term: fifteen years plus (completion onwards); and
- Permanent: more than twenty five years.

Reversibility; the prospect and the practicality of the effect being reversed post completion.

Significance of Visual Effects

Final conclusions about significance relate separate judgements about sensitivity of the receptors and magnitude of the changes combined, to judge whether the effect is significant.

The following factors inform the judgement about the significance of visual effects:

- Effects on people who are particularly sensitive to changes in views and visual amenity;

- Effects on people at recognised and important viewpoints or recognised scenic routes;
- Large scale changes which introduce non-characteristic or discordant or intrusive elements into the view are more likely to be significant than small changes or change including features already present within the view; and
- Where visual effects are judged to be significantly adverse, proposals for preventing/avoiding, reducing or offsetting or compensating for them are set out (referred to as mitigation).

The significant visual effects remaining after mitigation are summarised as the final step in the process.

For the purposes of this assessment, the effects identified as negligible/ minor adverse, or lower, are not considered significant.

APPENDIX 6.2:
VERIFIED PHOTOMONTAGES:
METHODOLOGY AND SUPPORTING EVIDENCE

designhive

STRATEGIC VISUAL COMMUNICATION

Himley Farm, Bicester

Verified Photomontages:
Methodology and Supporting Evidence
Technical Appendix 6.2

December 2014

Contents

1.0 Overview

This document has been prepared by Designhive Media Ltd to explain the methodology used to create accurate visual representations (AVRs) of the proposed development of Himley Farm, Bicester. The visual assessment of the proposed development reflects current best practice in relation to the verification of images, a process which is constantly being refined and improved with advances in technology and industry experience.

The purpose of the photomontages is to present an accurate overview of the proposed development which enables its effect on the landscape and views to be objectively evaluated. Every image contained within this document is verified unless otherwise stated. Final images should not be used as a standalone tool to assess the suitability of a development, but should be used in conjunction with a site visit.

In this document, you will be guided through a step-by-step description of how Designhive has produced an accurate representation of the maximum envelope of built form in accordance with development parameters, in pictorial form, to explain the processes used (including statements from the photographer and survey team). The methodologies described in this document are based on current best practice and follow recommendations from The Landscape Institute's "Guidelines for Landscape and Visual Impact Assessment" (3rd Edition 2013) and their supplementary Advice Note "Photography and Photomontage in Landscape and Visual Impact Assessment" (Jan 2011).

This document includes an audit trail to demonstrate the key stages of production (see Section 3.0) that can, if required, be checked by a third party. This document sets out the methodologies used for the photography, surveying, 3D modelling and camera matching processes - all critical to ensuring the accuracy of the final photomontages.

A number of viewpoints were considered. In relationship with Turley Planning Consultants, these viewpoints were discussed and agreed with Cherwell Council via phone and email on the the 28th October 2014. The viewpoints that inform the assessment take into account representative views of key visual receptors including people living in the area, people passing through on roads and people engaged in recreation of different types such as use of public rights of way. Viewpoints are summarised below:

1. Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road
2. Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road
3. Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road
4. Middleton Road on roadside verge to gated entrance of the field
5. Middleton Road on roadside verge to gated entrance to bridle path
6. From bridleway south of Crowmarsh Farm
7. From bridleway/Aldershot Farm track to gated entrance of the field

The entities responsible for the preparation of the views that are set out in the following pages comprise:

Photography
Arcminute Ltd
62 Grove Park Terrace
London W4 3QE
Phone: 07774 857627

Survey of existing views and camera locations
Datum Survey Services Ltd
Brickfield Business Centre, Brickfield House
High Road, Thornwood, Epping CM16 6TH
Phone: 07977 111935

Production and checking of verified images
Designhive Media Ltd
The Workshop, Old Barn Cottage, Down Lane
Compton, Guildford GU3 1DQ
Phone: 01483 813888

Supply of building/landscape CAD plus spot height information
Penoyre & Prasad
28-42 Banner Street
London EC1Y 8QE
Phone: 020 7250 3477

Team engineers
Alan Baxter & Associates
75 Cowcross Street
London EC1M 6EL
Phone: 020 7250 1555

2.0 Methodology

2.1 Photography

The professional architectural photographer employed on this project was briefed by Designhive to work to a methodology which conforms to the principles specified in section 1.0 Overview.

