ENVIRONMENTAL STATEMENT

VOLUME 2

APPENDIX 2.1 – EIA SCOPING REPORT

Great Lakes UK Limited

GREAT WOLF LODGE - OXFORDSHIRE

EIA Scoping Report

Bicester Hotel Golf & Spa
Green Lane,
Chesterton,
Bicester,
Oxfordshire
OX26 1TH

REFERENCE
JULY 2019

CONFIDENTIAL

Great Lakes UK Limited

GREAT WOLF LODGE - OXFORDSHIRE

EIA Scoping Report

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Great Lakes UK Limited

GREAT WOLF LODGE - OXFORDSHIRE

EIA Scoping Report

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CONTENTS

APPENDICES

1. INTRODUCTION

1.1.1. Great Lakes UK Limited (the 'Applicant') intends to submit a full planning application to Cherwell District Council (CDC) in Autumn 2019 proposing a leisure resort as part of a redevelopment of a triangular shaped area of the existing Bicester Hotel Golf and Spa (BHGS) site (hereafter referred to as the 'Site'). Design evolution is ongoing in consultation with key stakeholders and consultees (including local groups and residents), and redevelopment of the Site is expected to provide a new leisure resort (sui generis) incorporating a waterpark, family entertainment centre, hotel, conferencing facilities and restaurants with associated access, parking and landscaping (the 'Proposed Development').

1.1.2. The anticipated planning application boundary of the Site as shown in **Figure 1 – Site Location Plan** extends to approximately 18.6 hectares. The Site is situated approximately 3.2km west of Bicester town centre within the area that currently comprises 9 of the 18-hole Golf Course associated with BHGS. The Site is bordered by the M40 to the west, the A4095 to the north and the existing BHGS and outdoor office buildings to the south and south-east. Aerial photography of the Site and red line boundary for the Proposed Development is provide as **Figure 2 – Red Line Boundary**. Further details and description of the existing Site can be found within Section 2 of this report.

1.1.3. The Applicant has employed a full Project Team, including architects EPR acting as the lead design consultant. Arcadis are the Project Managers, DP9 are leading the planning process and WSP are co-ordinating the Environmental Impact Assessment (EIA), along with ecological, arboricultural, ground conditions assessments and waste management strategy, working alongside Volterra (socio-economics), Motion (transportation and access), Hoare Lea (air quality and noise and vibration), BMD (landscape and visual assessment), AOC (archaeology and cultural heritage) and Curtins (water resources, flood risk and drainage).

1.1.4. The planning application will be supported by a suite of application reports including an Environmental Statement (ES) that will report the assessment of likely significant environmental effects of the Proposed Development in line with the scope contained herein and subject to consultation with CDC and relevant stakeholders.

1.2. DEFINITION OF AN EIA

1.2.1. The term 'EIA' describes a procedure that must be followed for certain types of project before they can be given 'development consent'. The procedure is a means of drawing together, in a systematic way, and assessment of a project's likely significant environmental effects. This helps to ensure that the importance of the predicted effects and the scope for reducing them are properly understood by the public and the relevant local planning authority before it makes its decision. The aim of EIA is to:

'to protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment,

does so in the full knowledge of the likely significant effects, and take this into account in the decision making process[1]'.

1.3. REQUIREMENT FOR EIA

Town and Country Planning (environmental impact assessment) EIA regulations, 2017

1.3.1. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations') require that, before consent is granted for certain types of development, an EIA must be undertaken to identify any likely significant effects of the development and mitigation, where appropriate. The EIA Regulations set out the types of development which must be subject to an EIA (referred to as Schedule 1 development) and other developments, which may require assessments if they give rise to significant environmental effects (referred to as Schedule 2 development).

1.3.2. The Proposed Development does not fall under any of the types of development set out in Schedule 1 of the EIA Regulations. However, it is considered to constitute a 'Schedule 2' development, as the Proposed Development meets the criteria within Section 12(c) 'Hotel complexes and associated developments' and Section 12(d) 'Theme parks'. A development is considered to fall within Schedule 2 if:

- Any part of the development is to be carried out in a sensitive area; or
- Any applicable threshold or criterion in the corresponding part column 2 of the table in Schedule 2 is exceeded or met in relation to that development.

1.3.3. The Site (18.6ha) is not located within a sensitive area, however is above the Section 12(c) 'Hotel complexes and associated developments' and Section 12(d) 'Theme parks' threshold of 0.5ha. As such, the Applicant has elected to prepare an Environmental Statement (ES) to accompany the planning application. The ES which will report the likely significant environmental effects of the Proposed Development.

1.3.4. A full description of the final fixed Proposed Development submitted for planning will be set out in the ES to enable the assessment of the likely significant environmental effects of the temporary construction works and permanent operation of the Proposed Development.

1.4. PURPOSE OF THIS SCOPING REPORT

1.4.1. WSP have been commissioned by the Applicant, to coordinate and undertake the EIA to accompany the proposed planning application to be reported in the ES in accordance with the EIA Regulations.

1.4.2. This document sets out the proposed scope and methodologies of the technical assessments of the EIA, and requests an EIA Scoping Opinion from CDC under Regulation 15 of the EIA Regulations to seek agreement to the approach and scope of the EIA to be reported in the ES. This EIA Scoping Report therefore reviews all the environmental disciplines identified in Part 1 of Schedule 4 of the EIA Regulations as is reasonably required to assess the likely significant environmental effects of the application based on the description of the Proposed Development.

[1] Planning Practice Guidance (PPG) Online Tool, Paragraph 032. Reference ID: 4-032-20170728, [online] Available at: https://www.gov.uk/guidance/environmental-impact-assessment#Sensitive-areas Accessed: April, 2019.

1.4.3. In accordance with Part 4, Regulation 15 of the EIA Regulations, WSP request that CDC provide a Scoping Opinion within five weeks of receipt of this request following discussion with the consultation bodies. The EIA Scoping Opinion will then be adopted by the Applicant for the preparation of the ES to accompany the planning application.

1.4.4. Under the terms of Regulation 15(4) of the EIA Regulations, CDC are required to consult with [at least] the key statutory consultation bodies identified in Regulation 2(1) of the EIA Regulations, before issuing their formal Scoping Opinion to agree the key issues and proposed methodologies proposed to be included in the ES and to provide their input and comments into the formal Scoping process.

1.4.5. In preparing this Scoping Report, the National Planning Practice Guidance (NPPG) 'Environmental Impact Assessment' (2017)[2] has been considered which states that "*if required, they [an EIA] should limit the scope of assessment to those aspects of the environment that are likely to be significantly affected*." In addition, the NPPG promotes proportional EIA in so far as the ES should be proportionate and not be any longer that is necessary to assess properly those effects. The NPPG also states that "*Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered*."

1.4.6. **Table 1-1** confirms the detail provided in this Scoping Report informed by EIA Regulation 15 and therefore includes other relevant information known now.

Table 1-1 - Information provided as part of the Scoping Report

Information	Location in this Scoping Report
A plan to sufficiently identify the land.	Figure 1
A brief description of the nature and purpose of the development, including its location and technical capacity.	Sections 1 and 2
An explanation of the likely significant effects of the development on the environment.	Sections 5 to 13

1.4.9. In addition to the above, Regulation 15 of the EIA Regulations also requires '*such other information or representations as the person making the request may wish to provide or make*'. Such other information providing in this Scoping Report is outlined in **Table 1-2** below.

[2] Ministry of Housing, Communities & Local Government (2019). Environmental Impact Assessment Guidance Available at: https://www.gov.uk/guidance/environmental-impact-assessment Accessed: May 2019

Table 1-2 – Other Information provided within this Scoping Report

Information	Location in this Scoping Report
An overview of the conditions present on Site and in the surrounding area, together with a brief overview of the relevant planning history, policy context.	Section 2
Scope of the proposed application reports to be submitted.	Section 3.11
List of known committed developments for purposes of cumulative assessment.	Section 14
The proposed approach to the EIA and an appraisal of the key environmental issues to be covered in the EIA (i.e. "scoped in") and the issues not requiring further consideration (i.e. "scoped out") in the context of the key legislative and policy documents and Part 1 of Schedule 4 of the EIA Regulations 2017 as is reasonably required to assess the likely significant environmental effects of the development.	Section 3
Outlines the scope and assessment methodology (including the significance criteria to be adopted) for assessing the likely significant environmental effects to be employed for each respective discipline to be reported in the ES.	Section 3 and 5-13
The proposed structure and format of the ES which will comprise three main parts – Volume 1 Environmental Statement Text and Figures and Volume 2 Technical Appendices and Volume 3 Non-Technical Summary	Appendix A

1.5. STRUCTURE OF THE EIA SCOPING REPORT

1.5.1. The EIA Scoping Report has been structured as follows:

- ***Chapter 1*** - outlines the context in which WSP request an EIA Scoping Opinion from CDC along with the structure of the EIA Scoping Report and the definition and requirement for EIA;
- ***Chapter 2*** – provides a description of the Proposed Development, the Site and the surrounding environment, which represent the baseline conditions;
- ***Chapter 3*** – provides an overview of the proposed approach to the EIA;
- ***Chapter 4*** – outlines the environmental topics which we consider are not significant at this stage and will not form part of the EIA;
- ***Chapters 5 to 13*** – these are the environmental topics which we consider are potentially significant at this stage, albeit we have identified a number of insignificant effects within these environmental topics; and
- ***Chapter 14*** – outlines the proposed methodology for the assessment of cumulative effects, comprising both effect interactions and in-combination effects.

2. BACKGROUND AND CONTEXT

2.1. OVERVIEW OF THE PROPOSED DEVELOPMENT

2.1.1. The Proposed Development comprises the redevelopment of existing 9 holes of the wider 18-hole course at Bicester Hotel Golf and Spa ('BHGS') to provide a new leisure resort (sui generis) incorporating waterpark, family entertainment centre, hotel, conferencing facilities and restaurants with associated access, parking and landscaping.

2.1.2. The Cherwell Local Plan 2011-2031 (2015, re-adopted in December 2016)[3] Policy SLE3 (Tourism) explicitly "*supports proposals for new or improved tourist facilities in sustainable locations, to increase overnight stays and visitor numbers within the District"*. The supporting text also details that CDC look to "*promote the provision of hotels, restaurants and leisure development opportunities*" in Bicester, and it is felt that the Proposed Development supports these goals.

2.2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.2.1. The Proposed Development will provide a new leisure resort incorporating a waterpark, family entertainment centre, hotel, conferencing facilities and restaurants with associated access, parking and landscaping. The Proposed Development will also include appropriate ecological mitigation integrated into the design proposals.

2.2.2. The Proposed Development comprises an overall site area of approximately 18.6 ha. The building height of the main buildings will be approximately 20m (102.7 above ordnance datum (AOD)), extending up to a maximum development height of approximately 24m (106.7m AOD), with the taller structures (housing the flumes of the water park feature) located on the western side of the Site.

2.2.3. The approximate total building area of the Proposed Development is 42,000 m^2 Gross Internal Area (GIA) and 51,000 m^2 Gross External Area (GEA). The design of the Proposed Development is still evolving; however, the component parts of the main leisure resort, to comprise:

- 500 guest room hotel to accommodate on average 4.5 people and with an expected average stay of 1.6 days (approximately 500,000 visitors each year);
- Conference facilities: flexible facilities for use by groups staying at the hotel and for wider use;
- Food and Beverage restaurants and bars for guests and including shared food hall;
- Indoor waterpark, family-orientated, enclosed water amusement park with pools & attractions;
- Car parking: approximately 900 car parking spaces including accessible and electrical vehicle charging spaces; and
- Landscaping: extensive landscaping throughout to provide an enhanced landscape buffer to adjacent sites and creating a publicly accessible new nature trail area.

2.2.4. The Proposed Development also includes provision of a new re-routed Public Right of Way (Footpath 161/6/10) which will be diverted around the Site as part of a comprehensive active

[3] Cherwell District Council (2016). Cherwell Local Plan 2011-2031. Available at: https://www.cherwell.gov.uk/info/83/local-plans Accessed May 2019

landscape design. The Proposed Development will also seek to enhance transport links to Bicester town centre and other local attractions through resort management, publicity and other means including investment in local shuttle bus services (for guests, staff and local residents).

2.2.5. Nine of the current 18 holes of the golf course will remain operational and the existing access to BHGS would remain via Green Lane (main customer access) and the A4095 (service access). The Proposed Development seeks a new vehicular access point, in the form of a T-junction on the A4095, which runs along the north-eastern boundary of the Site. This would include an additional right turn lane created through widening a stretch of the A4095. It is considered that this represents an appropriate solution to serve the access demands of the Proposed Development, supporting the distribution of traffic away from Chesterton.

2.2.6. The design of the Proposed Development has incorporated in-built mitigation which includes:

- Landscaping;
- Consideration of heights and views;
- Ecological mitigation; and
- Drainage.

2.2.7. The anticipated start of construction is 2021 with an expected duration of approximately 2 years.

2.3. THE SITE AND SURROUNDINGS

2.3.1. The Site is located on the eastern side of the M40, approximately 2km north of Junction 9 (with the A41), and the southern side of the A4095, within the Chesterton Parish of Cherwell District, South Oxfordshire. A Public Right of Way (Footpath 161/6/10) crosses the Site in a north to south east direction. Residential dwellings in the immediate context of the Site include Vicarage Farm and Stableford House. Key features within the Site and in the vicinity of the Site are identified and shown on **Figure 3 – Features of the Site and Surrounding Area**.

2.3.2. The Site is situated approximately 500 metres to the west of the centre of Chesterton village, 3.2km west of Bicester town centre, and 2.5km from the retail centre known as Bicester Village.

2.3.3. The Applicant has the option for the land (subject to planning permission) which currently exists as 9 of the 18-hole course at Bicester Golf Club, which is triangular shaped. The Site currently comprises outdoor golf course, ponds, mounds and dense woodland areas, all associated with the golf course. Adjacent to the Site is the existing BHGS buildings and the remainder of the existing 18-hole golf course, which is of established mixed hotel and leisure use (Class C1 / D2), the buildings are two storeys with pitched roofs. There are other low-density buildings in the vicinity, including surrounding houses and farm buildings and a warehouse/factory, all of which are of about three storeys (including pitched roofs) in height.

2.3.4. The landscape surrounding the Site is relatively flat and also well vegetated, the Site is therefore well visually contained by hedgerows and woodland between 4-13m tall. The landscape typology of the land within the Site area is of typical Golf course terrain which includes open space, ponds, mounds and dense woodland areas. The Site generally grades from north-west to south-east along the A4095 road at the north-eastern boundary of the Site; with levels falling from around 87 to 81m AOD.

2.3.5. The Site is not located within 2km of any ecological statutory or non-statutory designated sites. The Site contains a variety of habitat types of ecological value including ponds, plantation and semi-

natural woodland, species-rich hedgerow, a variety of grasslands, dense scrub and tall ruderal vegetation. These habitats are suitable to support bats (foraging, commuting and roosting), badger, hazel dormouse, birds, common reptiles, amphibians (including great crested newt) and invertebrates.

2.3.6. The Site is not located within or near to Green Belt land, an Area of Outstanding Natural Beauty, National Park or other landscape related designation. The Chesterton Conservation Area is located approximately 1km to the east of the Site. There is one registered Park (Middleton Park) and a number of Grade II listed buildings and scheduled monuments within 2km of the Site.

2.3.7. The Site is not located within an Air Quality Management Area (AQMA), the nearest AQMA is declared along King's End, Queens Avenue and Field Street which is located 2.7km to the north-east of the Site.

2.3.8. There are several water bodies situated within the Site, comprising drainage ditches and engineered ponds, lakes and swamps associated with the golf course, the majority of which are located towards the north of the Site. The closest water body off-site is Gagle Brook which is located approximately 520m to the north-east at its closest point.

3. APPROACH TO EIA

3.1. INTRODUCTION

3.1.1. This section confirms the proposed approach to the EIA and provides an appraisal of the key environmental issues to be covered in the EIA (i.e. "scoped in") and the issues not requiring further consideration (i.e. "scoped out") in the context of the key legislative and policy documents. It outlines the approach to the EIA process, including:

- Identifying the approach to the assessment of environmental effects;
- The significance criteria which will be used within the EIA;
- The level of information required for the EIA and proposed structure of the ES; and
- Proposed consultation.

LEGISLATIVE COMPLIANCE

3.1.2. The EIA will be undertaken in the context of relevant legal requirements and current best practice guidance, including the NPPG document 'Environmental Impact Assessment' and the following:

- Ministry of Housing, Communities & Local Government (2019) – Environmental Impact Assessment Guidance[4];
- Institute of Environmental Management and Assessment (IEMA) (2017) – Delivering Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice[5]; and
- IEMA (2016) – Environmental Impact Assessment Guide to: Delivering Quality Development[6].

3.1.3. Legislation, policy or guidance which relates to a specific technical discipline will be considered as appropriate within the ES and discussed within the relevant technical chapters of the ES.

3.1.4. The ES will report the likely significant environmental effects as a result of the Proposed Development. Where possible, mitigation measures and enhancement opportunities will be identified to prevent, reduce or remedy any effects and to optimise any benefits and positive aspects of the Proposed Development.

3.1.5. The ES will review and provide all the relevant environmental information outlined in Schedule 4 of the EIA Regulations as is reasonably required to assess the likely environmental effects of the development.

[4] Ministry of Housing, Communities & Local Government (2019). Environmental Impact Assessment Guidance Available at: https://www.gov.uk/guidance/environmental-impact-assessment Accessed: May 2019
[5] Institute of Environmental Management and Assessment (IEMA) (2017). Delivering Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice https://www.iema.net/policy/ia/proportionate-eia-guidance-2017.pdf Accessed: May 2019
[6] IEMA (2016). Environmental Impact Assessment Guide to: Delivering Quality Development https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf Accessed: May 2019

PLANNING POLICY CONTEXT

3.1.6. The EIA Regulations do not require an assessment of planning policy or guidance; however, the ES will confirm the policy context. The Planning Statement to accompany the planning application will examine the merits of the Proposed Development against the relevant national, regional and local planning policy documentation including:

- National Planning Policy Framework (NPPF) published March 2012, updated February 2019[7];
- Planning Practice Guidance issued published November 2016, updated May 2019[8]; and
- Cherwell Local Plan 2011-2031[9].

3.2. EIA CONSULTATION

3.2.1. Under the terms of EIA Regulation 13(4) a request is made to the CDC to consult with at least the consultation bodies identified in Regulation 2(1) of the EIA Regulations, including Oxfordshire Country Council (OCC), Historic England, Natural England and the Environment Agency before issuing their EIA Scoping Opinion to enable the above organisations to provide their input into the formal EIA Scoping process.

3.2.2. Consultation with both statutory and non-statutory consultees will be undertaken in future stages of the EIA. Initially, this EIA Scoping Report will provide the basis for consultation on the nature of the Proposed Development, its potential environmental effects, and the scope and methodology proposed for the EIA. To this end, CDC is expected to, on receipt of this EIA Scoping Request:

'Notify the consultation bodies in writing of the name and address of the person who intends to submit an Environment Statement and of the duty imposed on the consultation bodies by paragraph (4) to make information available to that person; and inform in writing the person who intend to submit an Environmental Statement of the names and addresses of the bodies to be notified.'

3.2.3. At this stage, it is envisaged that, as a minimum, the following consultation bodies will be notified:

- CDC Officers:
  - Development Management;
  - Biodiversity Officer;
  - Environmental Protection Team [Noise / Air Quality / Land Contamination];
  - Planning Policy; and
  - Waste Management.
- OCC;
- Highways England;
- Environment Agency;

[7] Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework (NPPF). Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 Accessed May 2019
[8] Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance Accessed May 2019
[9] Cherwell District Council (2016). Cherwell Local Plan 2011-2031. Available at: https://www.cherwell.gov.uk/info/83/local-plans Accessed May 2019

- Historic England;
- Natural England; and
- Thames Water.

3.3. DEFINING THE STUDY AREA

3.3.1. Each topic has applied specific study areas, these are defined and justified in each relevant topic chapter (Sections 5 to 13).

3.4. ESTABLISHING BASELINE CONDITIONS

3.4.1. For the purposes of the EIA and all technical assessments, the baseline scenario (against which any likely significant effects will be assessed) will be taken to be the Site as it currently is, i.e. occupied and operated by the BHGS.

3.4.2. The baseline scenario would be across 2018/2019. The Transport Assessment (TA) and, therefore, the noise and air quality assessments which rely on traffic data, will be based on a baseline year (2019) and the year of completion and operation as 2022, selected in accordance with relevant standards and assessment guidelines.

3.4.3. Effects arising at the time of demolition and construction will for the most part be temporary, but others may result in lasting changes, for example in relation to beneficial effects from remediation of any contamination. It is anticipated that there will be a condition for a Construction Environmental Management Plan (CEMP), which will be inclusive of mitigation outlined within the ES as identified through the EIA process.

3.4.4. Topic specific approaches to defining baseline conditions will be defined and justified in the relevant topic chapters.

3.4.5. Where relevant, developments under construction/completed in the study area are considered in the baseline scenario of the technical assessments which is explained further in Section 13 Cumulative Effects.

3.5. ESTABLISHING FUTURE BASELINE CONDITIONS

3.5.1. The ‘future baseline’ is the description of the likely evolution of the baseline scenario without the implementation of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of available environmental information and scientific knowledge.

3.5.2. The description of future baseline conditions will be presented in each of the technical chapters of the ES.

3.6. APPROACH TO MITIGATION MEASURES

3.6.1. Good practice dictates that the EIA process should influence the location and basic design of a scheme to limit adverse effects on receptors. Mitigation of effects on receptors should follow the hierarchical system i) avoidance and prevention, ii) reduction, and iii) remediation.

3.6.2. Following guidance published by IEMA[10],[11], three types of mitigation will be identified and used throughout the EIA:

- Primary Mitigation – Modifications to the location or design of the Proposed Development made during the pre-application phase that are an inherent part of the Proposed Development. For example, the majority of the built form elements of the Proposed Development are located in the south of the Site, avoiding the sensitive habitats and associated ponds in the north-eastern corner of the Site.
- Secondary Mitigation – Actions that will require further activity to achieve the anticipated outcome. For example, the adoption of a Construction Environmental Management Plan to avoid, reduce and off-set potential environmental effects during the construction works.
- Tertiary – Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects (i.e. construction related nuisances). For example, best practice construction noise and vibration levels are to be considered to reduce any impact associated with this phase of the Proposed Development.

3.6.3. The primary and tertiary mitigation will be presented as part of the description of the Proposed Development which will be documented within the ES. In addition, each technical chapter of the ES will outline relevant elements of the Proposed Development that are considered in the pre-mitigation scenario, i.e. inherent to the Proposed Development. Following the conclusion of the effects of the Proposed Development, any further mitigation measures (i.e. secondary mitigation) will be outlined separately for each technical chapter. These mitigation measures will further reduce an adverse effect or enhance a beneficial one.

3.6.4. Mitigation embedded as part of the design of the Proposed Development will be reported in the Proposed Development chapter (and technical chapters, where applicable) of the ES. Embedded mitigation will be taken into account within the assessment of significance, and significance will not be reported in the absence of this mitigation.

3.6.5. Environmental effects which cannot be avoided or mitigated through design and controls will be assessed to determine their significance and where required additional mitigation will be recommended for both the construction and operation of the Proposed Development within the relevant topic chapters.

3.6.6. The mitigation measures/ enhancement measures reported within the ES chapters will be identified and may be secured through planning conditions and/or included within an Environmental Management Plan (EMP)/Construction Environmental Management Plan (CEMP), for example.

[10] IEMA (2015) Environmental Impact Assessment Guide to Shaping Quality Development. Available at: https://www.iema.net/assets/uploads/iema_guidance_documents_eia_guide_to_shaping_quality_development_v7.pdf Accessed: May 2019

[11] IEMA (2016) Environmental Impact Assessment Guide to Delivering Quality Development. Available at: https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf Accessed: May 2019

3.7. ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

3.7.1. The assessment will be undertaken in the context of and considering the above details, and relevant planning policy at national (National Planning Policy Framework (NPPF)), regional and local levels. Legislations, policy or guidance which relates to a specific technical discipline will be considered as appropriate within the ES and discussed within the relevant technical chapters.

3.7.2. The assessment will consider the potential effects of the construction and operational stages of the Proposed Development. The definitions of these are presented below:

- Construction: Site preparation includes work required to prepare the Site for construction. Earthworks, remediation (if required) and any archaeological excavation. The construction stage includes all works associated with construction. It is known that the construction of the Proposed Development will extend over several years. Therefore, where feasible and where sufficient information exists, construction effects identified within the ES will be time bound and location specific; and
- Operation: This relates to effects once the Proposed Development is constructed and in use or occupied.

3.7.3. Information relating to the above Proposed Development stages will not be applicable to the assessment process for all technical disciplines. For example, the Transport Assessment and, therefore, the noise and air quality assessments will be based on baseline year, operating year and years subsequent to this, in accordance with relevant standards and assessment guidelines. At this stage several design details are still emerging, including the phasing, demolition and construction programme. Details of the phasing of the Proposed Development will be included within the ES, including an opening year which will be referenced consistently throughout each of the technical chapters within the ES.

3.7.4. Each technical discipline will consider and assess effects considering the geographical extent of any given effect.

3.7.5. The assessments of the likely significant effects for each discipline will consider both the construction and operational phases of the Proposed Development, however the assessments will not consider specific build out stages of each phase. Several criteria will be used to determine if the potential effects of the Proposed Development are ‘significant’. The effects will be assessed quantitatively wherever possible. The significance rating will take account of the following criteria:

- Likelihood of occurrence;
- Geographical extent;
- Adherence of the proposals to legislation and planning policy;
- Adherence of the proposals to international, national and local standards;
- Sensitivity of the receiving environment or other receptor;
- Value of the affected resource;
- Whether the effect is temporary or permanent;
- Whether the effect is short, medium, or long-term in duration;
- Whether the effect is reversible or irreversible; and
- Inter-relationship between effects (both cumulatively and in terms of potential effect interactions).

3.7.6. The effects that are considered to be significant, prior to mitigation, will be identified in the ES. The classification of effects reflects professional judgements as to the importance or sensitivity of the

affect receptor(s) and the nature and magnitude of the predicted changes. For example, a high magnitude of change a feature or site of low importance/sensitivity will comprise a lower classification of effect than the same impact of a feature or site of high importance/sensitivity.

3.7.7. The following terms will be used in the ES, unless otherwise stated within individual chapters, to classify effects:

- Major beneficial or adverse effect – where the Proposed Development would cause a large improvement (or deterioration) to the existing environment;
- Moderate beneficial or adverse effect – where the Proposed Development would cause a noticeable improvement (or deterioration) to the existing environment;
- Minor beneficial or adverse effect – where the Proposed Development would cause a small improvement (or deterioration) to the existing environment; and
- Negligible – no discernible improvement or deterioration to the existing environment as a result of the development will occur.

3.7.8. Effects which are deemed to be significant for this assessment are generally those which are described as moderate or major beneficial or adverse. Those that are classified as negligible or minor are deemed to be not significant. However, how effects have been classified will be detailed within each technical chapter of the ES as appropriate.

3.7.9. Summary tables that outline the potential effects associated with an environmental discipline (e.g. air quality), potential mitigation measures and residual effects will be provided in the ES.

3.7.10. The matrix provided as **Table 3-1** will be used as a basis in the EIA to determine the significance of any given effect.

3.7.11. Best practice and guidance requires that certain technical disciplines are required to follow topic-specific criteria for determining significance. This includes for the assessment topics of air quality, noise and vibration, landscape and visual, and archaeology and heritage. Where this is the case, the criteria to be used will be presented clearly in the methodology section of the technical chapters within the ES. **Appendix A** confirms the proposed structure and format of the ES.

Table 3-1 – Matrix for Classifying Effects

		Sensitivity of Receptor / Receiving Environment to Change			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Change	**High**	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor to Moderate	Negligible
	Low	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

3.8. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

3.8.1. Relevant technical chapters will identify opportunities for enhancing the environment wherever possible.

3.9. ASSESSMENT OF MAJOR ACCIDENTS AND DISASTERS

3.9.1. As detailed within Schedule 3 of the EIA Regulations, there is a requirement to consider the risk of major accidents and / or disasters relevant to the Proposed Development.

3.9.2. Although there are extensive potential major accidents / disasters that could occur, the frequency of some accidents/disasters is considered to be so low that the probability of potential risks to occur is highly unlikely. Although detailed design will need to take account of safety in design, including fire risk, in accordance with the CDM Regulations[12].

3.9.3. For proportionality, the evaluation process of such major accidents / disasters has not been detailed in completeness, but are summarised below:

- The risk of natural disasters arising from climatic occurrences (i.e. hurricanes) is considered to be very low due to the natural climatic condition of the UK within the global climate system;
- The risk of natural disasters arising from specific geological events (i.e. earthquakes, tsunami, volcanic incidents etc.) is considered to be very low due to the general absence of required geological conditions (i.e. area of tectonic plate interaction) within or in close proximity to the UK. Although earthquakes have occurred within the UK the magnitude of such events have generally been low; and
- The risk of major accidents associated with future roads and transport methods associated with the Proposed Development, will be assessed in the Transport Assessment and the Transport and Access ES chapter. However, elements of the Proposed Development would be designed to applicable safety standards thereby reducing the potential risk of major accidents.

3.9.4. Following a qualitative appraisal of major accidents and/or disasters that are relevant to the Proposed Development, the following have been taken into consideration as being appropriate for this type of development and site location:

- Flooding; and
- Geological Events.

Flooding

3.9.5. The consideration of flooding and the susceptibility of the Site to flooding will be assessed in the Water Resources, Flood Risk and Drainage chapter of the ES, which will be supported by a Flood Risk Assessment and Drainage Strategy. The assessment will also determine the required levels of mitigation for each of the use classes within the Proposed Development which will be implemented as either primary or secondary mitigation and reported within the ES.

Geological Events

3.9.6. Ground conditions and risk associated with geological elements will be considered as part of the Ground Conditions chapter of the ES, using evidence and baseline information collected. The assessment will focus on potential risks associated with ground conditions and identify any

[12] HM Government (2015), Construction Design and Management Regulations 2015.

requirements for primary or secondary mitigation to facilitate the Proposed Development, and reported within the ES.

3.10. SCOPE OF THE APPLICATION DOCUMENTS

3.10.1. The planning submission is expected to be supported by a suite of Application Reports and Plans. **Tables 3-2** and **3-3** confirm the respective details and a brief description of the purpose of each.

Table 3-2 – Documents to be Submitted for Approval

Document	Purpose	Author
Planning application form, certificates and notices.	To define and describe the component elements of the application compliant with validation requirements.	DP9
Application location and Site Plans.	To confirm the location and extent of the application boundary.	EPR
Application Plans	To define the design, layout and elevations of the Proposed Development and proposed works with both above and below ground	EPR

3.10.2. **Table 3-3** confirms the supporting reports expected to be submitted alongside the ES to support the planning application and assist in the consideration and determination of the Planning Application. Whilst not forming part of the application for which approval is sought, these reports are to be submitted with the aim of assisting CDC and consultees in both understanding and evaluating the Proposed Development.

Table 3-3 – Proposed Supporting Application Reports

Document	Purpose	Author
Design and Access Statement (including Open Space Assessment)	Sets out the design rationale and principles behind the Proposed Development including the content, layout, access and circulation proposed. Includes a description of the design evolution, strategy and principles.	EPR
Economic Benefits Statement	Examines the economic benefits associated with the Proposed Development and outlines the economic context, the proposed uses, job creation and any additional community benefits.	Volterra
Planning Statement	Identifies the context and need for the development and includes an assessment of how the Proposed Development accords with relevant national, regional and local planning policies.	DP9

Document	Purpose	Author
Landscaping Details/Plans	Sets out the landscaping strategy for the Proposed Development.	BMD
Environmental Statement and Non-Technical Summary	To report the assessment of the likely significant effects of the Proposed Development.	WSP
Statement of Community Involvement	Summarises the outcome of public consultations in relation to the project.	Redwood
Servicing and Delivery Plan	Outlines the current situation and the proposed delivery and servicing strategy, with objectives, measures and initiatives.	Motion
Transport Assessment and DraftTravel Plan (Appended to the ES)	Considers the major modes of transport and provides a review of the existing situation, analysis of the likely conditions after development and recommends necessary mitigation measures.	Motion
Energy and Sustainability Statement	Demonstrates that the Proposed Development is considered sustainable, compared to the relevant local, regional and national planning policies. Outlines the strategy for the energy centre.	Hoare Lea
Flood Risk Assessment (To be Appended to the ES)	Reports on the potential risk of flooding to and as a result of the Proposed Development	Curtins
Waste Management Strategy	Calculates expected waste generation from the development during construction and operational phases. Identifies a plan in relation to separating, collection, treatment and disposal of waste.	WSP
Arboriculture Report	Providing a Tree Survey Schedule, Arboriculture impact assessment, arboriculture method statement and tree protection plans.	WSP
Ventilation and Extraction Statement	Reports the proposed strategy for ventilation and extraction in the buildings associated with the Proposed Development.	Hoare Lea
Draft Construction Method Statement	Define the methods involved in construction of the Proposed Development.	Arcadis
Lighting Strategy	Establish baseline conditions and recommend a lighting strategy which will minimise the impact to the surrounding environment.	Hoare Lea
Utilities Statement	Outlines the utilities required for the construction and operation of the Proposed Development and considers how existing utility assets would be affected.	Hoare Lea
Operational Management Plan	Defines the strategy and plans for the management of the Proposed Development in the operational phase.	Great Wolf Resorts

4. TOPICS SCOPED OUT OF THE EIA

4.1.1. As part of the EIA process and based on the information available to date, there are a number of topics for which it is considered an assessment as part of the EIA is not justified and it is proposed that these technical topics are scoped out of the EIA.

4.1.2. The topics proposed to be scoped out of the EIA are:

- Services and Utilities;
- Sustainability and Energy;
- Waste;
- Health and Wellbeing;
- Climate Change; and
- Microclimate (Wind and Daylight, Sunlight and Overshadowing).

4.1.3. The justification for scoping out the above topics is provided below.

4.2. SERVICES AND UTILITIES

4.2.1. Existing services and utilities and any required diversions or new provision are being taken into consideration as part of the design process for the Proposed Development and suitable solutions are being agreed with the relevant service providers such that no significant effects are anticipated. It is therefore proposed that the **topic of services and utilities is scoped out of the ES**.

4.3. SUSTAINABILITY, ENERGY AND WASTE

4.3.1. Separate reports will be submitted with the Planning Application to address the relevant sustainability, energy and waste planning policy context for the area at the national, regional and local level. Relevant design details relating to Energy, Sustainability and Waste will be described in the ES and used to inform various assessments to be reported in the ES where appropriate, such as Air Quality. It is therefore proposed that the **topics of sustainability, energy and waste are scoped out of the ES**.

4.4. HEALTH AND WELLBEING

4.4.1. Where appropriate, the technical chapters of the ES (such as air quality and noise and vibration) will consider the potential effects on the health and wellbeing of the existing and future users and workers of the Proposed Development. Due to the nature of the Proposed Development, it is unlikely to have significant effects on the health and wellbeing of individuals and the local community. There is unlikely to be any change to the accessibility or provision of health services because of the construction or operation of the Proposed Development.

4.4.2. Temporarily, construction may cause the emissions of dust and noise, however, these emissions will be controlled and managed through a Construction Environmental Management Plan (CEMP). This will also include measures relating to construction access and traffic to ensure disruption to journeys is reduced as much as possible and use of local roads through the neighbouring villages is avoided. Any potential impacts of the Proposed Development on health of the existing and future residents / workers will be assessed through the Air Quality and Noise and Vibration chapters of the ES. It is therefore proposed that a **separate chapter addressing the potential effects on health and wellbeing is scoped out of the ES**.

4.5. CLIMATE CHANGE

4.5.1. Schedule 4, Section 5(f) of the EIA Regulations requires consideration of the effects of a scheme on climate change and the vulnerability of a project to climate change.

4.5.2. At present there is no guidance that determines the necessary assessment process for consideration of impact on the climate, however, the Institute of Environmental Management and Assessment (IEMA) primer[13] recommends that EIAs should consider the following, with respect to climate change:

- Green House Gas (GHG) emissions;
- Climate change resilience; and
- Climate change adaptation.

4.5.3. During construction, many different types of materials (in significant volumes) may be required and the generation of GHGs associated with the production of such materials is noted. However, the EIA will reflect the planning consent sought which is defined within the Site boundary. Any GHGs generated in relation to the production and sourcing of materials will be subject to other legislative requirements which will be responsible for the management of GHG generation. Due to the nature of the control mechanisms (legislative), it is considered highly likely that these control mechanisms will occur. Therefore, greenhouse gas generation associated with the sourcing of materials will not be considered within the ES.

4.5.4. Once operational, the traffic movements associated with the Proposed Development and use of natural resources will cause a release of GHG emissions. As part of the planning application, an Energy and Sustainability Statement will be prepared in line with local and national policy which will propose a method to meet building regulations to support the planning application. Through the application of the recommendations of the Sustainability and Energy Statements, the GHG emissions associated with the operational phase of the Proposed Development will be reduced. Therefore, the contribution to climate change (in relation to greenhouse gas emissions) will not be considered further within the ES.

4.5.5. Where appropriate, the technical chapters of the ES will consider the potential effects of climate change. The Flood Risk Assessment will consider the *UK Climate Change Predictions 2009*[14], future climate change scenarios identified in the *Environment Agency's Climate Change Impacts and Adaptation*[15].

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[13] Cave, B., Fothergill, J., Pyper, R., Gibson, G. and Saunders, P. (2017). Health in Environmental Impact Assessment: A primer for a proportionate Approach. Ben Cave Associates Ltd, IEMA and the Faculty of Public Health. Available at: https://www.iema.net/assets/newbuild/documents/IEMA%20Primer%20on%20Health%20in%20UK%20EIA%20Doc%20V11.pdf Accessed May 2019.

[14] HM Government (June, 2009). Adapting to climate change UK Climate Projections. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69257/pb13274-uk-climate-projections-090617.pdf Accessed: May 2019.

[15] Environment Agency (November, 2018). Climate Change Impacts and Adaptation. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/758983/Climate_change_impacts_and_adaptation.pdf

4.5.6. The potential impacts of climate change will be robustly addressed as part of the design of the project, such as through the drainage strategy and energy and sustainability strategy. The planning submission will include an Energy and Sustainability Statement, Flood Risk Assessment and Drainage Strategy, and the Design and Access Statement which will include a section on climate change impacts and strategies for mitigation. It is therefore proposed that the **topic of climate change is scoped out of the ES**.

4.6. MICROCLIMATE

4.6.1. There are a number of considerations in relation to microclimate, these include wind (specifically considered at the pedestrian level); levels of daylight and sunlight (within neighbouring buildings) and overshadowing (specifically of proposed open spaces used by the public).

4.6.2. The height of the Proposed Development is anticipated to be approximately 20m AOD, extending up to a maximum height of 24m AOD at the western end of the Site (where the flumes of the water park feature will be housed). Effects such as wind pressure and loading on building facades and natural ventilation will be considered as part of the detailed design of structures and will adhere to necessary safety standards and design codes and therefore does not fall within the scope of the EIA. In terms of effects on the pedestrian wind environment, these are below the heights generally considered as potentially affecting the wind environment[16].

4.6.3. As the height of the Proposed Development is up to 24m AOD in one location, with general building heights being up to approximately 20m AOD, there is unlikely to be any significant overshadowing of areas of public space (within the Proposed Development and the surrounding Golf Course).

[16] City of London Corporation (July 2017). Planning Advice Note: Wind Effects and Tall Buildings. Available at: https://www.cityoflondon.gov.uk/services/environment-and-planning/planning/design/Documents/wind-and-tall-buildings-pan.pdf Accessed: May 2019.