The following methodology statement has been supplied by Arcminute:

Photography brief The following methodology applies to the production of photographic images originated in November 2014 which form the pictorial basis for visual impact assessment photomontages for 7 views for Himley Farm, Bicester.

Equipment Images are captured on a 36mm x 24mm 21 megapixel digital sensor in combination with the following shift lenses:

- Focal length 24mm | Horizontal FOV 74° (for close views in built-up streetscapes)
- Focal length 35mm | Horizontal FOV 55° (for close views requiring selective framing)
- Focal length 50mm | Horizontal FOV 40° (for long distance views)

Lenses outside these parameters are also available for use in certain circumstances but these 3 lenses have been found to cover the vast majority of situations required in this type of work.

Choice of lens We prefer to replicate (as far as possible) what may have already been provided in terms of preliminary view studies as typically these would have been generated using pre-considered factors as to what each view would need to illustrate e.g. context, key visual receptors etc. In the absence of a definitive steer, we will generally use a 74° HFOV lens for medium to close views in an urban environment and a 40° HFOV lens for long distance views. However, the actual size and nature of a scheme (single building or large multibuilding development) and its location will also be considered before lens selection. The Landscape Institute's latest guidelines have been relaxed with regard to lens choice and they are no longer insistent that a 'standard' lens be used wherever possible.

Photography The camera is mounted on a tripod at eye level which on level ground is 1.65m within a +/- 100mm tolerance. The camera is then levelled in roll and pitch to a tolerance of 30mm per 100m using a precision spirit level. The point on the lens which coincides with the virtual render camera is horizontally referenced to a survey mark (nail or paint) to +/- 2mm using a survey standard procedure and the height above this is measured using a steel tape measure to the same tolerance. A photograph is taken of the tripod in its location, the survey point on the ground and the tape measure reading against a reference point on the camera mount. During image capture particular emphasis is placed on the following:

- Rendering all points in the scene as sharply as possible to avoid any sense of selective focus.
- Capturing all tonal detail in the scene and avoiding 'blown out' highlights and 'blocked up' shadows.

Where a scene's brightness range exceeds that of the sensors dynamic capture range it may be necessary to combine two or more different exposures to create a final image to overcome this limitation and to maintain a realistic tonal rendering closer to that of the human eye.

Post production The camera images are captured using a native camera or RAW format and a software application is used to turn these into universally accessible RGB raster images. At this conversion stage colour and tonal adjustments are made to recreate as honestly as possible the scene as was presented to the photographer at the time of capture. RGB images are corrected using specialist software to remove non-perspectival optical distortion in order to create a geometrically accurate 2D projection which can be precisely aligned with CGI renderings and survey data. The image is then placed in a standard sized image template and the calibrated lens axis position is aligned with the documents centre. This accounts for both deliberate offset through lens shift and manufacturing tolerances in lens to camera body alignment. A text file in the image document records camera height above the survey point, lens focal length, film gate, date and time, nominal lens offset and document pixel dimensions. All images are also accompanied with photographic evidence of camera location, survey point location and height above survey point.

Where temporary survey targets have been set up in the scene the before and after images are included as separate TIFF layers to enable both accurate

camera alignment and seamless removal of the targets for final output.

2.2 Survey

All of the baseline photographs were taken by a professional architectural photographer. Each viewpoint location is surveyed and identified by Ordnance Survey co-ordinates. The heights and distances of significant points within each view that are easily distinguishable have also been recorded as Ordnance Survey grid and level datum and their accuracy has been checked relative to the fixed camera position. The survey points for each view provide an effective check for ensuring that the 3D model and existing views are accurately merged together.