5. SOCIO-ECONOMICS

5.1. STUDY AREA

5.1.1. This chapter of the EIA will assess the socio-economic impact of the Proposed Development on the local area, as well as how it functions within the wider Cherwell local authority district, the county of Oxfordshire and the South East regional economies. A national geographical area will also be utilised in the assessment for comparison purposes. The study area can vary for the purposes of a socio-economic assessment depending on availability of data. For most considerations, the study area will be defined as Cherwell (local authority district) or the Lower Super Output Area[17] (LSOA) in which the site lies (local area), namely Cherwell 016A.

5.1.2. This assessment will be undertaken by Volterra.

5.2. BASELINE CONDITIONS

5.2.1. In order to ascertain the likely significant effects that will arise as a result of the Proposed Development, an understanding of the economic, demographic and social baseline conditions is required. An initial assessment of the baseline economic and demographic conditions has been carried out, as well as a review of the existing social infrastructure around the Site.

5.2.2. In 2017, Oxfordshire accommodated the fifth highest number of workers (374,000) of the 19 counties within the South East region, accounting for 9% of total employment (4,239,500) in the region. Total employment in Cherwell was estimated to be 78,500 in 2017[18], of which the most dominant sectors of employment were retail (12.1%), manufacturing (10.8%) and health (9.6%). The proportion of retail employment in the area is higher than the national average, where approximately 10% of jobs are in the retail sector, which is likely due to the presence of Bicester Village. During the month of December 2017, there were an estimated 255 unemployed residents in Cherwell that were claiming Jobseeker's Allowance and actively seeking work, of which 72% of these workers were seeking work in customer services and sales occupations[19]. The local area is estimated to support 1,250 workers, of which almost half (49%) are accounted for by the retail and accommodation & food services industries alone[20].

5.2.3. The Site comprises part of the golf course associated with Bicester Hotel Golf and Spa (BHGS) and it lies within the vicinity of a renowned retail destination, namely Bicester Village. These are part of the strong leisure and tourism industry in the area.

5.2.4. According to Destination Research[21], there were c. 2.1m tourism day trips to Cherwell in 2017, which does not include visits to Bicester Village of which there were 6.6m in 2017, up from 6.4m in

[17] Lower Super Output Areas (LSOAs) are small geographic areas defined by the Office of National Statistics with the aim of improving the reporting of small area statistics. They are designed such that their minimum population is 1,000 and the mean population is 1,500.
[18] ONS, 2017, Business Register and Employment Survey (Safeguarded Access).
[19] ONS, 2017, Jobseeker's Allowance by Occupation - South Occupation
[20] ONS, 2017, Business Register and Employment Survey (Safeguarded Access).
[21] Destination Research, 2018, The Economic Impact of Tourism in Oxfordshire 2017.

2016. Across Oxfordshire, there were 27.1m day trips (approximately 12% of day trips to the South East) and 2.8m overnight trips. The number of overnight trips to Oxfordshire increased by 2% year on year to 2017, whilst the number of day trips increased by 9%.

5.2.5. Destination Research estimates that the total tourism value generated from direct, indirect and induced tourism spend in Oxfordshire totalled £2.2bn in 2017, supporting a total of 36,900 tourism-related jobs. This is equivalent to 26,900 full time equivalent jobs or 10% of total employment in Oxfordshire.

5.2.6. Cherwell is the 251st most deprived local authority in England and Wales (out of 322), meaning it lies within the top 25% least deprived local authorities[22]. Cherwell performs relatively well in the deprivation sub-domains of employment, income and living environment, but performs less well (relatively) in the sub-domains of education and barriers to housing.

5.2.7. Within Oxfordshire, GP practices have an average patient list size of 1,670 per FTE GP[23], which is lower than the standard benchmark of 1,800 residents per FTE GP used by the Royal College of General Practitioners in the HUDU model. At a more local level, a 3.3km distance to the Site is used as the local area 'radius', as this was found to be the average distance that patients travel to their GP practice across Great Britain[24]. At the local level, the average patient list size is found to be 1,535 per FTE GP, suggesting that local medical services are not constrained.

5.2.8. The nearest Accident & Emergency (A&E) to the Site is in the John Radcliffe Hospital, situated approximately 14 km away. The hospital is operated by the Oxford University Hospitals NHS Foundation Trust, who operate four hospitals in total, two of which contain an A&E (the John Radcliffe and Horton General). In Q4 2018/19, 86% of patients in the Oxford University Hospital NHS Foundation Trust's A&Es were admitted within the four hour target time, which is below the national target of 95%, but just above the national average (85%) during the same time period.

5.3. IDENTIFICATION OF SENSITIVE RECEPTORS

5.3.1. The sensitivity of receptors is dependent upon the established baseline conditions (e.g. the extent to which unemployment or social infrastructure issues are present in an area and thus how much employment or infrastructure are needed in that area). It is not possible to ascribe specific 'values' or a scale of 'sensitivity' to all socio-economic receptors due to their diversity in nature and scale.

5.3.2. The socio-economic assessment will therefore focus on the qualitative "sensitivity" of each receptor, and on their ability to respond to change based on recent rates of change. For examples, very high rates of unemployment or low skills in the local population would both be deemed very sensitive receptors, because they represent very significant and persistent socio-economic problems in the context of the local environment.

[22] Department for Communities and Local Government, 2015, English Indices of Deprivation 2015 - Local Authorities Summary.
[23] NHS Digital, 2018, NHS General Practice Data Hub
[24] Deloitte, 2006, Adjusting the general medical services allocation formula for the unavoidable effects of geographically dispersed populations on practice sizes and locations. Report to NHS employers.

5.3.3. For the purposes of this assessment, receptors are likely to include, but may not be limited to:

- Construction employment;
- Unemployment and employment;
- Availability of local workforce;
- Local expenditure;
- Leisure provision;
- Crime and deprivation;
- Education and skills;
- GP and A&E provision; and
- Open space.

5.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

5.4.1. The socio-economic assessment will estimate the operational employment opportunities generated at the Proposed Development, and the resulting indirect and induced employment, relative to the existing Site, in the context of the existing labour market and targets for employment growth. The assessment will consider both gross and net additional estimates in order to present a thorough assessment of the effect of the increased operational jobs and the proportion of these that are likely to benefit local residents. In addition to this, the availability of workers in the local area will be considered, through analysis on the catchment of the labour market and projected employment growth in Cherwell, in order to understand whether there is significant demand for jobs in the local area. Overall, the effect that the Proposed Development will have on operational employment and local jobs is expected to be beneficial and permanent in nature.

5.4.2. It is proposed that the expenditure generated by visitors to the Proposed Development during the operational phase is scoped into the assessment. Initial estimates carried out in the pre-application stage suggest that the level of visitor expenditure is likely to be significant in the context of the local area. The effect that the Proposed Development will have on visitor expenditure is considered to be beneficial and permanent in nature.

5.4.3. The Proposed Development's contribution to the local leisure offering is anticipated to be significant. The leisure provision within the Proposed Development will also be aimed at a different demographic of the local (and wider) population - families and young children - to the offering of the current leisure facilities that exist on-site, such as the Golf Club and Spa, which will remain in-situ. In addition to assessing the new facilities being provided, the assessment will take into account the impact of losing 9 holes of the existing golf course. The effect that the Proposed Development will have on leisure provision is considered to be permanent in nature and likely to be beneficial overall, although the potential adverse effect of losing 9 holes of the golf course will also be taken into consideration.

5.4.4. A summary of the likely significant effects to be **scoped in** to the socio-economic assessment is provided in **Table 5-1** below.

Table 5-1 – Summary of Likely Significant Effects for Socio-economics

Impact	Phase	Receptor	Justification
Operational employment	Operational	Workforce by industry	Significant employment creation is anticipated, particularly once indirect and induced impacts are taken into account. This will also consider the availability of the local workforce.
Geographic distribution of employees	Operational	Local jobs	The types of operational jobs at the Proposed Development are typically those in which workers live more locally, and hence this effect is scoped into the assessment.
Visitor expenditure	Operational	Turnover in the local area	Visitor expenditure at the Proposed Development is expected to be significant at a local area level.
Contribution to leisure	Operational	Provision of leisure floorspace	The Proposed Development will provide a significant amount of new leisure, targeting a different demographic (i.e. young children and families) than is currently on offer on site. Existing leisure facilities will also be enhanced in the local area, in addition to the new leisure facilities being provided, although 9 holes of the existing golf course will be lost as part of the proposals.
Employee training and college partnerships	Operational	Education and skills	The Proposed Development aims to partner with local colleges to provide in-work opportunities for local students. It also has a thorough training programme for all its staff members hence will provide them with valuable skills.

INSIGNIFICANT EFFECTS

5.4.5. The effects outlined in **Table 5-2** below are anticipated to be insignificant within the context of socio-economics and hence are proposed to be **scoped out** of this chapter of the EIA.

Table 5-2 – Summary of Insignificant Effects for Socio-economics

Impact	Phase	Receptor	Justification
Construction employment	Construction	Construction sector workforce	Employment generated during the construction phase would be temporary in nature. When coupled with the fact that the construction workforce tends to be one of the most fluid sectors, travelling to work where construction is occurring, the impact of increased demand for construction workers is not considered likely to have a significant effect and is therefore proposed to be scoped out.

Impact	Phase	Receptor	Justification
Construction worker expenditure	Construction	Turnover in the local area	The temporary expenditure and revenue generated by workers at the Proposed Development during the construction phase is proposed to be scoped out of the assessment because any additional expenditure in the local area through construction workers would not be significant relative to the expenditure in the local area.
Operational worker expenditure	Operational	Turnover in the local area	The expenditure and revenue generated by workers at the Proposed Development during the operational phase is proposed to be scoped out of the assessment because any additional expenditure in the local area through workers at the Proposed Development would not be significant relative to the expenditure in the local area.
Crime and deprivation	Operational	Crime and deprivation	Cherwell already performs very well in relative deprivation scores, particularly in the sub-domains most likely to be affected by the Proposed Development - Income, Employment and Living Environment. The Proposed Development's anticipated small (but beneficial) impact on local deprivation and crime levels is therefore anticipated to have an insignificant effect, given the low levels of existing deprivation in the local area.
Local healthcare provision	Construction and Operational	GP and A&E Provision	As the Proposed Development does not have a residential element, and local GP services are not constrained, it is anticipated that the impact of additional workers and visitors in the local area will have a negligible effect on local health care provision and hence it is advised that this effect is scoped out.
Open space	Operational	Open Space	The Proposed Development is not anticipated to have a substantial impact on open space provision in the local area. It will result in a loss of golf course space but this is privately owned and not open to the public.

5.5. MITIGATION

5.5.1. The Applicant has a strong track record of putting measures in place to maximise job opportunities and enhance skill levels for local residents. The chapter will outline mitigation measures that will look to maximise the local benefits of the Proposed Development, particularly in relation to local jobs.

5.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

5.6.1. It is anticipated that direct opportunities for enhancing the environment will be presented in other chapters of the EIA, e.g. in the Ecology and Landscape and Visual chapters.

5.7. ASSESSMENT METHODOLOGY

5.7.1. The baseline conditions for the Site will be established with a desk top review bringing together the following information: employment, unemployment rates and industrial specialisation. The desk top review will be undertaken to establish the existing baseline conditions through review of the existing economic conditions prevalent in the study area in comparison with local and regional trends, utilising geographic information systems (GIS), available information relating to the Site from the current owners, and from published database records such as the Office of National Statistics (ONS).

5.7.2. As with any dataset, baseline conditions will change over time. The socio-economic assessment will firstly define the existing baseline socio-economic conditions of the Site and the surrounding area. The most recent published sources will be used in doing so: 2019 data will be used where possible but if this is not available the next best alternative (i.e. the most up to date) will be used as a proxy.

5.7.3. The likely significant socio-economic effects will be quantitatively and qualitatively assessed against the relevant baseline position. The assessment of the significance of effects will be undertaken based on expert judgment as there are no industry standard significance criteria relating to the assessment of socio-economic impacts. The assessment will aim to be objective, quantifying the magnitude of impact wherever possible. Where quantification is not possible, qualitative assessment will be made and justified.

5.7.4. Mapping techniques, as well as flow diagrams and matrices (all identified by 'EC Guidelines on Indirect and Cumulative Impacts[25]' as useful assessment methods) will be used wherever possible to ensure that assumptions and interdependencies between impacts and effects are clearly presented within the assessment. Finally, where standard or existing methodologies don't exist, benchmarking exercises will be undertaken and presented clearly and transparently, along with any assumptions made.

5.7.5. In accordance with the Additionality Guide[26], the likely operational employment effects of the Proposed Development will be considered at multiple geographic scales (i.e. ward/LSOA, local authority district and regional), which will be clearly defined in the ES Chapter. Employment creation directly on-site at the Proposed Development will be considered relative to the total employment that currently exists within the Cherwell 016A LSOA. Modelling and accepted metrics will be used wherever possible to calculate primary, secondary and indirect effects.

5.7.6. The Proposed Development is unique in its nature and therefore the employment densities and additionality guides do not have appropriate industry standard metrics for assessing the likely direct, indirect and employment effects of the proposals. In assessing the impacts, we will therefore draw

[25] European Commission (1999). Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.
[26] Homes & Communities Agency, 2014, Additionality Guide – Fourth Edition

upon industry knowledge from the Applicant, as well as making reference to appropriate benchmarks and comparators, and the employment densities[27] and additionality guides[28].

5.7.7. Data on commuting patterns from the 2011 Census[29] will be used to provide an initial estimate of the proportion of jobs created by the Proposed Development that will go to local residents. The Applicant's local employment mitigation measures will then be taken into account later on in the chapter to provide a full estimate of the proportion of operational jobs that will go to local residents.

5.7.8. Visitor expenditure outside of the Proposed Development will be estimated using previous research carried out on the economic impact of tourism in Oxfordshire. The research provides estimates of the relative proportions of spending carried out by visitors on accommodation, retail, catering, attractions and transport[30].

5.7.9. The Proposed Development's contribution to leisure will be assessed against a baseline of existing leisure provision in the local area, and context will be provided through utilising local research that has been conducted and planning policies that have been released.

5.7.10. The magnitude of the impact and the sensitivity of the receptor will be combined to determine the scale of effect, as set out in **Table 3-1** (Section 3.7). Effects that are classified as moderate or major based on the criteria shown in the matrix are viewed as significant effects. Those that are classified as negligible or minor are deemed insignificant.

5.8. LIMITATIONS AND ASSUMPTIONS

5.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The assessment relies on available data, and best endeavours will be made to ensure the data are accurate and up to date. It is assumed that information on the ONS database (Nomis) is accurate. The most recent published data sources will be used for the assessment, which is usually data from 2017-2019, but where this is not available, the next best alternative (i.e. most up-to-date) will be used as a proxy. For example, the most recent data available for analysis worker commuting patterns is the 2011 Census. The assessment is therefore likely to be limited by the latest available information and data.

[27] Homes & Communities Agency, 2015, Employment Densities Guide – third edition
[28] Homes & Communities Agency, 2014, Additionality Guide – Fourth Edition
[29] ONS, 2011, The Census - Location of usual residence and place of work
[30] Destination Research, 2016, Economic Impact of Tourism in Oxfordshire

6. TRANSPORTATION AND ACCESS

6.1. STUDY AREA

6.1.1. In order to determine the study area for the assessment, consideration has been given to the scope of the highway network on which the proposed development could result in a material change in trips. The study area therefore comprises key routes connecting central Bicester to the Site as well as the routes from the Site to the wider strategic highway network, including the M40 and A34.

6.1.2. The scope is considered appropriate and comprehensive accounting for both long and short distance trips to and from the Site. The proposed study area has been discussed and agreed with Officers at OCC. On that basis, it is anticipated that the study area will not need to be updated during the project lifecycle.

6.1.3. This assessment will be undertaken by Motion.

6.2. BASELINE CONDITIONS

6.2.1. The Site currently forms part of the BHGS site that benefits from one vehicle access from the A4095, which operates as a service route to the golf course, and a second vehicle access from Green Lane which operates as the main customer/vehicle access to the golf course.

6.2.2. The Site is located approximately 500 metres to the west of the centre of Chesterton village and fronts the A4095 to the northeast and the M40 to the west. The A4095 connects east through Chesterton Village towards Bicester and links to Vendee Drive which connects east to the A41, Oxford Road. The A41 connects north to Bicester town centre, east towards Aylesbury and south to the M40 Junction 9. West of the Site, the A4095 connects to the B430 at Middleton Stoney which links south to the A34 and north to the A43 and M40 Junction 10.

6.2.3. A range of sources have been considered to determine the baseline conditions on the road network as per the scope outlined above. Baseline data for the road network has been collected using Automatic Traffic Counters (ATCs) and manual turning count surveys, in addition to data obtained from OCC and Highways England (for the trunk road network). In addition to sources relating to traffic flows, accident data has been obtained from OCC for analysis with regards to road safety.

6.3. IDENTIFICATION OF SENSITIVE RECEPTORS

6.3.1. Consideration has further been made as to the likely receptors effected by the development proposals. For the purpose of this assessment the receptors identified are those people making journeys within the study area. The potential receptors are summarised below along with the likely sensitivity of each receptor:

- Pedestrians - Low
- Cyclists - Low
- Bus Passengers - Low
- Car Drivers - Medium

6.3.2. There is no specific industry standard guidance identifying the sensitivity of a receptor. As such, the sensitivity of each receptor has been assigned with consideration of the potential sensitivity to changes in vehicle movements on the local highway network. It is anticipated that pedestrians would continue to use nearby footpaths whilst cyclists are likely to use quieter back roads, as such both

receptors are likely to have a low sensitivity level. As local bus services are limited, it is considered that there would be a minimal impact on how these operate and as such the receptor is likely to have a low sensitivity level. Car drivers are likely to be most sensitive to change and as such have been assigned a medium level of sensitivity.

6.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

6.4.1. The ES will assess the likely trip generation of the development proposals and the assessment will account for staff and visitor trips by a range of transport modes and the effect of those trips on the transport networks in the vicinity of the Site. In addition, an assessment of servicing and delivery trips, including HGV trips, will be undertaken with consideration for the likely routeing of such vehicles.

6.4.2. An assessment will also be undertaken on the effect of construction works at the Site. the assessment will consider the likely programme and any phasing of construction, along with the expected number of construction vehicles associated with the works and the routeing of construction vehicles.

6.4.3. The Proposed Development has the potential to result in an effect on the local highway network both during the construction and the operational phases. The assessment will subsequently consider the following impacts:

- Delay to road users during both construction and operational phases;
- Effect on pedestrian and cyclists during both construction and operational phases;
- Effect on public transport during both construction and operational phases;
- Disruption to existing site servicing activity during the construction phase; and,
- Effect of delivery and servicing activity associated with the site during operational phases.

6.4.4. A summary of the likely significant effects to be scoped in to the socio-economic assessment is provided in **Table 6-1** below.

Table 6-1 - Summary of Likely Significant Effects for Transport and Access

Element	Phase	Receptor	Justification
Severance	Construction/ Operation	Pedestrians, Cyclists and Public Transport Users	Potential for effect on severance due to change in traffic movements
Delay	Construction/ Operation	Pedestrians, Cyclists, Public Transport Users and Car Drivers	Potential for effect on delay due to change in traffic movements
Amenity	Construction/ Operation	Pedestrians, Cyclists, Public Transport Users and Car Drivers	Potential for effect on local amenity due to change in traffic movements

Element	Phase	Receptor	Justification
Accidents and Safety	Construction/ Operation	Pedestrians, Cyclists, Public Transport Users and Car Drivers	Potential for effect on accidents and safety due to change in traffic movements
Fear and Intimidation	Construction/ Operation	Pedestrians, Cyclists, Public and Transport Users	Potential for effect on fear and intimidation due to change in traffic movements

INSIGNIFICANT EFFECTS

6.4.5. No insignificant effects to be scoped out of the assessment.

6.5. MITIGATION

6.5.1. There will be a range of mitigation measures implemented as part of the Proposed Development. These include, but are not limited to, the following:

- A new access junction will be designed in accordance with standards to serve the Site to maximise safety of all road users;
- A pedestrian link will be provided between the Site and Chesterton to improve the pedestrian environment;
- A Construction Traffic Management Plan will be drafted and secured by condition to minimise the effects of construction on the neighbouring area; and,
- A Travel Plan will be implemented to encourage sustainable travel.

6.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

6.6.1. As outlined above, the Proposed Development includes enhancements to the pedestrian environment with an overriding aim to reduce reliance on the private car. It is further intended to implement a Travel Plan so as to raise awareness of the more sustainable modes of travel that can be used to access the Site. This will include details of both the staff and visitor shuttle bus services which are proposed to connect the Site to local rail stations.

6.7. ASSESSMENT METHODOLOGY

METHODOLOGY FOR DETERMINING CONSTRUCTION EFFECTS

6.7.1. A qualitative assessment will be undertaken of the potential HGV movements that could be associated with construction of the development. The expected level of HGV movements will be

assessed against IEMA Guidelines[31] to determine the likely impact. The IEMA Guidelines advise that changes in HGV traffic flow of over 30% can be regarded as requiring detailed environmental assessment, this threshold will be use as the criteria for assessing the potential effect of HGVs.

METHODOLOGY FOR DETERMINING OPERATIONAL EFFECTS

6.7.2. In accordance with IEMA Guidelines for the Environment Assessment of Road Traffic, the assessment will consider the following possible key effects of the Proposed Development:

- Severance;
- Delay;
- Amenity;
- Fear and intimidation; and,
- Accidents and safety.

6.7.3. The assessment will assess the operational effects of the Proposed Development for the expected opening year of 2022. The assessment will present baseline traffic data inclusive of cumulative development schemes for the highway network local to the Site as well as considering the effect of the traffic flows generated by the Proposed Development. Based on the IEMA Guidelines, changes in traffic flows of 30%, 60% and 90% can be regarded as producing slight, moderate and severe impacts respectively and these levels will be used as the criteria against which the effect of the Proposed Development will be considered.

6.7.4. The IEMA guidance defines amenity as the relative pleasantness of a journey and provides a threshold for judging the significance of an effect of amenity as a doubling of traffic flow on a link. This criteria will be used for assessing the impact of the Proposed Development and should traffic flow double on any nearby link, this will be considered a significant effect on amenity.

6.7.5. The assessment of fear and intimidation is considered to be linked to that of accidents and safety and as such they will be considered together. Traffic accident records for the local highway network will be obtained from OCC and used to assess whether there is an inherent safety concern of accident patterns on the local highway network. The assessment will consider whether the Proposed Development will have a material effect on the accident patterns on the local highway network. There is no specific threshold for assessing the effect of a development on accidents and safety and as such the assessment will be undertaken on the basis of professional expertise and judgement.

6.7.6. Finally, consideration will be made as to the impact of the Proposed Development on local public transport infrastructure and cycle infrastructure. There is no specific threshold for assessing these factors and as such the assessment will be undertaken on the basis of professional expertise and judgement.

[31]IEMA, (2017). Environmental Assessments of Transport Impacts. Available at: https://www.iema.net/assets/uploads/EIA%20Articles/Atkins%20Environmental%20Assessments%20of%20Transport%20Impacts.pdf

6.8. LIMITATIONS AND ASSUMPTIONS

6.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- All future traffic forecasts include a degree of uncertainty and therefore has been taken of reasonable uncertainty when assessing the potential significant effects.
- At this stage, detailed construction information is not available and therefore the preliminary the possible impact of construction has been estimated at this stage.

7. NOISE AND VIBRATION

7.1. STUDY AREA

7.1.1. The Proposed Development will contain a mix of noise-sensitive and noise-generating use. For the proposed noise-sensitive uses the Site will form the extent of the study area; however, noise sources such as nearby roads outside of the Site will be included in any modelling. The assessment of potential construction and operational noise impacts brought about by the Proposed Development will include receptors outside of the Site.

7.1.2. The study area will be under review as the project progresses and may be refined as appropriate.

7.1.3. This assessment will be undertaken by Hoare Lea.

7.2. BASELINE CONDITIONS

7.2.1. A baseline noise survey was carried out across the Site between Tuesday 19th March 2019 to Monday 25th March 2019 to measure the existing baseline noise climate across the Site and surrounding area. A total of four locations were surveyed: two unmanned noise loggers for the entire duration of the survey one central to the Site and the second to the east, representative of the nearest dwellings off the Golf Club access road. In addition, two manned short-sample measurements were undertaken following the Shortened Measurement Procedure described in the Calculation of Road Traffic Noise 1988 adjacent to the M40 and the A4095 to quantify these noise sources.

7.2.2. The existing noise climate experienced across the Site and at nearby dwellings is dominated by road traffic noise and natural sounds, such as wind disturbed vegetation. Noise levels at the façade of proposed noise-sensitive uses within the Site are elevated, but are considered possible to control through façade mitigation to deliver reasonable internal noise levels within the Proposed Development.

7.3. IDENTIFICATION OF SENSITIVE RECEPTORS

7.3.1. Noise-sensitive receptors that will be considered in the assessment are subject to ongoing review, but currently comprise:

- Dwellings near to the Site or roads where traffic flow may be altered by the Proposed Development, including:
  - Vicarage Farm;
  - Alleen; and
  - Tanora Cottage.
- BHGS;
- Hotel accommodation within the Proposed Development.

7.3.2. The sensitive receptors are presented on **Figure 4 – Sensitive Receptors in the Wider Area**.

7.3.3. Existing and predicted with development traffic flows on roads located further from the Site will be reviewed to determine if there is the potential for significant effects on noise at sensitive receptors as a result of more vehicles associated with the Proposed Development. Where necessary these will be included within the noise modelling.

7.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

7.4.1. The proximity of existing residential dwellings to the east of the Site may result in temporary noise and vibration impacts during the construction phase of the Proposed Development. Mitigation measures are available to control any impacts through the selection of alternative construction methods or plant.

7.4.2. Operational noise impacts resulting from changes in road traffic flows will be determined and any significant effect assessed.

7.4.3. A summary of the likely significant effects that have been **scoped in** to the Noise and Vibration Assessment are provided in **Table 7-1** below.

Table 7-1 – Summary of Likely Significant Effects for Noise and Vibration

Impact	Phase	Receptor	Justification
Construction noise	Construction	Existing Dwellings and BHGS	Potential for direct temporary noise impacts generated during the construction phase.
Construction traffic	Construction	Existing Dwellings and BHGS	Potential for direct temporary changes in road traffic noise resulting from additional heavy construction vehicles using existing roads.
Construction vibration	Construction	Existing Dwellings and BHGS	Potential for direct temporary vibration impacts generated during the construction phase.
Plant noise	Operational	Existing Dwellings and proposed hotel	Potential for direct noise impacts generated by fixed plant and operational noise within the Proposed Development.
Road traffic	Operational	Existing Dwellings and BHGS	Potential for direct changes in road traffic noise resulting from additional vehicles accessing the Proposed Development using existing roads.

INSIGNIFICANT EFFECTS

7.4.4. The Proposed Development would not introduce any new sources of vibration during its operation. Therefore, an operational vibration assessment is scoped out.

7.4.5. Construction and operational noise impacts will reduce with increasing distance from the Site; therefore, assessment at more distant receptors is not necessary.

7.4.6. These effects are outlined in **Table 7-2** below and are anticipated to be insignificant and hence are proposed to be **scoped out** of the Noise and Vibration Assessment.

Table 7-2 – Summary of Insignificant Effects for Noise and Vibration

Impact	Phase	Receptor	Justification
Vibration	Operational	Existing dwellings and BHGS	No potential sources of operational vibration will be introduced.
Vehicular traffic & plant noise	Operational	Existing dwellings not listed as sensitive receptors above	The increased distance from these sources when compared with the receptors assessed will result in lesser impacts.

7.5. MITIGATION

7.5.1. It is anticipated that mitigation in the form of façade treatment will be required to protect noise-sensitive rooms within the Proposed Development from elevated levels of road traffic noise from the M40.

7.5.2. Best practice construction noise and vibration levels are to be considered to reduce any impact associated with this phase of the development. It is anticipated that this can be controlled through a Construction Environment Management Plan (CEMP).

7.5.3. At this stage it is not anticipated that mitigation will be necessary for the reduction of road traffic noise impacts generated by the operation of the Proposed Development.

7.5.4. Noise limits will be specified for operational plant and commercial activity such that appropriate thresholds are not exceeded when assessed in accordance with British Standard (BS) 4142 2014[32].

7.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

7.6.1. There are no significant opportunities for enhancing the existing noise and vibration environment at existing dwellings.

7.7. ASSESSMENT METHODOLOGY

7.7.1. The assessment will focus on three main areas: noise from existing sources affecting the Proposed Development; construction noise and vibration; and operational noise from the Proposed

[32] British Standards Institute (2014). BS 4142:2014: Methods for rating and assessing industrial and commercial sound.

Development affecting nearby noise sensitive uses. Set out below is the proposed assessment methodology for these three areas.

NOISE FROM EXISTING SOURCES AFFECTING THE PROPOSED DEVELOPMENT

7.7.2. A noise model of the Proposed Development will be created using specialist software CadnaA. The model will include road traffic noise as the dominant source identified during the baseline survey. The accuracy of the model will be determined by way of comparison to the measured noise levels against those calculated.

7.7.3. Road traffic flow data will be provided by the project transport consultant for the existing baseline (2019) and future years, equivalent to the year that the Proposed Development is fully open (Future Baseline) and 15 years after the Future Baseline (Design Year). Noise levels predicted in the existing baseline case will be compared against the measured noise survey levels to provide confidence in the noise model.

7.7.4. The suitability of the noise climate across the Site for the proposed use will assess noise levels calculated within the noise model for the Design Year against Effect Level thresholds. Suitable Effect Level thresholds will be determined with reference to national noise policy and planning guidance (Noise Policy Statement for England[33], National Planning Policy Framework and Online Planning Practice Guidance), government-commissioned research and the ProPG Professional Practice Guidance on Planning and Noise[34]. Relevant British Standards such as BS 8233:2014[35] will also be referenced. Current noise policy and guidance advises that no specific measures are required if noise is below the threshold of Lowest Observed Adverse Effect Level (LOAEL) and development exposed to noise above a threshold considered to be the Significant Observed Adverse Effect (SOAEL) level should be avoided. Where the noise levels across the Site fall between the LOAEL and SOAEL it is appropriate to mitigate and reduce to a minimum.

7.7.5. In addition, internal noise levels will be considered following guidance provided in British Standard 8233:2014 Guidance of sound insulation and noise reduction for buildings.

CONSTRUCTION NOISE AND VIBRATION

7.7.6. An indicative construction noise and vibration assessment will be carried out that follows the guidance provided in BS 5228[36]. At this stage it is envisaged that full details of the construction programme, methodology and plant to be utilised will not be known; therefore, reasonable assumptions of the likely plant used during the construction phase based on the type and scale of the Proposed Development will be made, where appropriate.

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[33] Department for Environment, Food & Rural Affairs (DEFRA) (2010). Noise Policy Statement for England. Available at: https://www.gov.uk/government/publications/noise-policy-statement-for-england

[34] ProPG: Planning & Noise: Professional Practice Guidance on Planning & Noise. Available at: https://www.ioa.org.uk/sites/default/files/14720%20ProPG%20Main%20Document.pdf

[35] British Standards Institute (2014). BS 8233:2014: Guidance on sound insulation and noise reduction for buildings. Available at: http://bailey.persona-pi.com/Public-Inquiries/M4-Newport/C%20-%20Core%20Documents/Copyright%20Documents/14.2.14.pdf

[36] British Standards Institute (2009). BS 5228:2009: Code of practice for noise and vibration control on construction and open sites.

7.7.7. Construction noise and vibration levels generated with the Site will be predicted for potential stages of construction for minimum distances between the identified sensitive receptors and the Site boundary and set distances to represent the potential worst-case and range of noise and vibration levels expected to be experienced during the construction programme.

7.7.8. The impact of the construction noise and vibration will be quantified against fixed noise and vibration threshold levels derived from guidance found within BS 5228. The sensitivity of the receptor and the magnitude of impact will both be used to classify the effect.

OPERATIONAL NOISE FROM THE PROPOSED DEVELOPMENT AFFECTING NEARBY NOISE SENSITIVE USES

7.7.9. Potential noise introduced by the Proposed Development could occur from altered road traffic flows; and/or operational noise within the Site itself. Impacts from road traffic will be calculated using the method described in the Calculation of Road Traffic Noise and assessed using relevant criteria derived from the Design Manual for Roads and Bridges (DMRB)[37]. To quantify the change in road traffic noise a comparison of the Future Baseline without development will be made against the Design Year with development. The change in road traffic noise will be used to define the magnitude of impact from this operational source.

7.7.10. Noise limits for any plant associated with the operation of the Proposed Development will be set based on typical daytime and night-time background noise levels and guidance found within BS 4142. Other commercial related noise such as deliveries will also be considered using BS 4142. All commercial noise, together with any appropriate acoustic feature correction, as required by BS 4142, will define the Rating Level to give a magnitude of impact.

7.7.11. The sensitivity of the receptor and the magnitude of each element of the operational impacts will both be used to determine the significance of effect.

7.8. LIMITATIONS AND ASSUMPTIONS

7.8.1. Limitations and assumptions will be defined as the assessment progresses and listed within the Noise and Vibration chapter of the ES. Currently, no significant information gaps are identified and the assessment will be undertaken in line with the relevant standards and policy documents.

7.8.2. The road traffic noise model that will be used in the assessment will be dependent upon the predicted future traffic data that will be provided. Any assumptions or limitations of the traffic model may influence this element of the noise assessment. A large error in road traffic flow (10%) results in a small error in the noise prediction (0.5 dB); therefore, it is considered that any limitations and assumptions related to the traffic model are unlikely to result in a limitation for the noise assessment.

7.8.3. Full details of specific construction activity, plant used or likely programme are not likely to be available at this stage of the planning process. The construction noise assessment will assume typical activity for the type and scale of development.

[37] Highways England (various dates). Design Manual for Roads and Bridges (DMRB). Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/

8. AIR QUALITY

8.1. STUDY AREA

8.1.1. The study area for the Air Quality assessment includes the Site itself and sensitive receptor locations in the vicinity of any affected roads. This includes the road network immediately surrounding the Site as well as a number of roads within Bicester. The Air Quality assessment will consider impacts associated with traffic emissions on existing sensitive receptor locations in close proximity to the Site and in the Air Quality Management Area (AQMA) declared along King's End, Queens Avenue and Field Street. The network extent has been discussed and agreed with the appointed Transport Consultant for the Proposed Development.

8.1.2. This assessment will be undertaken by Hoare Lea.

8.2. BASELINE CONDITIONS

8.2.1. Baseline air quality refers to existing concentrations of pollutants present in ambient air, based on the reports and data described below.

CHERWELL DISTRICT COUNCIL REVIEW AND ASSESSMENT

8.2.2. A review of the most recent air quality Annual Status Report[38] indicates that there are currently four Air Quality Management Areas (AQMAs) declared for exceedances of the annual mean NO_2 objective across CDC's area of administration. The Site is not currently located within an AQMA with the closest AQMA being approximately 2.7km to the north-east (AQMA 4 – sections of Kings End, Queens Avenue, Field Street and St Johns Street). Due to the distance of the AQMA from the Site and the likely direction of travel for visitors of the Proposed Development, it is unlikely that the Proposed Development will have a significant impact as a result of additional traffic travelling to and from the Site.

LOCAL AIR QUALITY MONITORING

8.2.3. CDC do not currently undertake any continuous monitoring within their area of administration. However, monitoring is currently undertaken at 45 nitrogen dioxide diffusion tube locations across the district. Monitoring results from the closest monitoring sites within approximately 1km of the Site boundary are provided in **Table 8-1**.

[38] Cherwell District Council Air Quality Annual Status Report 2018

Table 8-1 - Diffusion Tube Monitoring Results

Site ID	Type	Distance from site (km)	Grid Reference		2017 Annual Mean NO_2 Concentration ($\mu g/m^3$)
			X	Y	
Middleton Stoney	Kerbside	2.0	453397	223516	33.6
Shakespeare Drive	Roadside	2.5	456937	223586	24.0
Villiers Road	Urban Background	2.5	457619	222535	17.9
Kings End South	Roadside	2.8	458006	222404	41.7
Queens Avenue	Kerbside	2.8	458539	222381	39.5

8.2.4. A full review of the air quality monitoring results will be undertaken as part of the Air Quality ES chapter.

8.3. IDENTIFICATION OF SENSITIVE RECEPTORS

8.3.1. For the construction phase assessment, guidance by the Institute of Air Quality Management (IAQM)[39] advises that a construction dust assessment is required if there are human receptors within 350m of the boundary of the Site or within 50m of construction vehicle routes. Additionally, an assessment is required if there are ecological receptors within 50m of the Site boundary. A desk-top review of the Site location identified human receptors within 350m of the Site boundary. A desk-top review was also undertaken to identify any ecological receptors and confirmed that there are no ecological receptors within 50m of the Site boundary. A construction phase assessment is therefore required to assess the impacts on human receptor locations.

8.3.2. For the operational phase, there are a number of residential properties in the vicinity of the Site these are presented on **Figure 4 – Sensitive Receptors in the Wider Area**. Sensitive receptor locations include, but are not limited to, the following:

- The existing BHGS; and
- Residential properties along Green Lane, the A4095, Middleton Stoney Road, King's End, Queens Avenue and Field Street.

8.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

8.4.1. Impacts during the construction phase are likely to be significant at the existing residential receptors and the existing golf club, located to the south-east of the Site prior to the inclusion of mitigation

[39] IAQM (2014). Guidance on the assessment of dust from demolition and construction. Available at: http://iaqm.co.uk/wp-content/uploads/guidance/iaqm_guidance_report_draft1.4.pdf

measures. The impacts will be direct, temporary and short-term, but consideration must be given to reduce the impacts of dust soiling and on human health.

8.4.2. During the operational phase, it is likely that the addition traffic generated by the Proposed Development will impact pollutant concentrations in the vicinity of the Site. Should the air quality assessment result in significant increases in concentrations, impacts will be in-direct, permanent and long-term.

8.4.3. A summary of the likely significant effects to be **scoped in** to the Air Quality Assessment is provided in **Table 8-2** below.

Table 8-2 - Summary of Likely Significant Effects for Air Quality

Impact	Phase	Receptor	Justification
Dust impacts at existing receptor locations	Construction	Residential	Potential for significant dust-soiling and human health impacts
Air quality impacts at existing receptor locations	Operational	Residential	Potential for significant increases in pollutant concentrations as a result of additional traffic associated with the proposals

INSIGNIFICANT EFFECTS

8.4.4. Due to the distance of any ecological receptors, impacts as a result of the construction and operational phases of the Proposed Development are unlikely to be significant. Similarly, as the closest AQMA (AQMA 4) is located over 2.5km from the Site, it is unlikely that sensitive receptors located within the AQMA will experience a significant impact as a result of the operational phase of the Proposed Development.

8.4.5. The effects outlined in **Table 8-3** below are anticipated to be insignificant and hence are proposed to be **scoped out** of the Air Quality Assessment.

Table 8-3 – Summary of Insignificant Effects for Air Quality

Impact	Phase	Receptor	Justification
Air quality impacts at ecological receptors	Construction and Operational	Ecological	Due to the distance of the nearest ecological receptors to the Site, it is unlikely that the proposals would give rise to any significant impacts at these locations
Air quality impacts in the AQMA	Operational	Residential	Due to the distance of the AQMA, it is unlikely that traffic generated as a result of the Proposed Development will give rise to any significant impacts at receptor locations within the closest AQMA.

8.5. MITIGATION

8.5.1. For the construction phase, it is recommended that the mitigation measures outlined within the IAQM guidance should be taken into consideration, especially where a high risk of dust soiling or to human health is identified.

8.5.2. For the operational phase of the Proposed Development, CDC recommend that electric vehicle charging points be installed as part of any new residential or commercial developments in the district. This along with a travel plan, providing sustainable alternative transport to single occupancy vehicles, is considered to be good practice.