The following methodology statement has been supplied by Datum Survey Services:

Survey brief We were commissioned to survey and record co-ordinates (Eastings, Northings and AOD Height) of known points of detail located around the study site known as Himley Farm, Bicester. Digital files of the 7 views together with camera point locations were provided by the photographer.

Date of surveys November 2014.

Camera point positioning Network RTK solutions were established using a Leica GPS + GLONASS SmartRover receiver. The equipment was set-up directly over the camera position (survey nail) and multiple observations were recorded. A second (reference) point was taken approximately 100m away from the camera position using the same method.

Data capture Traditional survey techniques were employed to record the points of detail within each view. A Leica TCRA TS15 Total Station with long range reflector-less distance measurement capabilities was set-up directly over the camera point and orientated to Ordnance Survey National Grid using the two sets of co-ordinates determined by the SmartRover receiver.

Several views lacked sufficient clearly defined detail to survey. In these instances retro targets mounted on ranging rods were introduced to act as 'artificial' points within the field of view.

Deliverables The completed survey data was issued as follows:

- Microsoft Excel Spreadsheet comprising point numbers, coordinate data and descriptions
- PDF copies of each photo with point locations and view specific point numbers clearly marked
- AutoCAD DWG file containing 3D survey points with view specific point numbers.

2.3 3D building model

The 3D computer models of the development (which are superimposed upon the 'existing' views) are based upon CAD supplied by Penoyre & Prasad. The 2D drawings of the proposed development supplied by the architect are initially imported into 3DS Max. and then traced over using snap tools (within 3DS Max) to create an accurate 1:1 scale model of the proposed development. The minimum and maximum parameter models are made using the terrain surface as detailed in 2.4 below, 'cutting out' each footprint and extruding the surface to the storey heights specified (as no AOD heights were available). As a consequence, in some of the views, the vertical lines of the buildings are not vertical but are angled to the terrain surface.

The energy centre chimneys are incorporated into the 3D model to their maximum height of 20m.

A manual crosscheck of heights is then carried out by Designhive across all buildings working with a range of spot height information as supplied by the architect. Once the 3D model has been approved by the architect, a corresponding issue number is recorded. The 3D models are based on the minimum and maximum block dimensions set out in the parameter plans.

2.4 3D landscape

The landscape is developed in 3D using 2D 1m topographic contours as supplied by Penoyre & Prasad. These 2D contours are set to the correct heights, and a detailed mesh surface generated. This surface forms the basis of the buildings.

Alan Baxter & Associates advised on the 20m expanse of proposed hedgerow and hedgerow tree removal either side of the existing road junction and new road access of the B4030 (exiting north). The removal of the hedgerow and hedgerow trees has been factored in when generating the keylines to indicate the proposed visibility of the scheme. In relation to this, in images 2 and 3 the keyline changes from solid (i.e. visible) to dotted (i.e. not visible) half way along a hedge.

2.5 Camera matching

The verification process confirms the accuracy of the 3D model in relation to each view. The camera matching process involves accurately matching the position of the virtual camera with the real world camera in OS space, and the location of the 3D model of the proposed development within each (existing) view. This is achieved through aligning the imported 3D cloud of survey points within the base photo and 3D environment, creating a virtual camera that replicates the exact position and height of the real world camera to produce an image where the rendered survey points match in visual location those recorded by the survey team and photographer.

The specifications of the lens type relating to each existing view is also entered into 3DS Max to help guide with alignment. An alignment is deemed correct only when all survey points sit exactly over the pixel in the photo that corresponds with the marked-up survey photo. If all points match, the virtual camera must therefore be correctly aligned.

For each view we measure the distance from camera to target and apply respective equations to establish the potential adjustment necessary to compensate for both curvature of the earth and light refraction. Typically, when the real world camera is positioned within 1.5km from the target, the effects of curvature of the earth and light refraction are deemed to be negligible in terms of their visual impact and therefore no adjustment is made to the Z axis of the building model within the view.

2.6 Lighting and rendering

To accurately light the 3D model, 3DS Max's 'daylight system' is set to replicate the solar time, date and geographic location (longitude and latitude) as recorded in the base photograph. The settings used for each base photograph (F stop, shutter speed etc) are replicated in both this 'daylight system' and the virtual camera set-up. This process mimics the virtual sun so that the lighting falls upon the 3D model as it would in real life at the point when the photograph was captured. Fine tuning is sometimes necessary to better match the resultant lighting and shadows to the base photograph.

Once the camera matching and lighting processes are complete, the render of the 3D model is output to the same pixel resolution as per each respective base photograph.

2.7 Post production

The render of the 3D models (minimum and maximum parameter versions) are superimposed on the existing still views in Photoshop. A red keyline is generated to replicate the outline of the minimum parameter and a blue keyline to represent the maximum parameter of the building (both shown as a solid line where the scheme is visible, and a dotted line where obscured by foreground items like trees, other buildings, lamp posts etc).

The energy centre chimneys have been incorporated into the 3D model to their maximum height of 20m and therefore appear in the photomontages (for both minimum and maximum options) as an extension to the blue keyline.

2.8 Recommended viewing distances

It is recommended that final images are viewed at an optimum viewing distance (in relation to the size of printed photomontage) to give a correct sense of scale. We recommend that images are printed to a size that creates a comfortable viewing distance of between 300 to 500mm. The recommended viewing distance for each image is specified within Section 4.0 of this document.

2.9 Caveats

None.

3.0 Supporting evidence

Ordance survey co-ordinates			
View Ref	Eastings	Northings	AOD Height
1	455059.563	223216.007	89.539
2	455457.018	223085.545	91.986
3	455839.891	222949.497	90.076
4	455508.244	225248.359	106.031
5	455027.288	224736.563	104.914
6	455893.099	224392.149	93.737
7	456784.411	223998.576	89.310

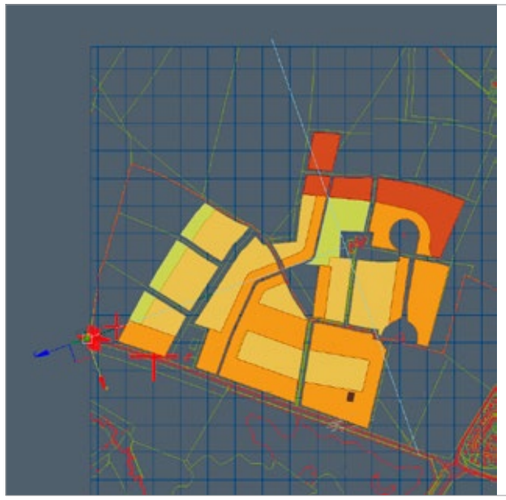
View 1 Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
1.1	455169.934	223261.206	98.455
1.2	455169.236	223259.296	98.458
1.3	455065.33	223222.950	88.444
1.4	455071.262	223221.319	88.336
1.5	455078.03	223219.269	88.377
1.6	455085.437	223217.173	88.407
1.7	455093.340	223214.921	88.490
1.8	455101.882	223212.520	88.501
1.9	455303.341	223150.318	97.693
1.10	455064.961	223218.755	88.066
1.11	455071.300	223216.963	88.044
1.12	455079.784	223214.522	88.052
1.13	455088.266	223212.078	88.111
1.14	455096.732	223209.650	88.195
1.15	455105.236	223207.199	88.364
1.16	455081.372	223211.749	93.120

3.2 OS survey points marked on photograph

3.3 View 1 camera location

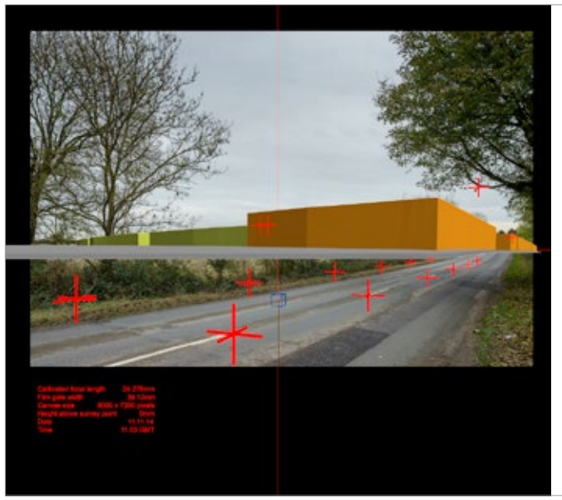
Eastings	455059.563m
Northings	223216.007m
AOD height	89.539m
Approx distance to site	114m
Bearing from North	70.5°