8.6. ASSESSMENT METHODOLOGY

8.6.1. The proposed methodology for undertaking the air quality assessment is as follows:

- Impacts as a result of emissions from road traffic associated with the operational phase of the Proposed Development will be assessed using dispersion modelling techniques in order to predict concentrations of NO_2, PM_{10} and $PM_{2.5}$ at sensitive receptors within the vicinity of the Site, within AQMA 4 and across the Site;
- The assessment will include a sensitivity test for the prediction of NO_2 concentrations whereby road traffic emissions will be assumed to remain unchanged for the future year scenario;
- The model will be verified against data from suitable monitoring locations outside of the AQMA as due to the distance of the Site from the AQMA, it is agreed with CDC that pollutant concentrations in this area are not representative of those at the Site;
- Impacts as a result of any proposed energy combustion systems will be assessed using dispersion modelling techniques and inputs obtained from the appointed Mechanical and Electrical Consultant for the Proposed Development;
- The air quality assessment will be undertaken in line with EPUK/IAQM guidance[40]; and
- Impacts as a result of the construction phase will be assessed using the IAQM guidance.

8.6.2. The above scope of works was sent via email and agreed by reply from Neil Whitton, Environmental Protection Officer at CDC on the 25th April 2019.

8.7. LIMITATIONS AND ASSUMPTIONS

8.7.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

[40] Moorcroft and Barrowcliffe. et al. (2017). Land-use Planning & Development Control: Planning for Air Quality. v1.2. Available at: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

9. BIODIVERSITY

9.1. STUDY AREA

9.1.1. In order to inform the Ecological Impact Assessment (EcIA) and scoping study, an ecological desk study was undertaken in February 2018, followed by a series of surveys for habitats and species in 2018 and the spring of 2019. Details of these and their respective Study or Survey Areas, and methods where relevant, are detailed in **Table 9-1** and **Table 9-2** below.

9.1.2. The 'Site' has been defined as the application red line boundary, whilst the 'Survey Area' comprises the Site with the addition of the rest of the golf course extending to the south-east. The Study and Survey Areas were informed by good practice guidance on the subject(s)41,42 and using professional judgement, considering the likely zone(s) of influence of the Proposed Development. Due the scale and type of development at the Site (leisure), project effects pathways were considered up to 10km only.

Table 9-1 - Desk Study Search Radii and Data Sources

Feature	Study/ Survey Area	Data Source
Statutory international designated sites	Within 10km of the Survey Area	Natural England Corporate datasets, citations and data held by the Joint Nature Conservation Committee (JNCC)
Statutory national designated sites	Within 2km of the Survey Area	Natural England corporate datasets
Non-statutory designated sites	Within 2km of the Survey Area	Thames Valley Environmental Records Centre (TVERC)
Habitats of Principal Importance (HPI) including Ancient Woodland	Within 2km of the Survey Area	Natural England corporate datasets
Waterbodies	Within 500m of the Survey Area	Ordnance Survey corporate datasets

[41] Chartered Institute for Ecology and Environmental Management (CIEEM) (2017). Guidelines for Preliminary Ecological Appraisal.
[42] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland

Table 9-2 - Field Survey Radii and Methods

Feature Survey Type	Study/ Survey Area	Dates of Survey	Field Survey Methods
On-site habitats	Survey Area	Jan 2018	**Phase 1 Habitat Survey:** Habitats were described and mapped following the standard Phase 1 habitat survey methodology[43]. The dominant plant species are recorded and habitats are classified according to their vegetation types. Where appropriate, consideration was given to whether habitats qualify, or could qualify, as an HPI following habitat descriptions published by the Joint Nature Conservation Committee[44].
		Aug 2018	**Update Botanical Walkover:** In addition, a botanical walkover survey was conducted in August 2018 by a competent botanist, during the peak flowering season. This provided an update to the botanical lists gathered within the Phase 1 habitat report and allowed mapped habitats to be reassessed and remapped as appropriate.
Bats	Site	Jul 2018	**Preliminary Bat Roost Assessment (PBRA)**: A ground-based visual inspection of the trees within the Site was completed using binoculars to search for Potential Roost Features (PRFs) which may provide suitable roosting opportunities for bats, and to grade the tree's suitability accordingly, in accordance with good practice guidelines[45].
	Survey Area	May-Oct 2018	**Bat Activity Surveys**: A series of manual transect surveys were undertaken within the Survey Area as informed by good practice guidelines[5]. Each month a walked transect survey was completed at dusk, with a pre-dawn survey undertaken in August. In tandem with the walked transect surveys, additional bat activity data was gathered using automated bat detectors. Automated (static) bat detectors Song Meter 2+ (SM2+) were installed within the Survey Area in pre-determined locations during each of the survey months May – October (inclusive). The recordings of bat echolocation calls collected during the surveys were analysed using specialist computer software.

[43] Joint Nature Conservation Committee (JNCC) (2010). Handbook for Phase 1 habitat survey – a technique for environmental audit. JNCC, Peterborough
[44] JNCC Biodiversity Reporting and Information Group (2008). UK Biodiversity Action Plan
[45] Collins J. (ed.) (2016). Bat Surveys for Professional Ecologists, Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London

Feature Survey Type	Study/ Survey Area	Dates of Survey	Field Survey Methods
Badger *Meles meles*	Within 50m of the Site	May 2019	**Badger Walkover:** A walkover was undertaken to search for evidence of badger in the form of field signs, informed by best practice guidelines[46].
Hazel dormouse *Muscardinus avellanarius*	Survey Area	Jun – Nov 2018	**Dormouse Tube Survey:** To establish whether dormice are present or likely absent, 53 dormouse tubes were installed within suitable habitat in May 2018 and checked once a month or bi-monthly from June to November 2018 (inclusive). The survey work was completed in accordance with current good practice guidance[47].
Breeding birds	Survey Area	May-Jun 2018	**Breeding Bird Survey:** To inform an evaluation of the on-site habitats for bird species, three breeding bird survey visits were completed. The survey work followed a standard method based on the British Trust for Ornithology's (BTO's) Common Bird Census (CBC), as summarised by best practice guidance[48], involving walked transects.
Reptiles	Site	Aug-Oct 2018	**Reptile Survey:** A reptile survey was undertaken to determine presence/likely absence of reptile species and to infer population sizes. It comprised two main elements; the deployment and checking of 66 artificial refugia, and visual observation of habitats and natural refugia present. The survey was undertaken in line with published guidance[49,50].

[46] Harris S, Cresswell P and Jefferies D (1991). (Report) Surveying Badgers. The Mammal. Society, Bristol
[47] Natural England [then English Nature] (2006). The Dormouse Conservation Handbook. 2nd Edition. Natural England, Peterborough
[48] Bibby C.J, Burgess N.D, Hill D.A, Mustoe S.H. (2000). Bird Census Techniques. Second Edition. Elsevier Ltd
[49] Froglife (1999). Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice sheet 10. Froglife, Halesworth
[50] Gent, A. and Gibson, S. (2003). Herpetofauna Workers Manual. JNCC, Peterborough

Feature Survey Type	Study/ Survey Area	Dates of Survey	Field Survey Methods
Amphibians – Great crested newt (GCN) *Triturus cristatus*	Survey Area	Apr-Jun 2018	**Habitat Suitability Index (HSI) Scoring:** All water bodies within the Survey Area to which access was possible, were assessed for their suitability to support GCN, using the standard HSI assessment method which scores waterbodies' suitability based on a number of factors[51]. **Manual GCN Surveys:** All waterbodies that were accessible and found to have suitable HSI score were subject to further survey. Four initial survey visits were conducted using a range of techniques (trapping, torching and egg-searching), followed by a further two surveys if GCN were recorded to be present, in order to obtain a robust estimate of population size, as informed by good practice guidelines[52].
Invertebrates	Survey Area	Mar 2018	**Invertebrate Walkover:** The Site was assessed for its potential to support important invertebrate assemblages. The assessment involved identifying any habitats with potential to support important invertebrate communities and also any features that might limit the invertebrate value. **Hairstreak Butterfly Survey:** The Phase 1 habitat survey, identified a large number of hedgerows containing abundant blackthorn *Prunus spinosa*, which is the larval food plant of brown hairstreak butterfly *Thecla betulae* and black hairstreak butterfly *Satyrium pruni*. Elm *Ulmus procera* was also recorded, the larval food plant of white-letter hairstreak *Satyrium w-album* butterfly. All three butterflies are Species of Principal Importance (SPI). A targeted egg search survey was conducted as this is considered to be an effective means for identifying the presence of these species.
	Site	Aug 2018	**Predictive System for Multimetrics (PSYM):** Ten ponds were subject to a PSYM assessment to confirm whether they qualify as HPI or not, using indices based on botanical and aquatic macroinvertebrate assemblages.
	Site	Sep 2018, May & Jun 2019	**Terrestrial invertebrate Surveys:** Invertebrates were located and collected by recognised methods using sweep net, beating tray, pit-fall and water-filled pan traps, as well as hand-searches of vegetation and soil matter.

[51] Amphibian and Reptile Groups of the United Kingdom (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. ARG UK, UK

[52] Natural England [then English Nature] (2001). Great Crested Newt Mitigation Guidelines. Natural England, Peterborough

Feature Survey Type	Study/ Survey Area	Dates of Survey	Field Survey Methods
			Further surveys are due to take place in 2019 using similar methods in order to obtain full seasonal coverage.

9.2. BASELINE CONDITIONS

Table 9-3 - Baseline Condition Summary by Feature

Feature	Baseline Condition Description
Statutory designated sites	The desk study identified no statutory European designated nature conservation sites within 10km, and no statutory nature conservation sites within 2km.
Non-statutory designated sites	The desk study identified no non-statutory nature conservation sites within 2km of the Survey Area.
Off-site HPI	In total, 57 parcels of various HPI were identified within the 2km Study Area, 51 parcels of which are deciduous woodland, 5 which have no main habitat and one parcel of traditional orchard, within 2km of the Survey Area. Two parcels of ancient woodland were identified 1.5km south of the Survey Area.
On-site habitats	The Survey Area contains a variety of habitat types of ecological value including ponds, plantation and semi-natural woodland and species rich hedgerow, of which some are listed as HPI. Other habitat present included a variety of grasslands, dense scrub and tall ruderal. Overall, the habitats present are likely to be of up to Local level value on account of HPI such as ponds. A biodiversity net gain (BNG) assessment will be undertaken to provide detailed advice on how to compensate for loss of habitat and enhance the overall area and quality of habitats present following completion of the Scheme (i.e. during operation).
Bats	**Roosting:** The trees within the main body of the Survey Area are dominated by young to semi-mature specimens of relatively recent origin, likely planted during landscaping for the golf course complex. Some more mature specimens are present at the peripheries. Within the Site one tree with low bat roosting suitability was noted, T17. **Foraging and commuting:** At least five bat species were recorded within the Survey Area during the manual transect surveys, dominated by common and widespread species, as well as some calls not identifiable to species level. The results of the activity surveys suggest that the value of the Site for bats is non-uniform, with the majority of high and medium/high activity being concentrated in the north-east, with species assemblages dominated by *Pipistrellus spp*. and noctule *Nyctalus noctule* (an SPI). The abundance of noctule activity indicates that the bat assemblage at the Site is of District level importance, whilst other species' or groups' populations are of lower level value.
Badger	Surveys have identified an active badger sett within the Survey Area that is well separated from the Site (approximately 200m to the south east).

Feature	Baseline Condition Description
	Two possible badger setts have been identified at the Site boundaries which may be affected by the Scheme, as well as evidence of badger using the Site for foraging. Further survey using camera traps is required to confirm whether the possible badger setts are being used by this species or another species.
Hazel dormouse	No evidence of dormouse was recorded during the course of surveys, and this species is considered to be absent from the Site, assigning it negligible value for this species.
Breeding birds	A total of 54 species were recorded within or over the Survey Area during the breeding bird survey, of these 40 are considered to breed within the Survey Area. A total of 10 species considered to breed within the Survey Area are species of conservation concern. • Bullfinch *Pyrrhula pyrrhula* • Dunnock *Prunella modularis* • House martin *Delichon urbicum* • House sparrow *Passer domesticus* • Linnet *Carduelis cannabina* • Mallard *Anas platyrhynchos* • Mistle thrush *Turdus viscivorus* • Mute swan *Cygnus olor* • Song thrush *Turdus philomenos* • Starling *Sturnus vulgaris* This included species listed as Schedule 1 species of the Wildlife and Countryside Act 1981, Species of Principal Importance (SPI) in accordance with the Natural Environment and Rural Communities (NERC) Act 2006, UK Biodiversity Action Plan (BAP) species and as either a red or amber list Bird of Conservation Concern (BoCC). The bird community within the Survey Area is considered of Local nature conservation importance, given it supports common and widespread species as well as some notable species.
Reptiles	The survey results indicate a 'low' population of grass snake, concentrated in the north easterly area of the Site. Two common lizard *Zootoca vivipara* were also recorded incidentally in 2019 on the western boundary of the Site, comprising a 'low' population. Overall, based on the survey results, habitats present and landscape context, the reptile population within the Site is considered to be of value at a Local level.
Amphibians (GCN)	The HSI indicated that one pond scored excellent, four ponds scored good, three scored average and four scored below average and five scored poor. Only one pond did not have a HSI completed as it was dry at the time of all the surveys. All ponds, except SW4, were subject to presence/absence surveys. From this, 15 out of 18 ponds had recorded GCN breeding activity. Further survey was carried out to determine the population size class in ponds with confirmed presence of GCN. This identified: ▪ three ponds supporting a large population; ▪ eight ponds supporting a medium population; and, ▪ three ponds supporting a small population of GCN.

Feature	Baseline Condition Description
	A population size class could not be determined for two ponds where GCN eggs were identified but no adult GCN were found. Populations of common toad *Bufo bufo* (an SPI), common frog *Rana temporaria* and smooth newt *Lissotriton vulgaris* were also identified. Overall the amphibian population within the Site is considered to be of District level importance.
Invertebrates	There are six parcels of habitat within the Site which were identified as having the potential to be important to terrestrial invertebrates. The PSYM survey confirmed only one pond in the Site as being HPI based on its macroinvertebrate assemblage. Brown hairstreak butterfly (an SPI) was confirmed as being present on Site, with eggs being found in suckering blackthorn along the northern boundary of the Site. Black and white-letter hairstreak butterfly eggs were not recorded during the hairstreak survey Further surveys are scheduled for Spring and early Summer 2019 which will allow confirmation of the value of the invertebrate assemblage at the Site.

9.3. IDENTIFICATION OF SENSITIVE RECEPTORS

9.3.1. Based on the baseline information collected (summarised above), the following sensitive receptors have been scoped out of the impact assessment.

- Designated sites;
- Off-site habitats of ecological value; and
- Hazel dormouse.

9.3.2. The remaining features listed below have been scoped in to the impact assessment.

- On-site habitats of ecological value (including ponds and deciduous woodland);
- Badger;
- Bats;
- Birds;
- Reptiles;
- Amphibians (GCN); and
- Invertebrates.

9.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

Table 9-4 - Likely Significant Effects by Receptor

Receptor (Feature)	Effect	Justification
Construction Phase		
On-site habitats of ecological value	▪ Direct loss ▪ Degradation ▪ Fragmentation	▪ Habitats including plantation woodland, ponds, scrub and trees will be removed to facilitate the Proposed Development's construction. ▪ Habitats retained may be degraded by light, exposure, pollution (airborne and waterborne) and changes to drainage regimes. ▪ Habitat parcels may become separated and lose connectivity through clearance and construction of buildings and access routes etc.
Badger (if present)	▪ Direct loss (mortality and injury) ▪ Habitat degradation	▪ Works in the vicinity of an active badger sett could disturb badgers and lead to mortalities. ▪ Removal of habitat such as long grassland, scrub and plantation woodland could reduce the available habitat for badgers to forage.
Bats	▪ Habitat loss ▪ Habitat degradation ▪ Habitat fragmentation	▪ Clearance during construction will result in loss or degradation of foraging and commuting habitat such as ponds and scrub or tree lines. Tree felling (T17, and possibly trees alongside the M4 corridor) could also result in loss of potential roosts ▪ Bat-suitable habitats may be degraded illumination, pollution (airborne and waterborne) and changes to drainage regimes. ▪ Bat-suitable habitats may be fragmented through lighting, clearance and construction of buildings and access routes etc.
Birds	▪ Direct loss (mortality and injury) ▪ Habitat loss ▪ Habitat degradation	▪ Felling or pruning of trees and clearance of scrub and other habitat may risk killing or injuring breeding birds and their nests. ▪ Clearance of foraging and refuge habitat during construction could reduce the success of the bird population. ▪ Degradation of habitat via light, noise, pollution or drainage regime alteration could reduce the suitability for breeding birds.
Reptiles	▪ Direct loss (mortality and injury) ▪ Disturbance ▪ Habitat loss ▪ Habitat degradation	▪ Clearance of reptile-suitable habitat may risk killing or injuring individuals. ▪ Clearance of reptile-suitable habitat may risk disturbing individuals. ▪ Construction phase clearance could reduce available suitable habitat for reptiles and endanger long term population status. ▪ Reptile-suitable habitats may be degraded by exposure, pollution (airborne and waterborne) and changes to drainage regimes, reducing suitability for reptiles.

Receptor (Feature)	Effect	Justification
	▪ Habitat fragmentation	▪ Clearance of habitat and construction of hardstanding and buildings may reduce, fragment and isolate reptile-suitable areas.
Amphibians (GCN)	▪ Direct loss (mortality and injury) ▪ Disturbance ▪ Habitat loss ▪ Habitat degradation ▪ Habitat fragmentation	▪ Clearance of habitat suitable for GCN (and other amphibians) may risk killing or injuring individuals. ▪ Clearance of suitable habitat may risk disturbing individuals. ▪ Construction phase clearance would reduce available terrestrial and breeding pond habitat GCN and endanger long-term population status. ▪ Amphibian-suitable habitats may be degraded by exposure, pollution (airborne and waterborne) and changes to drainage regimes, reducing suitability for them. ▪ Clearance of habitat and construction of buildings and roads may reduce, fragment and isolate amphibian-suitable areas.
Invertebrates	▪ Direct loss ▪ Habitat loss ▪ Habitat degradation	▪ Clearance of suitable habitats within the Site risks killing adult invertebrates and their eggs, including notable and protected species. ▪ Overall loss of suitable foraging and breeding habitat could reduce overall invertebrate assemblages diversity and numbers (and in turn the many species that rely on them). ▪ Degradation or alterations to retained habitats through any means could reduce their suitability for invertebrates (and the species that rely on them).
Operational Phase		
On-site habitats of ecological value	▪ Degradation ▪ Habitat creation ▪ Habitat management for improvement	▪ Retained and newly created habitats could be degraded by operation of the Proposed Development via light, disturbance, pollution (airborne or waterborne) or changes to drainage regimes. ▪ New habitat creation (as informed by a BNG assessment) would compensate for the habitat lost, and achieve no net loss or biodiversity net gain as appropriate. ▪ Suitable management for habitat quality (for wildlife) could further improve the value for wildlife, as well as maximising future resilience and viability as it establishes.
Bats	▪ Habitat degradation ▪ Disturbance ▪ Habitat creation and management	▪ Pollution from the operation of the Proposed Development could compromise the suitability of new and retained habitats for bats. ▪ Operational lighting and other factors such or noise could reduce the Site's suitability for bats. ▪ The establishment of new and additional bat-suitable habitat (including boxes), and the management of

Receptor (Feature)	Effect	Justification
		habitats created will increase available opportunities for bats to forage and roost.
Birds	▪ Habitat degradation ▪ Disturbance ▪ Habitat creation and management	▪ Pollution from the operation of the Proposed Development could compromise the suitability of new and retained habitats for birds. ▪ Disturbance from people or noise during operation could reduce the Site's suitability for breeding birds. ▪ The establishment of new and additional habitat (including boxes), and the management of habitats created will increase available opportunities for birds to forage and nest.
Reptiles	▪ Habitat degradation ▪ Disturbance ▪ Habitat creation and management	▪ Pollution from the operation of the Proposed Development could compromise the suitability of new and retained habitats for reptiles. ▪ Disturbance from people or noise during operation could reduce the Site's suitability for reptiles. ▪ The establishment of new and additional habitat (including habitat piles/ refugia), and the management of habitats created will increase available opportunities for reptiles on-site.
Amphibians (GCN)	▪ Habitat degradation ▪ Disturbance ▪ Habitat creation and management	▪ Pollution from the operation of the Proposed Development could compromise the suitability of new and retained habitats for amphibians, in particular waterbodies. ▪ Disturbance from pollution or light during operation could reduce the Site's suitability for amphibians. ▪ The establishment of new and additional habitat (waterbodies and refugia), and the management of habitats created will increase the suitability and connectivity of the Site for amphibians.
Invertebrates	▪ Habitat degradation ▪ Disturbance ▪ Habitat creation and management	▪ Pollution from the operation of the Proposed Development could compromise the suitability of new and retained habitats for invertebrates, in particular waterbodies. ▪ Disturbance from pollution or light during operation could reduce the Site's suitability for invertebrates. ▪ The establishment of new and additional habitat (including waterbodies and brash piles), and the management of habitats created will enhance the suitability of the Site for invertebrates

INSIGNIFICANT EFFECTS

Table 9-5 - Likely Insignificant Effects by Receptor

Receptor (Feature)	Effect	Justification
Designated Sites	▪ No effect anticipated	▪ No designated sites fall within the search radii and therefore these features are considered to be sufficiently separate from the Site to render any impacts unlikely.
Hazel Dormouse	▪ No effect anticipated	▪ Dormice are considered likely to be absent from the Site, so impacts are unlikely.