01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line

01.6 Screen grab of camera matching to OS data



01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

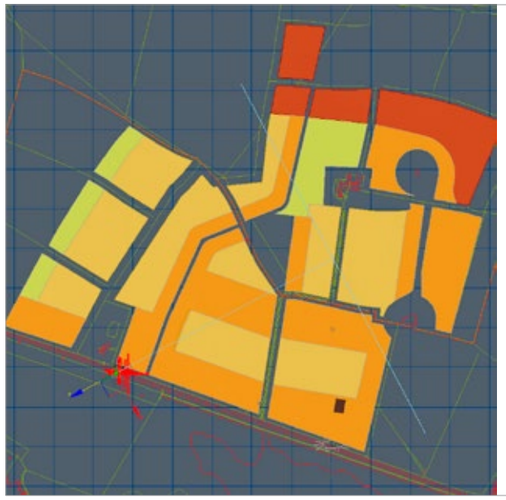
View 2 Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
2.1	455461.556	223092.653	90.641
2.2	455465.060	223091.296	90.703
2.3	455467.373	223090.439	90.770
2.4	455471.780	223089.285	90.818
2.5	455480.459	223086.138	90.836
2.6	455487.381	223083.478	90.672
2.7	455464.580	223087.419	90.340
2.8	455472.434	223084.634	90.323
2.9	455467.381	223084.794	90.298
2.10	455462.208	223089.084	90.333
2.11	455462.895	223086.367	90.299

3.2 OS survey points marked on photograph

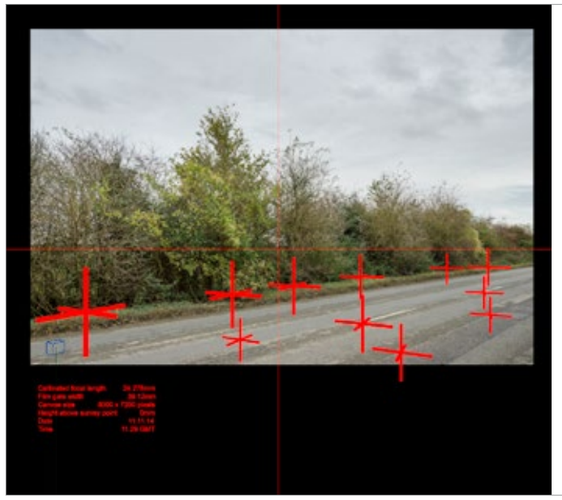
3.3 View 2 camera location

Eastings	455457.018m
Northings	223085.545m
AOD height	91.986m
Approx distance to site	23m
Bearing from North	62.2°