9.5. MITIGATION

9.5.1. Details of outline mitigation measures are provided below in relation to biodiversity impacts anticipated. They are divided into design (embedded) mitigation and other additional measures.

DESIGN MEASURES

- Layout: The layout will seek to retain habitats of greatest ecological value, including waterbodies in the northern extent which support GCN and also have the highest PYSM quality category scores (moderate-good).
- Landscape Design: The landscape design for the Site will focus on creation of new habitat of wildlife value (for species groups listed in **Table 9-5**), and management and retention of other valuable habitats.
- Lighting Strategy: A lighting strategy will be developed in order to minimise adverse effects on a range of habitats and species (see **Table 9-5** above). This will aim to avoid lighting as far as possible on features of ecological value, in particular on valuable habitats, including waterbodies, using steps such as use of LEDs, directionality using cowls or shields and timers.

OTHER MEASURES

- Construction Environmental Management Plan (CEMP): A CEMP will be produced to incorporate a range of pollution prevention methods during the construction phase, and include measures such as low-level construction lighting. It will include some measures specifically aimed at biodiversity impact avoidance or mitigation including:
  - Timing of works - in order to minimise risks to some groups such as hibernating reptiles or breeding birds, vegetation clearance should be carefully timed.
  - Precautionary methods of clearance – to further minimise risks to wildlife, some specialist vegetation clearance techniques will be used, and ecological supervision may be required.
- Translocation exercise: For protected species GCN and reptiles, a translocation exercise will be required to move animals off areas to be cleared. Translocated animals will be moved to suitable habitat on-site and within the wider Survey Area. The GCN translocation will be carried out under a European Protected Species Licence (EPSL) from Natural England.

9.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

9.6.1. The landscape plan for the Proposed Development will be informed by the BNG assessment to achieve an overall net-gain for biodiversity after development. This should include;

- Creation of new valuable habitat, such as trees, scrub/shrub areas, waterbodies and grassland.
- The use of botanical species with known wildlife value in the new habitats, all of native, local origin and subject to appropriate biosecurity measures. Blackthorn should be used widely to improve the available habitat for brown hairstreak butterfly.
- Management of these habitats in a low-intensity way (e.g. biannual mowing, minimal pesticide use etc) to optimise their value for wildlife.
- Installation of wildlife hardware, including bat and bird boxes, log piles and hibernacula, with associated monitoring and maintenance.

9.7. ASSESSMENT METHODOLOGY

ASSIGNING VALUE

9.7.1. The conservation value of each ecological feature will be evaluated within a defined geographical context using the categories recommended in good practice[53], extended to include the Site. The following geographic scales will be used:

- International and European;
- National (England);
- Regional (South-East England);
- District (Oxfordshire), vice-county or other local authority-wide area;
- Local (Cherwell); and,
- Site.

9.7.2. In addition, to distinguish between habitats and species that are of value and/or relevance at the Site scale and those that have negligible value at any scale (i.e. of conservation value at a scale below the Site), the latter will be assigned to be of negligible value.

9.7.3. Many characteristics are considered to contribute the importance of ecological features, including for example (but not exclusively) the rarity of a species or habitat, habitat diversity, whether the species population size is notable in a wider context, rich assemblages of plants and animals and species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change.

9.7.4. Conservation value does not necessarily equate directly to sensitivity, as a receptor of high conservation value may comprise a robust ecosystem which is resilient to effects which may potentially be caused by external factors and therefore is not highly sensitive. Equally, a species may be highly sensitive to change but widespread and therefore the individuals representing the species within the zone of influence of a scheme may not be of high conservation value.

[53] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine

9.7.5. Those ecological features that are considered to be of at least Local importance will be referred to as 'Important Ecological Features' (IEFs).

CHARACTERISING THE POTENTIAL EFFECT

9.7.6. Based on an understanding of the baseline conditions and of the Proposed Development, potential effects on IEFs scoped into the assessment will be considered, taking into account construction (to include site preparation) and operational phases. The following parameters will be referred to in assessing effects on ecological structure and function:

- Impact: The physical change in the environment that may lead to an effect upon an ecological feature.
- Effect: The consequence of an impact upon an ecological feature.
- Direction: Beneficial or adverse.
- Magnitude: refers to the 'size' or 'amount' of an effect determined on a quantitative basis e.g. total or partial.
- Extent: the geographical area over which the effect occurs.
- Duration: the period over which the effect is expected to last prior to recovery or replacement of the resource or feature e.g. short-term or long-term.
- Reversibility: whether recovery from the effect is possible or not e.g. irreversible (permanent) effects or reversible (temporary) effects.
- Temporality: Timing and frequency.

SIGNIFICANCE CRITERIA

9.7.7. The geographical scale of significance will be used as specified within good practice guidelines both to evaluate the ecological feature and to assess the scale at which an effect is significant. An ecologically significant effect is defined as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general.

9.7.8. The classification of effects upon important ecological features is determined considering their value at a geographic scale (as noted above); however, any given effect may be significant at a reduced scale depending on the extent and magnitude of the effect. For example, although a habitat type may represent 20% of the resource at a County level and hence be considered of value at this scale, a scheme might affect only a portion of the habitat representing 1% of the resource in the County hence the effect would not be considered significant at this scale. However, that 1% may represent 20% of the resource at a Local scale and therefore the effect at this geographic scale would be considered significant.

9.7.9. In the process of EcIA, it is important to select the appropriate features for inclusion in the assessment. For this assessment ecological features will be scoped-in to the assessment where potential effects could be of significance at the Local scale or greater and, or where there are legal and/or planning implications associated with effects.

9.8. LIMITATIONS AND ASSUMPTIONS

9.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- At the time of writing, surveys in relation to badger and invertebrates are in the process of being finalised.

- The recommended ecological mitigation detailed will be designed into the Proposed Development during the detailed design stage.
- Assumptions and limitations associated with the suite of survey work undertaken are detailed in the relevant reports which will be submitted as technical appendices with the ES Biodiversity Chapter. Nevertheless, no limitations likely to affect robustness of the results and analysis have been encountered.

10. ARCHAEOLOGY AND CULTURAL HERITAGE

10.1. STUDY AREA

10.1.1. The following guidance have been used to determine the extent of the Study Area:

- Chartered Institute for Archaeologists, 2017, Standard and guidance for historic environment desk-based assessment, The Chartered Institute for Archaeologists[54].
- Historic England, 2017, Historic England Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets[55]

10.1.2. The Study Area for the Archaeology and Cultural Heritage assessment will comprise an area extending 1.5km from the edge of the Site boundary. All heritage assets located within a 1.5km radius of the Site will be included in this assessment. The aim of this is establish the historic environment baseline, to identify the potential for direct impacts upon known archaeological remains and to help predict whether any similar hitherto unknown archaeological remains may survive within the Site. Designated heritage assets within 1.5km of the Site boundary will also be identified to allow for an assessment of the potential for impacts upon their settings.

10.1.3. For contained development sites within a rural setting it is standard practice to use a 1km buffer area from the boundary of the Site to establish the historic environment baseline and to assess the heritage potential of the Site and, depending on development type, identify any impacts upon the settings of designated assets which may result from the Proposed Development. However, in this instance consultation with the Oxfordshire HER and the National Heritage List for England indicated that using a 1km Study Area would not include all of the designated assets that the Proposed Development may have the potential to be impacted upon. In particular, the village of Chesterton, the nearest settlement to the Site, was only partially within the 1km Study Area. Therefore, a 1.5km Study Area will be used in order to assess and confirm the potential for any setting impacts on designated assets that may result from the Proposed Development.

10.1.4. In addition to any Archaeological Field Evaluation, the following sources will be used to identify known heritage assets and to inform the baseline assessment:

- The Oxfordshire Historic Environment Record (For Historic Environment Record data)[56]
- The National Heritage List for England (For designated Heritage Asset data)[57]
- Historic England Archives, Swindon (For National Record of Historic Environment vertical and oblique aerial photographs)

[54] Chartered Institute for Archaeologists (2017). Standard and guidance for historic environment desk-based assessment. Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_3.pdf
[55] Historic England, (2017). Historic England Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets. Available at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/
[56] Oxfordshire County Council (2017). Historic Environment Record. Available at: https://www.oxfordshire.gov.uk/residents/environment-and-planning/archaeology/historic-environment-record
[57] Historic England (2019). The National Heritage List for England (NHLE). Available at: https://historicengland.org.uk/listing/the-list/

- The Environment Agency online (For any LiDAR data covering the Site)[58]
- Archives and Local Studies Centre – Oxfordshire History Centre, Oxford (For historic maps and documents relating to the Site and the surrounding area)
- The National Map Library, National Library of Scotland, Causewayside, Edinburgh (For old Ordnance Survey maps (1st & 2nd Edition, small- and large-scale) and pre-Ordnance Survey historical maps)[59]
- Old-maps.co.uk (For later 20th century Ordnance Survey Maps)[60],
- British Geological Survey (For bedrock and superficial geology and boreholes within the vicinity of the Site, to ascertain the depth of deposits on the Site)[61]
- Results of a walkover of the Site conducted by AOC Archaeology Group on the 28th of March 2019.
- Results of a trial trench evaluation within the footprint of the Proposed Development.

10.1.5. This assessment will be undertaken by AOC Archaeology.

10.2. BASELINE CONDITIONS

10.2.1. The Site is bound by the M40 motorway to the west, by the A4095 to the north-east, by Bicester Golf Club Clubhouse and the eastern half of Bicester Golf Course, comprising of nine holes, to the southeast and by agricultural land to the south.

10.2.2. There are eight Listed Buildings of Grade II status and two Listed Buildings of Grade II* status within the 1.5km Study Area. The Site is located 465m to the west of Chesterton Conservation Area.

10.2.3. An Historic Environment Desk Based Assessment (HEDBA) has already been undertaken for the Site (**Appendix B**), to a methodology agreed with OCC's Planning Archaeologist. This HEDBA identified six non-designated assets recorded within the Site. Of these, two features are associated with the Site's previous use as agricultural fields, one feature is a 20th century quarry and three features are golf course features from the later 20th century. The three features associated with the current golf course are extant and in use and as a consequence are scoped out of this assessment and not discussed further in this scoping report.

10.2.4. There are no known finds or remains dating to the prehistoric or Roman periods within the Site. Study of aerial photographs indicates that remains dating to the prehistoric period within the 1.5km Study Area are predominantly located to the west and northeast of the Site. Known heritage assets that potentially date to the Roman period are situated along the alignment of the Roman Akeman Street to the south of the Site or further east towards Chesterton and the Roman town of Alchester. Therefore, the potential for finds or remains dating to the prehistoric or Roman periods to be present on the Site is considered to be Low.

[58] Environment Agency (2019). Defra Survey Data Download. Available at: https://environment.data.gov.uk/DefraDataDownload/?Mode=survey
[59] National Library for Scotland. The National Map Library. Available at: https://maps.nls.uk/
[60] Old-maps.co.uk. 20th century Ordnance Survey Maps. Available at: https://www.old-maps.co.uk/#/
[61] British Geological Survey. Geology of Britain Viewer. Available at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

10.2.5. No assets dating to the early historic and medieval period are present within the Site. It is likely that the Site remained part of the agricultural land to the west of Chesterton and south-west of the Deserted Medieval Settlement of Bignell throughout the medieval period. It is considered that the potential for finds or remains dating from the early historic or medieval periods to be present within the Site is Low.

10.2.6. Map regression indicates that the Site was in agricultural use throughout the post-medieval period and any post-medieval remains which might survive on Site are thus likely to be agricultural in nature. Although finds or remains from the post-medieval period, other than those related to agricultural use, cannot be ruled out, the potential for such remains to be present is considered to be Low.

10.2.7. The Ordnance Survey maps in the modern period show that the Site remained relatively unchanged prior to the development of Chesterton Golf Club from the late 20th century. However, a quarry is shown on the Site along the A4095 on the Ordnance Survey map of 1923. Although the quarry is still extant on the Ordnance Survey mapping of 1967 to 1968, by the time of the Ordnance Survey map of 1970 it is no longer depicted. Chesterton Golf Course, to the east of the Site is first depicted on the Ordnance Survey map of 1993 to 1996. New features are depicted on this mapping that indicate that the Site itself may have been part of the golf course at this time. A feature that appears to be a golf pond is depicted in the eastern portion of the Site along with a golf water drain that heads northwest from this pond. These two features are still extant on the present Bicester Golf Course. Despite the depiction of these features the extent of the landscaping undertaken within the Site to construct the golf course is unclear. However, information supplied during the walkover survey indicates that the topography of the Site was relatively flat until landscaping works for the golf course were undertaken around 2002. Therefore, any archaeological finds or remains from the modern period, that may survive on Site, will likely consist of agricultural field boundaries, field drainage systems and the remains of the quarry. There is also the potential for remains associated with landscaping and drainage required for the construction of the original Chesterton Golf Course. Therefore, the potential for finds or remains dating from the modern period to be present within the Site is considered to be Medium, though any such finds are unlikely to be of particular sensitivity in cultural heritage terms.

10.2.8. The historic environment baseline, including the assessment of the potential for archaeological remains to survive on the Site, as noted above, is based upon current understanding of the Site from desk-based assessment. Consultation with OCC's Planning Archaeologist has indicated the requirement for a 4% trial trench evaluation, targeting the built footprint of the Proposed Development. A Written Scheme of Investigation outlining the proposed method and timing of the trial trench evaluation will be agreed with OCC's Planning Archaeologist in advance of the works being undertaken and will adhere to CIfA standards and guidance. The results of the evaluation will further inform the archaeological baseline.

10.3. IDENTIFICATION OF SENSITIVE RECEPTORS

10.3.1. The following non-designated assets are known within the Site:

- 20th century quarry along the A4095; and
- Field boundaries and agricultural evidence.

10.3.2. The following designated assets are within 1.5km of the Site:

- Church of St Mary, Manor Farm Lane, Great Chesterton (Grade II* Listed Building);
- Manor Farm House, Manor Farm Lane (Grade II* Listed Building);
- Stables and Coach Houses Northwest of Chesterton Lodge (Grade II Listed Building);
- Thatchover, Alchester Road, Great Chesterton (Grade II Listed Building);
- No. 6 Tubbs Lane, Great Chesterton (Grade II Listed Building);
- Oxford Lodge, A43 (Grade II Listed Building);
- No. 4 Tubbs Lane, Great Chesterton (Grade II Listed Building);
- Chesterton Lodge including Forecourt Balustrade Immediately West (Grade II Listed Building);
- Ivy Cottage including Front Garden Area Railings and Gate to West, Alchester Road (Grade II Listed Building);
- Barn Approximately 40 metres northwest of Chesterton Fields Farmhouse, A4095 (Grade II Listed Building); and
- Chesterton Conservation Area.

10.3.3. In addition to known receptors (assets) within the Site and the Study Area, there is potential for hitherto unknown buried archaeology remains to survive on Site, which have the potential to be sensitive.

10.3.4. The sensitive receptors are presented on **Figure 4 – Sensitive Receptors in the Wider Area.**

10.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

10.4.1. Potential impacts on known or unknown buried archaeological remains which may survive within the Site relate to the possibility of disturbing, removing or destroying in situ remains and artefacts during groundbreaking works (including excavation, construction and other works) associated with the Proposed Development.

10.4.2. The assessment has established that the Site is located away from areas of prehistoric and Roman activity, which are concentrated to the west and north-east (prehistoric), and south and east (Roman) respectively. In the medieval and post medieval periods it is likely that the Site would have been predominantly agricultural land to the west of Chesterton and south-west of Bignell prior to the development of Chesterton Golf Course in the late 20th century. The nature and extent of truncation from the golf course landscaping that was undertaken from 2002 is unknown, however with the exception of the creation of negative features such as golf ponds and bunkers it is suggested by golf course staff that it was limited to topsoil stripping.

10.4.3. On the basis of current evidence, there is judged to be a Low potential for finds or remains dating from the prehistoric, Roman, early historic, medieval and post-medieval periods to be present on the Site. There is considered to a Medium potential for discovering finds or remains dating from the modern period within the Site, though these would likely be agricultural in nature or related to the construction of the golf course and therefore are unlikely to be of more than local importance. Based on the current understanding of the nature of the works employed to construct the golf course, there is potential for archaeological remains to survive undisturbed on the Site. The landscaping work required to construct the golf course was largely limited to topsoil stripping and building up of features, with the exception of the construction of negative features such as ponds and bunkers where any surviving remains may have been disturbed.

10.4.4. The historic environment baseline, including the assessment of the potential for archaeological remains to survive on the Site, as noted above, is based upon current understanding of the Site from desk-based assessment. Consultation with OCC's Planning Archaeologist has indicated the requirement for a 4% trial trench evaluation, targeting the footprint of the Proposed Development. A Written Scheme of Investigation outlining the proposed method and timing of the trial trench evaluation will be agreed with OCC's Planning Archaeologist in advance of the works being undertaken and will adhere to CIfA standards and guidance. The results of the evaluation will further inform the archaeological baseline and the Archaeology & Cultural Heritage chapter of the ES would consider the potential for significant effects upon any hitherto unknown buried remains which may be identified as a result of the trial trench evaluation.

10.4.5. A summary of the likely significant effects to be **scoped in** to the Archaeology and Cultural Heritage Assessment is provided in **Table 10-1** below.

Table 10-1 – Summary of Likely Significant Effects for Archaeology and Cultural Heritage

Impact	Phase	Receptor	Justification
Potential disturbance to buried archaeological remains	Construction	Potential buried archaeological remains	Potential for direct physical impacts upon any hitherto unknown buried archaeological remains within the Site. There is potential for pre-determination archaeological evaluation to identify hitherto unknown archaeological remains of significance and for these to be directly impacted upon by the construction of the Proposed Development.

10.4.6. On the basis of the above consideration of direct impacts upon hitherto unknown archaeological remains will be scoped into the Archaeology & Cultural Heritage Chapter of the ES. This assessment will be further informed by a trial trench evaluation focussed on footprint of the Proposed Development and undertaken prior to submission of the application.

INSIGNIFICANT EFFECTS

10.4.7. The three non-designated features associated with the in-situ golf course are modern, extant and in use and as a consequence are not considered to have any heritage significance and will be scoped out of this assessment.

10.4.8. There is potential for insignificant effects on the backfilled 20th century quarry located along the A4095. The exact magnitude of impact and level of effect will be dependent upon the final design of the Proposed Development. However, as the quarry is a modern feature of common type it is judged to be of negligible heritage significance and as such even high magnitude impacts are unlikely to result in a significant level of effect.

10.4.9. There are post-medieval field boundaries within the Site and associated features associated with previous agricultural use. The Proposed Development has the potential to have an insignificant impact on these remains. Given their late date and the fact that they are common features, the field boundaries and associated remains are judged to be of negligible heritage significance and as such even high magnitude impacts are unlikely to result in a significant level of effect.

10.4.10. An assessment of the potential for indirect effects upon the settings of designated heritage assets undertaken as part of HEDBA predicted that there would be insignificant effects upon the settings of the Listed Buildings and the Chesterton Conservation Area within the Study Area as a result of the Proposed Development. Although, the level of impact will be dependent upon the scale and nature of the final proposals, based on the current proposals it is suggested that they be scoped out of this assessment.

10.4.11. The effects outlined in **Table 10-2** below are anticipated to be insignificant and hence are proposed to be **scoped out** of the Archaeology and Cultural Heritage Assessment.

Table 10-2 – Summary of Insignificant Effects for Archaeology and Cultural Heritage

Impact	Phase	Receptor	Justification
Disturbance to known archaeological remains on Site	Construction	20th century quarry and post-medieval field boundaries and associated agricultural remains	Even though there is potential for high magnitude impacts upon these assets, they are of negligible heritage significance and as such the resulting level of effect would not be significant
Setting of Listed Buildings	Construction and Operation	• Church of St Mary, Manor Farm Lane, Great Chesterton (Grade II* Listed Building); • Manor Farm House, Manor Farm Lane (Grade II* Listed Building); • Stables and Coach Houses Northwest of Chesterton Lodge (Grade II Listed Building); • Thatchover, Alchester Road, Great Chesterton (Grade II Listed Building); • No. 6 Tubbs Lane, Great Chesterton (Grade II Listed Building); • Oxford Lodge, A43 (Grade II Listed Building); • No. 4 Tubbs Lane, Great Chesterton (Grade II Listed Building); • Chesterton Lodge including Forecourt Balustrade Immediately West (Grade II Listed Building); • Ivy Cottage including Front Garden Area Railings and Gate	There are no clear views from the assets to the Site. Based upon the current development proposals it is unlikely that Proposed Development would be visible from the assets. Any visibility that might be possible would be obscured by intervening built or landscape features and would not affect elements of setting which contribute to the significance of the assets. As such no significant effect are anticipated.

Impact	Phase	Receptor	Justification
		to West, Alchester Road (Grade II Listed Building); • Barn Approximately 40 metres northwest of Chesterton Fields Farmhouse, A4095 (Grade II Listed Building);	
Setting and Character of Conservation Areas	Construction and Operation	Chesterton Conservation Area	There are no clear views from the asset to the Site. Based upon the current development proposals it is unlikely that Proposed Development would be visible from the asset. Any visibility that might be possible would be obscured by intervening built or landscape features and would not affect elements of setting which contribute to the significance of the assets. As such no significant effect are anticipated.

10.4.12. Subject to the final design of the Proposed Development, direct impacts upon the known archaeological remains with the Site will be scoped out, as will consideration of impacts upon the setting and character of designated heritage assets within the Study Area. These will be scoped out of the ES, for the reasons outlined above, but assessment of insignificant effects upon them will be considered in the HEDBA which will form an appendix to the ES Chapter.

10.5. MITIGATION

10.5.1. Consultation with OCC's Planning Archaeologist has indicated the requirement for a 4% trial trench evaluation, targeting the area of the footprint of the Proposed Development. A Written Scheme of Investigation outlining the proposed method and timing of the trial trench evaluation will be agreed with OCC's Planning Archaeologist in advance of the works being undertaken and will adhere to CIfA standards and guidance. The results of the evaluation will further inform the archaeological baseline and will inform assessment.

10.5.2. If significant archaeological remains are encountered during the initial trial trenching, then mitigation may be required. Preservation of any significant remains *in situ*, which will provide mitigation by avoidance, would be the preference. Where preservation *in situ* is not justified, any impacts should be mitigated through preservation by record and as such further archaeological fieldwork, post-excavation analysis and reporting, including publication to facilitate this may be required.

10.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

10.6.1. It is unknown what potential heritage assets if any may be uncovered on the Site during the construction works. However, if archaeological remains are uncovered possible opportunities for enhancing the environment may include interpretation boards incorporated into the Proposed Development.

10.7. ASSESSMENT METHODOLOGY

10.7.1. The scope of the assessment will meet the requirements of current planning regulations set out in Planning Policy Guidance (2018); National Planning Policy Framework (February 2019) the Ancient Monuments and Archaeological Areas Act, 1979; Planning (Listed Buildings and Conservation Areas) Act, 1990; and local planning policy.

10.7.2. In fulfilling the requirements of the NPPF and the PPG, the assessment will utilise the following guidance:

- Chartered Institute for Archaeologists, 2017, Standard and guidance for historic environment desk-based assessment, The Chartered Institute for Archaeologists.
- Historic England, 2017, Historic England Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets

10.7.3. As set out under 'Scope of Assessment' above, early assessment undertaken for the HEDBA has indicated that known heritage assets on Site are of negligible cultural significance and as such even high magnitude impacts upon them will not result in in significant effects. As such impacts upon known heritage assets (based on desk-based work) are scoped out of this assessment. The HEDBA has also indicated there are no visual relationships between the Site and the designated assets within the 1.5km Study Area and as such there is unlikely to be any significant effect on these assets during the construction and operation of the Proposed Development. This is based upon the proposed nature of the Proposed Development, which includes consideration of the height of any new buildings and structures and associated landscaping and screening. Therefore, conditional upon this basis, it is suggested that consideration of the potential for impacts upon the setting of all designated heritage assets within the 1.5km Study Area are scoped out of further assessment in the ES.

10.7.4. The HEDBA has identified the potential for hitherto unknown archaeological remains to be present on Site. This will require further survey in the form of an archaeological field evaluation and consultation with OCC's Planning Archaeologist has indicated the requirement for a 4% trial trench evaluation, targeting the footprint of the Proposed Development. Depending upon the significance of any remains encountered, there may be potential for significant effects resulting from the construction of the Proposed Development. As such, assessment of impacts upon hitherto unknown archaeological remains is scoped in.

10.7.5. The assessment will utilise the following methodology to establish receptor sensitivity, magnitude of impact and significance of effect.

Assessing Cultural Value (Significance) & Importance

10.7.6. The definition of cultural significance is readily accepted by heritage professionals both in the UK and internationally and was first fully outlined in the Burra Charter, Article One of which identifies that 'cultural significance' or 'cultural heritage value' means aesthetic, historic, scientific, social or

spiritual value for past, present or future generations[62]. This definition has since been adopted by heritage organisations around the world, including Historic England (HE). The NPPF defines cultural significance as:

> *"The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting."*[63]

10.7.7. All heritage assets have some significance; however some assets are judged to be more important than others. The level of that importance is, from a cultural resource management perspective, determined by establishing the asset's capacity to inform present or future generations about the past. In the case of many heritage assets their importance has already been established through the designation (i.e. scheduling, listing and register) processes applied by HE.

10.7.8. The criteria which will be used to establish importance (sensitivity) in this assessment are presented in **Table 10-3** below and are drawn from the Department of Media, Culture and Sports publication, Principles for Selection of Listed Buildings[64] and the Scheduled Monuments Policy Statements published by the same body[65] which outline the criteria for designating heritage assets.

Table 10-3 - Criteria for Establishing Importance

Importance	Criteria
International and National	World Heritage Sites; Scheduled Monuments (Actual and Potential); Grade I and II* Listed Buildings; Grade I and II* Registered Parks and Gardens; Registered Battlefields; Fine, little-altered examples of some particular period, style or type.
Regional	Grade II Listed Buildings; Grade II Registered Parks and Gardens; Conservation Areas; Major examples of some period, style or type, which may have been altered; Asset types which would normally be considered of national importance that have been partially damaged (such that cultural heritage value has been reduced).
Local	Locally Listed Heritage Assets;

[62] ICOMOS (1999). Burra Charter Article 1.2.
[63] MHCLG: Department for Communities and Local Government (2018). NPPF, 71.
[64] DMCS (2018). Principles for Selection of Listed Buildings.
[65] DMCS (2013). Scheduled Monuments Policy Statements.

Importance	Criteria
	Lesser examples of any period, style or type, as originally constructed or altered, and simple, traditional sites, which group well with other significant remains, or are part of a planned group such as an estate or an industrial complex; Asset types which would normally be considered of regional importance that have been partially damaged or asset types which would normally be considered of national importance that have been largely damaged (such that their cultural heritage value has been reduced).
Negligible	Relatively numerous types of remains; Findspots or artefacts that have no definite archaeological remains known in their context; Asset types which would normally be considered of local importance that have been largely damaged (such that their cultural heritage value has been reduced);

10.7.9. A direct effect by a development can potentially result in an irreversible loss of information content and therefore heritage significance. The potential magnitude of change upon heritage assets caused by the Proposed Development will be rated using the classifications and criteria outlined in **Table 10-4** below.

Table 10-4 - Criteria for establishing magnitude of physical change

Physical Impact	Criteria
High	Major loss of information content resulting from total or large-scale removal of deposits from a site. Major alteration of a monument's baseline condition.
Medium	Moderate loss of information content resulting from partial removal of deposits from a site. Moderate alteration of a monument's baseline condition.
Low	Minor detectable changes leading to the loss of information content. Minor alterations to the baseline condition of a monument.
Negligible	Very slight or barely measurable loss of information content. Loss of a small percentage of the area of a site's peripheral deposits. Very slight alterations to a monument.
None	No physical change anticipated.

10.7.10. The predicted level of direct effect upon each asset will be determined by considering its importance in conjunction with the magnitude of change predicted for it. The method of deriving the level of effect classifications is shown in **Table 3-1** in Section 3.7.

10.8. LIMITATIONS AND ASSUMPTIONS

10.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- This assessment as set out in this Scoping Report and the HEDBA in **Appendix B**, is based upon data obtained from publicly accessible archives as described in the Data Sources in Baseline Conditions. All known heritage assets within 1.5km of the Site were identified. Data from the Oxfordshire Historic Environment Record was obtained in March 2019. The information presented in the HEDBA gazetteer regarding known heritage assets is current to this date.
- All the work carried out in this scoping document is based upon AOC Archaeology Group's professional knowledge and understanding of current (May 2019) and relevant United Kingdom standards and codes, technology and legislation.

11. GROUND CONDITIONS

11.1. STUDY AREA

11.1.1. This Chapter of the ES will establish existing ground conditions on-site and in the vicinity of the Site upon which to assess the likely significant effects of the Proposed Development on ground conditions and contamination, and/or the likely significant effects of existing ground conditions and contamination on the Proposed Development. The study area includes the area within the Site boundary and also areas outside this boundary that might influence the Proposed Development. The assessment will include a detailed study of the area up to 500m from the boundary of the Site, which is in general accordance with current contaminated land guidance[66].

11.2. BASELINE CONDITIONS

11.2.1. The following baseline information is based on the WSP Preliminary Risk Assessment (PRA) prepared in February 2018[67], which included information from a site walkover on 1 February 2018.

SITE DESCRIPTION

11.2.2. The Site comprises 9 of the existing 18-hole golf course. This area includes holes 10 to 18 and comprises grassed areas, interspersed with standing water bodies, drainage ditches, sand bunkers and semi-mature to mature trees. Bands of woodland areas and hedges extend along the boundaries of the Site, with the M40 beyond on the western boundary and the A4095 beyond on the north-eastern boundary.

11.2.3. The Site is located in a predominantly rural area, consisting of farm land and recreational land to the north and west, the remainder of the golf course to the south and a residential construction site was recorded adjacent to the east during the walkover.

11.2.4. During the walkover, potentially contaminative sources were generally identified off-site within the wider golf course area (predominantly within 100 m of the to the southern Site boundary) including soil stockpiles (mainly natural soil with some construction waste); bunded fuel tank; liquid storage (fertilizer, engine oil, sodium hypochlorite) propane gas tanks; fly tip/waste storage areas (tyres, plastics, timber, office furniture), electrical substation; gas governor; and a plant room.

SITE HISTORY

11.2.5. Historical Ordnance Survey maps indicate that the Site was generally open fields since the 1880s. A former quarry was noted in the north-east in the 1920s and appears to be backfilled by the late 1960s. The golf course was noted to be present by the 1980s.

11.2.6. Potential contaminative off-site sources included allotments, agricultural and farm land, a pump house, a tank and a coal yard.

[66] R&D Publication 66: 2008, Guidance for the Safe Development of Housing on Land Affected by Contamination.
[67] WSP (2018). GWR Bicester, Preliminary Risk Assessment, 70042711_PRA. February 2018.

11.2.7. A preliminary unexploded ordnance (UXO) enquiry with Zetica reported that the Site is located within an area with a very low WWII regional bombing density. However, there is record of at least four high explosive bombs to have fallen the immediate vicinity of the Site. Zetica therefore recommended the need for a further detailed UXO desk study report to further assess the UXO hazard level of the Site.

GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

11.2.8. Based on information from the British Geological Survey (BGS) the Site is underlain by the Cornbash Formation (limestone with interbeds of calcareous mudstone) overlying the Forest Marble Formation (mudstone with beds of limestone). There are no recorded superficial deposits. However, due to the engineered topography of the golf course it is anticipated that Made Ground is present across the Site. The Envirocheck report, within the February 2018 PRA, indicates that the Site is located within an Intermediate Probability radon affected area where 1-3% of homes are at or above the Action Level for radon gas.

11.2.9. The bedrocks beneath the Site are classified by the Environment Agency (EA) as a Secondary A aquifer. The Cornbash Formation and Forest Marble Formation are part of the larger Great Oolite Group, which consists of a significant limestone aquifer producing large yields. Groundwater is likely to be present within these formations beneath the Site. The Site is not located within a groundwater Source Protection Zone and there are no groundwater abstraction wells located within 500 m of the Site. The majority of the Site is located within an area defined by the BGS as having a low susceptibility to groundwater flooding, however, there is the potential risk for groundwater flooding of property situated below ground level immediately to the north-east and south-west.

11.2.10. The Site is located within a High Risk zone for Groundwater Vulnerability. The EA designates this by determining the vulnerability of groundwater to a pollutant discharged at ground level based on the geological, hydrological, hydrogeological and soil properties of the area. The soils within the area are designated with a High Leaching Potential. The Site is also located within a Soluble Rock Risk zone, as classified by the EA.

11.2.11. There are several water bodies situated within the Site, comprising drainage ditches and engineered ponds, lakes and swamps associated with the golf course. The closest river off-site is Gagle Brook (overall Poor classification according to the EA) located approximately 520 m to the south-east at its closest point. The Site is located within a surface water Nitrate Vulnerability Zone.

11.3. IDENTIFICATION OF SENSITIVE RECEPTORS

11.3.1. Based on the baseline information available, the following sensitive receptors have been identified relating to the Proposed Development:

- Future site users (high sensitivity);
- Construction workers (medium sensitivity);
- Third party neighbours (medium to high sensitivity);
- Secondary A aquifer (medium sensitivity);
- On-site water features (low sensitivity); and
- Gagle Brook (low sensitivity).

11.3.2. The on-site surface water features and Gagle Brook are presented on **Figure 4 – Sensitive Receptors in the Wider Area**.

11.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

11.4.1. Based on the baseline information and the historical and current uses of the Site and the immediate surrounding area, likely significant effects during the Construction and Operational Phases include:

Construction Impacts and Effects

- Potential effects on human health from exposure to contamination and/or ground gas associated with historical and current land use; and,
- Potential for increased mobilisation of chemical contaminants into surface water and / or groundwater.

Operational Impacts and Effects

- Potential effects on human health from exposure to contamination and/or ground gas/vapours associated with historical and current land use;
- Potential for increased mobilisation of chemical contaminants into surface water and / or groundwater;
- Potential impact to buildings from ground gas; and
- Potential degradation/permeation of water supply pipes from contaminants.

11.4.2. A clarification of the likely significant effects to be **scoped in** to the EIA is provided in **Table 11-1** below.

Table 11-1 **– Summary of Likely Significant Effects for Ground Conditions**

Impact	Phase	Receptor	Justification
Potential risk to human health	Construction	Construction workers Off site residents	Potential for direct contact with contaminants during ground works or from migration of contaminated dust/fibres. Potential for inhalation of ground gases/vapours within building spaces or excavations.
Potential risk to controlled waters	Construction	Groundwater (Secondary Aquifer) Surface water (on-site water feature. Gagle Brook)	Potential for increased mobilisation of chemical contaminants.
Potential risk to human health	Operational	Future site users Off site residents	Potential for direct contact with contaminants within the ground below areas of soft landscaping or from migration of contaminated dust/fibres.

Impact	Phase	Receptor	Justification
			Potential for inhalation of ground gases/vapours within building spaces.
Potential risk to controlled waters	Operational	Groundwater (Secondary Aquifer) Surface water (on-site water feature. Gagle Brook)	Potential for increased mobilisation of chemical contaminants.
Potential risk to building integrity	Operational	Future on-site buildings	Potential of explosive risk from ground gases.
Degradation/permeation of water supply pipes from contaminants	Operational	Future site users	Potential for direct contact with organic contaminants.

11.4.3. The PRA summarised that the risk to the identified receptors from contamination was considered to be low to moderate.

INSIGNIFICANT EFFECTS

11.4.4. At this stage no insignificant effects have been identified.

MITIGATION

11.4.5. It is anticipated that the appropriate mitigation measures (e.g. material management, suitable storage of fuels) during construction would be secured via a Construction Environmental Management Plan (CEMP).

11.4.6. In addition, the following is anticipated to address both construction and operational effects:

- Further UXO risk assessment;
- Targeted ground investigation and related contamination risk assessments;
- Remediation Strategy (if required);
- Remediation (if required, potentially including localised clean cover layers);
- Permanent controlled drainage scheme; and
- Ground gas protection measures in new buildings (if required following risk assessment).

11.4.7. Following assessment, any additional mitigation measures will be identified in the ES where necessary, to reduce the magnitude of impacts.

11.5. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

11.5.1. The National Planning Policy Framework (NPPF) requires newly developed or redeveloped sites to be 'suitable for use' in relation to ground contamination. Therefore, should contamination be present beneath the Site redevelopment would provide a beneficial effect through remediation works.

11.6. ASSESSMENT METHODOLOGY

LEGISLATIVE CONTEXT

11.6.1. The following legislative framework considered applicable to the assessment of ground conditions is summarised as follows:

- Part 2A of the Environmental Protection Act (EPA), 1990[68];
- Environment Act, 1995[69];
- Control of Substances Hazardous to Human Health, 2002[70];
- Dangerous Substances Directive (Amendment), 2006;
- Groundwater Directive 2006/118/EC[71];
- Control of Asbestos Regulations, 2012[72];
- National Planning Policy Framework 2019[73];
- Contaminated Land (England) (Amendment) Regulations, 2012[74];
- Construction (Design & Management) Regulations, 2015[75];
- Environmental Damage (Prevention and Remediation) Regulations, 2015[76];
- The Environmental Permitting (England and Wales) Regulations, 2016[77]; and,
- The Water Environment (Water Framework Directive) (England and Wales) Regulations, (2000/60/EC) 2017[78].