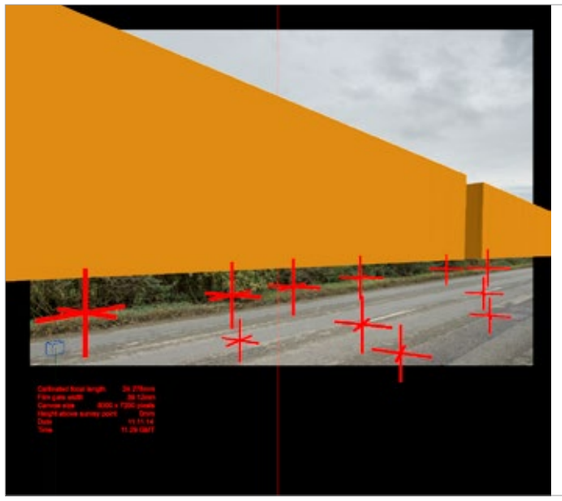


01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line



01.6 Screen grab of camera matching to OS data



01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

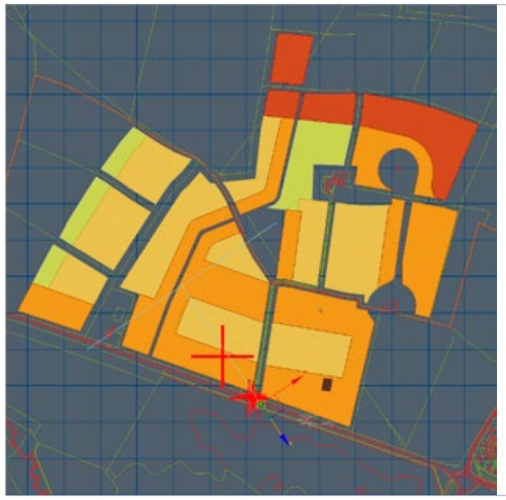
View 3 Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
3.1	455839.342	222958.927	88.798
3.2	455834.457	222960.671	88.987
3.3	455829.743	222962.808	89.126
3.4	455819.684	222970.198	88.964
3.5	455815.208	222967.801	89.034
3.6	455806.835	222970.295	89.202
3.7	455818.624	222970.233	95.529
3.8	455818.548	222970.142	90.502
3.9	455735.137	223080.275	98.129
3.10	455818.729	222976.297	90.305
3.11	455837.252	222956.145	88.512
3.12	455831.593	222956.631	88.558
3.13	455822.856	222959.709	88.647
3.14	455828.523	222955.637	88.531
3.15	455806.889	222965.845	88.813

3.2 OS survey points marked on photograph

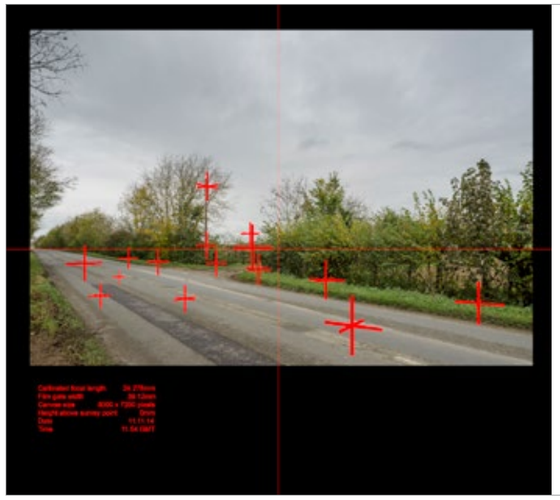
3.3 View 3 camera location

Eastings	455839.891m
Northings	222949.497m
AOD height	90.076m
Approx distance to site	23m
Bearing from North	326.1°

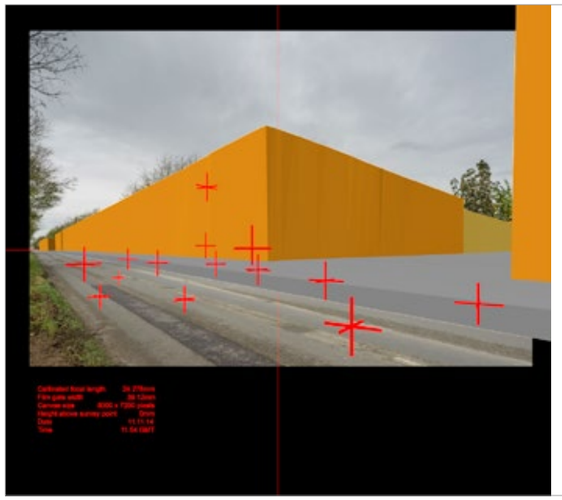


01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line



01.6 Screen grab of camera matching to OS data



01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

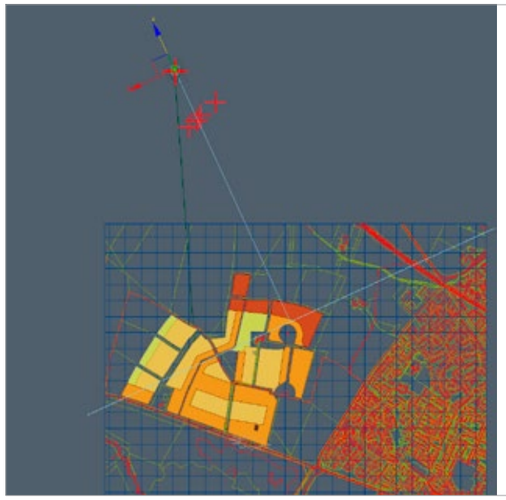
View 4 Middleton Road on roadside verge to gated entrance of the field

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
4.1	455511.645	225242.467	104.712
4.2	455513.110	225232.819	104.897
4.3	455644.932	224931.115	102.367
4.4	455672.979	224957.830	102.413
4.5	455762.229	225043.800	102.910
4.6	455507.307	225239.967	105.896
4.7	455601.153	224889.173	101.993

3.2 OS survey points marked on photograph

3.3 View 4 camera location

Eastings	455508.244m
Northings	225248.359m
AOD height	106.031m
Approx distance to site	1336m
Bearing from North	155.3°



01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line

01.6 Screen grab of camera matching to OS data

01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

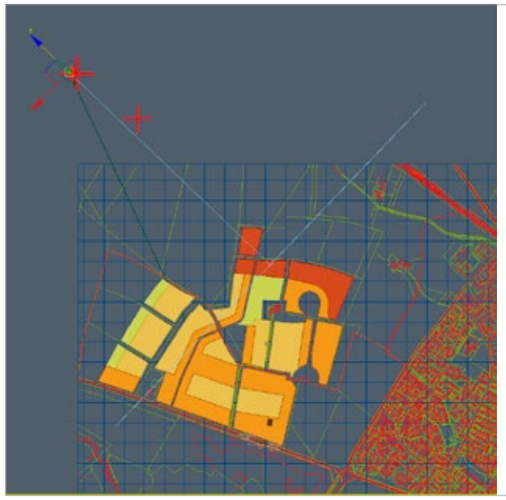
View 5 Middleton Road on roadside verge to gated entrance to bridle path

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
5.1	455036.393	224733.802	103.175
5.2	455043.549	224731.431	102.929
5.3	455055.025	224727.641	102.758
5.4	455046.648	224727.406	103.105
5.5	455039.918	224725.527	102.907
5.6	455032.809	224729.733	102.976
5.7	455068.312	224727.455	110.434
5.8	455067.896	224729.129	107.113
5.9	455365.792	224503.705	106.199

3.2 OS survey points marked on photograph

3.3 View 5 camera location

Eastings	455027.288m
Northings	224736.563m
AOD height	104.914m
Approx distance to site	1118m
Bearing from North	133.7°



01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line

01.6 Screen grab of camera matching to OS data

01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

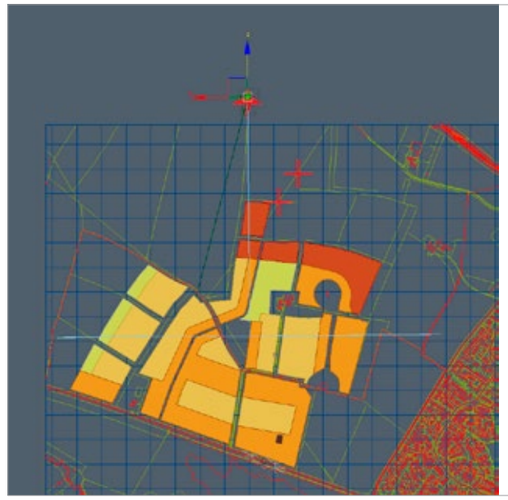
View 6 From bridleway south of Crowmarsh Farm

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
6.1	455896.558	224386.179	92.498
6.2	455896.199	224377.574	92.527
6.3	455892.091	224366.627	92.839
6.4	455892.976	224379.494	92.657
6.5	455890.301	224375.229	92.685
6.6	455890.008	224385.866	92.493
6.7	456096.926	224082.601	101.956
6.8	456019.096	223966.296	104.432

3.2 OS survey points marked on photograph

3.3 View 6 camera location

Eastings	455893.099m
Northings	224392.149m
AOD height	93.737m
Approx distance to site	425m
Bearing from North	179.5°



01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line

01.6 Screen grab of camera matching to OS data

01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

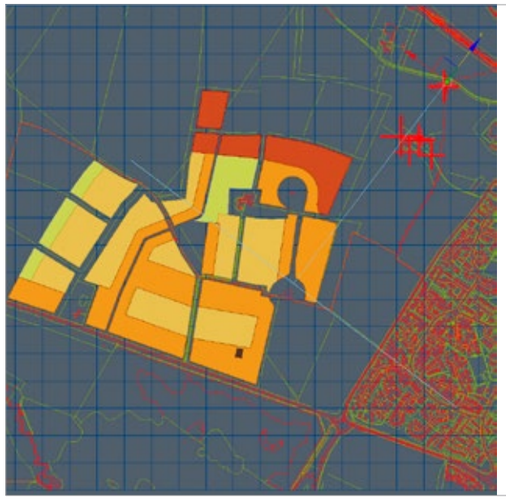
View 7 From bridleway/Aldershot Farm track to gated entrance of the field

01.1 Ordinance survey co-ordinates			
Point Ref	Eastings	Northings	AOD height
7.1	456783.748	223991.150	87.896
7.2	456780.248	223976.644	87.824
7.3	456775.246	223977.789	87.785
7.4	456772.765	223985.152	87.763
7.5	456775.777	223993.310	87.814
7.6	456728.807	223727.791	93.633
7.7	456694.772	223791.612	93.257
7.8	456645.739	223742.853	97.932
7.9	456616.838	223799.872	89.186
7.10	456682.119	223783.780	94.129

3.2 OS survey points marked on photograph

3.3 View 7 camera location

Eastings	456784.411m
Northings	223998.576m
AOD height	89.310m
Approx distance to site	447m
Bearing from North	217.2°



01.4 Screen grab of camera location in 3D Studio Max software

01.5 Screen grab of calculated horizon line

01.6 Screen grab of camera matching to OS data

01.7 Screen grab of wireline model matched to photograph

01.8 Final camera matched photomontage (showing both minimum and maximum parameter options)

4.0 Final verified photomontages

View 1 existing Middleton Stoney Road to SW corner of the site on roadside verge opposite side of road

Single frame image | Lens 24.278mm | Camera height above survey point 1600mm | Nominal lens rise 0mm | Date 11.11.14 | Time 11:03

View 1 proposed (minimum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 1 proposed (maximum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 1 proposed (minimum and maximum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 2 existing Middleton Stoney Road, to east of Lovelynch House on roadside verge opposite side of road

Single frame image | Lens 24.278mm | Camera height above survey point 1600mm | Nominal lens rise 0mm | Date 11.11.14 | Time 11:29

View 2 proposed (minimum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 2 proposed (maximum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 2 proposed (minimum and maximum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 3 existing Middleton Stoney Road, to east of Himley Farm track entrance on roadside verge opposite side of road

Single frame image | Lens 24.278mm | Camera height above survey point 1600mm | Nominal lens rise 0mm | Date 11.11.14 | Time 11:54

View 3 proposed (minimum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 3 proposed (maximum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 3 proposed (minimum and maximum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.

View 4 existing Middleton Road on roadside verge to gated entrance of the field

Single frame image | Lens 24.278mm | Camera height above survey point 1600mm | Nominal lens rise 0mm | Date 11.11.14 | Time 12:31

View 4 proposed (minimum parameter)

To achieve the optimum viewing distance of between 300-500mm (as per The Landscape Institute's guidelines), we recommend printing this image edge to edge on A2 landscape and viewing it from a distance of 306mm. Please refer to section 2.8 on page 5 of this document for further information.