GUIDANCE

11.6.2. The assessment will take into account the following guidance:

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[68] Part 2A of the Environmental Protection Act (EPA), 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/part/IIA
[69] Environment Act, 1995. Available at: https://www.legislation.gov.uk/ukpga/1995/25/pdfs/ukpga_19950025_en.pdf
[70] Control of Substances Hazardous to Human Health (2002). Available at: http://www.legislation.gov.uk/uksi/2002/2677/pdfs/uksi_20022677_en.pdf
[71] Groundwater Directive 2006/118/EC. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:372:0019:0031:EN:PDF
[72] Control of Asbestos Regulations, 2012. Available at: http://www.legislation.gov.uk/uksi/2012/632/pdfs/uksi_20120632_en.pdf
[73] National Planning Policy Framework (NPPF), 2019. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2
[74] Contaminated Land (England) (Amendment) Regulations, 2012. Available at: http://www.legislation.gov.uk/uksi/2012/263/pdfs/uksi_20120263_en.pdf
[75] Construction (Design & Management) Regulations, 2015. Available at: http://www.legislation.gov.uk/uksi/2015/51/pdfs/uksi_20150051_en.pdf
[76] Environmental Damage (Prevention and Remediation) Regulations, 2015. Available at: https://www.legislation.gov.uk/uksi/2015/810/pdfs/uksi_20150810_en.pdf
[77] The Environmental Permitting (England and Wales) Regulations, 2016. Available at: http://www.legislation.gov.uk/uksi/2016/1154/pdfs/uksi_20161154_en.pdf
[78] Available at: http://www.legislation.gov.uk/uksi/2017/407/pdfs/uksi_20170407_en.pdf

- British Standard (BS) BS8576 (2013) Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds[79];
- Construction Industry Research and Information Association (CIRIA) C552 (2001) Contaminated Land Risk Assessment. A Guide to Good Practice[80];
- CIRIA C532 (2001) Control of Pollution from Construction Sites[81];
- Environment Agency (EA) (2004) Model Procedures for the Management of Contaminated Land (CLR11)[82];
- CIRIA C665 (2007) Assessing Risks Posed by Hazardous Gases to Buildings[83];
- CIRIA C681 (2009) Unexploded Ordnance - A Guide for the Construction Industry[84];
- CIRIA C682 (2009) The VOCs Handbook[85];
- Department for Environment Food & Rural Affairs (DEFRA) (2012) Contaminated Land Statutory Guidance[86];
- CIRIA C733 (2014) Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks[87];
- BS5930 (2015) Code of Practice for ground investigations[88];
- BS 8485: 2015+A1 (2019) Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings[89];
- BS 10175:2011+A2 (2017) Investigation of Potentially Contaminated Sites – Code of Practice[90]; and
- EA (2017) Groundwater Protection Technical Guidance[91].

[79] British Standards Institute (2013). Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs).
[80] Rudland, D J, Lancefield, R M, Mayell, P N (2001). Contaminated Land Risk Assessment. A Guide to Good Practice (C552). Construction Industry Research and Information Association (CIRIA).
[81] Masters-Williams, H et al. 2001. Control of Pollution from Construction Sites. CIRIA C53.
[82] Environment Agency (2004). Model Procedures for the Management of Land Contamination (CLR11). Available at: https://webarchive.nationalarchives.gov.uk/20140328160926/http:/cdn.environment-agency.gov.uk/scho0804bibr-e-e.pdf
[83] Wilson, S et al. Assessing Risks Posed by Hazardous Gases to Buildings (C665). CIRIA.
[84] Stone, K et al. 2009 Unexploded Ordnance - A Guide for the Construction Industry (C681). CIRIA
[85] Baker, K. et al. (2009). The VOCs Handbook (C682). CIRIA.
[86] Department for Environment Food & Rural Affairs (1990). Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/223705/pb13735cont-land-guidance.pdf
[87] Nathanail, C P, et al. (2014). Asbestos in soil and made ground: a guide to understanding and managing risks (C733). CIRIA.
[88] British Standards Institute (2015). 5930:2015: Code of Practice for ground investigations.
[89] British Standards Institute (2019). BS 8485: 2015+A1: Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings
[90] British Standards Institute (2017). BS 10175:2011+A2: Investigation of Potentially Contaminated Sites – Code of Practice.
[91] Environment Agency (2017). Ground Water Protection Technical Guidance. Available at: https://www.gov.uk/government/publications/groundwater-protection-technical-guidance

PROPOSED ASSESSMENT METHODOLOGY

11.6.3. The EA's guidance CLR11 (2004)[92] advocates the use of a conceptual risk assessment model (Conceptual Site Model). The basis of this approach comprises three elements: a source, a pathway and a receptor. Without each of these there can be no contamination risk. Therefore, the presence of measurable concentrations of contaminants within the ground and subsurface environment does not automatically imply that a contamination risk exists, since the contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors, which are relevant to a particular site, will vary according to the intended use of the site, its characteristics and its surroundings. The potential for harm to occur requires three conditions to be satisfied:

- The presence of substances (potential contaminants/pollutants) that may cause harm (the 'Source' of pollution);
- The presence of a receptor that may be harmed, (e.g. the water environment or humans, buildings, fauna and flora) (the 'Receptor'); and
- The existence of a linkage between the source and the receptor (the 'Pathway').

11.6.4. CLR11 will be used as a technical framework in the understanding of how contamination issues that may arise on the Site could be managed.

11.6.5. The Conceptual Site Model will be used to identify and assess the potential effects on the identified sensitive receptors (including human health, controlled waters, buildings and services) and outline mitigation measures to manage the risks identified in the assessment. The assessment will be prepared in accordance with legislation and guidance referenced above.

11.6.6. The potential effect of the Proposed Development on ground conditions, and/or the effect of ground conditions on the Proposed Development, will be assessed during the construction and operational phases. The significance level attributed to each effect will be assessed based on the magnitude of change due to the Proposed Development and the importance/sensitivity of the affected receptor / receiving environment to change.

MAGNITUDE CRITERIA

11.6.7. Risk, probability and consequence inform the magnitude of change (CIRIA C552 guidance). The magnitude of change will be assessed on a scale of high, medium, low, and negligible as defined in **Table 11-2**.

[92] Environment Agency (2004). Model Procedures for the Management of Land Contamination (CLR11). Available at: https://webarchive.nationalarchives.gov.uk/20140328160926/http:/cdn.environment-agency.gov.uk/scho0804bibr-e-e.pdf

Table 11-2 – Magnitude Criteria

Magnitude of Impact	Definition
High	A severe or acute impact to human health. Major derogation of aquifer /surface water quality or status. Impacts which are predicted to result in a major or irreversible change in the habitat/community of ecosystems.
Medium	Minor detrimental impact to human health. Minor derogation of aquifer /surface water quality or status. Impacts with potential to affect key attributes of habitats/communities but without changing overall viability.
Low	A discernible effect that is, however, unlikely to significantly alter human health, aquifer /surface water quality, or the attributes of receptor habitats.
Negligible	Unlikely to have a discernible impact to human health, aquifer /surface water quality or status, or the attributes of receptor habitats/communities.

RECEPTOR IMPORTANCE / SENSITIVITY

11.6.8. The sensitivity of the affected receptor / receiving environment will be assessed on a scale of high, medium and low as defined in **Table 11-3**.

Table 11-3 - Sensitivity / Importance Criteria

Sensitivity / Importance	Receptor
High	On-site occupants Off-site occupants (residential) Surface water bodies of high quality and/or in use as public water supply. Aquifers currently used, or likely to be suitable for use, as public potable supplies (e.g. Principal Aquifers, Source Protection Zone for a potable groundwater supply). Controlled waters that are nationally designated areas e.g. SSSI; internationally designated areas e.g. SAC, SPA, RAMSAR.
Medium	Construction and maintenance workers Off-site occupants (non-residential) Surface water bodies of moderate quality. Aquifer providing abstraction water for agricultural or industrial use. (e.g. Secondary A Aquifers). Controlled waters that are regionally designated areas e.g. local nature reserves
Low	Local water bodies of poor or worse chemical or biological status. Secondary B and undifferentiated aquifers; unproductive strata.

Sensitivity / Importance	Receptor
	Undesignated sites or controlled waters features which appreciably enrich the local habitat resource.

OVERALL SIGNIFICANCE CRITERIA

11.6.9. The terms presented in **Table 3-1** (Section 3.7) will be used to define the effects. The impacts will be described as beneficial or adverse. An effect will be considered significant if assessed as moderate or above.

TEMPORAL SCOPE

11.6.10. The assessment of environmental impacts relating to ground conditions will comprise:

- Short and medium term, temporary effects; and,
- Long term, permanent effects.

12. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

12.1. STUDY AREA

12.1.1. The Landscape and Visual Impact Assessment (LVIA) considers the potential landscape and visual effects as a result of the Proposed Development upon:

- Landscape Character, including physical landscape resources; and
- Views and visual amenity experienced by people.

12.1.2. A preliminary study area has been identified, considering the nature and scale of the Proposed Development in relation to the existing physical characteristics of the landscape as well as making reference to existing published landscape character assessments and studies.

12.1.3. Following identification of the preliminary study area, Zones of Theoretical Visibility (ZTV) have been modelled digitally to identify those areas of the landscape that theoretically would be visually connected to the Proposed Development. **Figure 5** illustrates the ZTV, which takes accounts of the effect that settlements and significant woodland blocks / belts would have on views towards the Proposed Development. The ZTV is based on a preliminary maximum height of 23m (which reflects the tallest part of the preliminary proposals). A detailed methodology for production of the ZTV is included in the Methodology at **Appendix C**.

12.1.4. Following the preliminary study and output from the ZTV, a series of viewpoint locations were identified to represent the range of likely views of the Proposed Development, these were modified during field surveys in March and May of 2019 (to consider the likely views in summer and winter). Consultations were also carried out with the Landscape Officer of CDC (Tim Screen), to agree the LVIA methodology, viewpoint locations and requirements for Accurate Visual Representations (AVRs) (via email dated 7th March 2019 and a pre-application meeting on 15th May 2019).

12.1.5. The 3km extent of the Study Area has then been determined by collectively considering the preliminary study area, the results of the ZTV modelling, the site observation, and the consultation with CDC. It is considered that any direct or indirect landscape or visual impacts arising as a result of the Proposed Development at a distance greater than this radius would be negligible at worst and therefore will not be considered further as part of the LVIA.

12.1.6. This assessment will be undertaken by Bradley Murphy Design.

12.2. BASELINE CONDITIONS

12.2.1. In order to understand the baseline position for landscape and visual receptors, a preliminary desk study was undertaken which identified potential sensitive / designated landscape resources – following a review of national Geographic Information System (GIS) databases, Ordnance Survey (OS) maps, existing published landscape character studies, relevant planning policies and guidance, and other documents in relation to landscape designations and protect views.

12.2.2. The desk study has included a review of the following sources of information:

- National Planning Policy Framework (February 2019)[93];
- The Adopted Cherwell Local Plan 2011-2031 Part I (2015)[94];
- Non-statutory Cherwell Local Plan 2011 (2004)[95];
- ENV06 Bicester Environmental Baseline Report (September 2013)[96];
- ENV07 Bicester Green Buffers Report (September 2013)[65];
- ENV08 Bicester Landscape Sensitivity and Capacity Assessment (September 2013)[65];
- ENV13 Landscape Sensitivity and Capacity Assessment (September 2010)[65];
- ENV19PM Bicester Landscape Sensitivity and Capacity Assessment Addendum (August 20014)[65];
- National England NCA Profile 108: Upper Thames Clay Vales[97];
- The Character of England: Landscape, Wildlife and Natural Features (2014);
- Oxfordshire Wildlife and Landscape Study (OWLS): Oxfordshire Regional Character Areas – Cotswolds; Landscape Types – Wooded Estatelands; Local Landscape Area – CW/59 Middleton Stoney[98];
- Chesterton Conservation Area Appraisal (2008)[99];
- Ordnance Survey Mapping at 1:25,000 scale;
- Aerial photography of the Site and wider area (Google Earth, www.maps.google.co.uk and www.bing.com/maps);
- Multi Agency Geographic Information for the Countryside (MAGIC) interactive mapping (www.magic.gov.uk); and
- National Heritage List for England, Historic England[100] ()

12.2.3. In addition to the desk study, field work was also undertaken to confirm the features or elements that contribute to the character of the local landscape (as described by published documents). A series of representative photographs have been taken with a digital camera with a 50mm lens (equivalent focal length) at approximately 1.6m in height, presented as a series of panoramic photographs, included to illustrate landscape character in the area and also as specific viewpoints representative of nearby visual receptors. These will be used, together with a number of AVRs, to inform the assessment of both landscape and visual effects.

[93] Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework (NPPF). Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2
[94] Cherwell District Council (2015). The Adopted Cherwell Local Plan 2011-2031 Part I. Available at: https://www.cherwell.gov.uk/info/83/local-plans/376/adopted-cherwell-local-plan-2011-2031-part-1
[95] Cherwell District Council (2004). Non-statutory Cherwell Local Plan 2011. Available at: https://www.cherwell.gov.uk/info/83/local-plans/159/non-statutory-cherwell-local-plan-2011-december-2004
[96] Cherwell District Council (2010, 2013, 2014). Environmental and Energy Evidence. Available at: https://www.cherwell.gov.uk/info/84/evidence-for-adopted-local-plan-part-1/222/environmental-and-energy-evidence
[97] Natural England (2014). NCA Profile 108: Upper Thames Clay Vales. Available at: http://publications.naturalengland.org.uk/publication/5865554770395136
[98] Oxfordshire County Council (2004). Oxfordshire Wildlife and Landscape Study (OWLS). Available at: http://owls.oxfordshire.gov.uk/wps/wcm/connect/occ/OWLS/Home/
[99] Cherwell District Council (2008). Chesterton Conservation Area Appraisal. Available at: https://www.cherwell.gov.uk/downloads/file/366/chesterton-conservation-area-appraisal-january-2008
[100] Historic England (2019). The National Heritage List for England (NHLE). Available at: https://historicengland.org.uk/listing/the-list/

12.2.4. The Site lies on the north-eastern part of the current 18 hole golf course, with the centre of the Site lying at a level of approximately 80m AOD, characterised by the typical golf course landscape including small scale man made earthworks, scattered trees or small blocks of woodland / vegetation and a number of water bodies. The M40 and its associated cutting slopes and structural planting form the western boundary and provide strong physical and visual containment of the Site in views from the west. Similarly, along the north-eastern boundary, roadside vegetation alongside the A4095 also offers a physical and visual barrier. To the north-east of the A4095, thick and well-established boundary vegetation within the adjacent Bignell Park provides additional screening of the Site from the wider landscape to the north-east. Vegetation associated with the south-eastern half of the existing golf course provides strong visual containment and screening of the Site from this direction, including views from the Chesterton Conservation Area to the south -east. The southern boundary of the Site is relatively open, allowing glimpsed views in from the north bound carriageway of the M40 and the Green Lane bridge over the M40. There are also glimpsed views out over the northern part of the golf course from the hotel / spa complex and associated facilities.

12.2.5. Within the Site and its immediate context, visual receptors include the residents of Vicarage Farm and Stableford House, users of the hotel and golf course, walkers along the public right of way (PRoW) 161 6/10, users of the A4095 and Green Lane. Further afield, visual receptors largely comprise the users of the PRoW network and local roads, with limited views from residential properties or other public locations.

12.2.6. There are a number of heritage assets located within or on the edge of the Study Area that may have a degree of influence over the local landscape and visual amenity, including:

- Conservation Areas at Chesterton, Bicester and Western on the Green;
- Registered Park and Gardens at Middleton Park (Grade II) and Kirtlington Park (Grade II);
- Scheduled Monuments of Middleton Stoney Castle, Saxon Barrow and Alchester Roman site; and
- Listed Buildings: eight within Chesterton Conservation Area and a Barn to the north-west of Chesterton Fields Farmhouse.

12.3. IDENTIFICATION OF SENSITIVE RECEPTORS

12.3.1. A range of landscape and visual receptors have been identified as part of the scoping process and their sensitivities have been assessed in accordance with the LVIA Methodology included at **Appendix C**. It is anticipated that the following receptors are considered sensitive to this LVIA:

- Landscape components within the Site: land use, topography, vegetation and water bodies;
- The character of the landscape within the Site and its immediate context;
- The character of the local landscape as defined in the OWLS;
- Users of footpath 161 6/10 that passes through the Site (it should be noted that the alignment of footpath is not clearly marked within the Site and there is no evidence of regular use);
- Residents of Vicarage Farm and Stableford House to the immediate south-east of the Site;
- Users of the hotel / spa and remaining golf course; and
- Users of the A4095 and Green Lane.

12.3.2. The sensitivity of each receptor will be determined as part of the LVIA process. The baseline study suggested that the sensitivity of the landscape is medium, with sensitivity of visual receptors ranging from low to high (the greatest sensitivity associated with residential receptors and users of the public

footpath running through the Site, other receptors are less likely to be affected by the Proposed Development, so their susceptibility / sensitivity is considered to be low).

12.3.3. Sensitive receptors are presented on **Figure 4 – Sensitive Receptors in the Wider Area**.

12.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

12.4.1. The potential for any significant effects on landscape character would be based on the Landscape Types and Character Areas described in the published county and local assessments, as these are considered to provide a sufficient level of detail to assess the likely effects of the Proposed Development at a local level.

12.4.2. The most significant effects are likely to arise from the construction stage, which would comprise activities such as enabling works on site, preparation of building platforms, ongoing building activities and emerging built form. Other works to facilitate construction would include site compounds, access roads, traffic, storage area, etc. Depending on the nature of the construction activities, the associated logistics for moving material and plant on and off Site would be visible from the locations in close proximity to the Site, with these and on-site construction activities reducing the tranquillity of the local landscape. However, this impact would be temporary.

12.4.3. Operational effects are likely to arise from the introduction of the built form of the resort - comprising the waterpark, hotel, internal and external activity areas, car park and other associated facilities. Areas of existing vegetation would be removed to accommodate the Proposed Development, to include trees and woodland currently on the northern part of the golf course, along with breaks in the north-east boundary to provide a new access point from the A4095.

12.4.4. Operational effects will be considered in two stages for the LVIA, immediately on completion (Year 0) and 15 years after completion, when landscape mitigation has established. The most significant operational effects are likely to arise at Year 0, before landscape mitigation has had time to establish and fulfil its intended function.

12.4.5. It is considered that any likely significant effects upon landscape character or views would be limited to areas within or in close proximity to the Site.

12.4.6. A summary of the likely significant effects to be **scoped in** to the EIA is provided in **Table 12-1** below.

Table 12-1 – Summary of Likely Significant Effects for Landscape

Impact	Phase	Receptor	Justification
Landscape resource	Construction/ operational	Land use	Direct impact as a result of introduction of large scale built form; adverse
		Vegetation	Direct loss of some existing vegetation including grassland and trees; adverse New planting along the boundaries and within new areas of green infrastructure; beneficial

Impact	Phase	Receptor	Justification
Landscape character	Construction/ operational	Site	Direct impact; change of character; adverse and beneficial
Visual Receptors	Construction/ operational	Residents	Residents of Vicarage Farm and Stableford House, Direct and/or filtered views of the new built form and car park from, short distance: adverse
		Users of PROW	Users of Footpath 161 6/10, direct and / or filtered views of the new built form and car park, short distance; adverse Improved access: beneficial
		Users of hotel / spa & golf course	Direct and / or filtered views of the new built form, short distance: adverse

INSIGNIFICANT EFFECTS

12.4.7. The National Landscape Character Area NCA 108: Upper Thames Clay Vales is considered to inform the context for the County and Local level character assessments however, it is not considered to provide a sufficient level of detail appropriate to the nature effects likely to arise at a local level as a result of the Proposed Development. Given the relatively small part of the NCA that would be impacted by the development, any effects are likely to be minor at most, so the NCA would not be assessed any further as part of the LVIA.

12.4.8. Views of the Proposed Development are predominantly contained within its immediate context. Slightly further away, there will be heavily filtered and occasional views from local roads – including the bridge of the B4030 where it crosses over the M40. However, it is considered that the addition of the new built form will only result in a very small alteration in this visual baseline, with insignificant effects. In the wider study area, there may be glimpses of the Proposed Development from some parts of PRoW however, these views would be very limited due to the combination of the relatively flat landform and extent of intervening vegetation. It is therefore considered that likely visual effects from the wider study area would be insignificant.

12.4.9. In terms of heritage assets, the physical and visual relationship between the Proposed Development to the surrounding heritage assets such as Chesterton Conservation Area, various listed buildings, and Registered Parks and Gardens is very limited. Any changes that are generated by the Proposed Development are very unlikely to affect the landscape setting of these heritage assets, therefore the likely effects are considered to be insignificant.

12.4.10. Overall, it is considered that the majority of effects upon landscape character or views would be insignificant.

12.4.11. There are a number of viewpoints illustrated on **Figure 5** that represent the views described above, photographs from these locations will be provided within the LVIA to demonstrate the limited nature of these views toward the Proposed Development.

12.4.12. The effects outlined in **Table 12-2** below are anticipated to be insignificant and hence are proposed to be **scoped out** of the EIA.

Table 12-2 – Summary of Insignificant Effects for Landscape

Impact	Phase	Receptor	Justification
Landscape resource	Construction/ operational	Waterbodies	Retained and enhanced; beneficial
		Public footpath	Direct impact; Diverted within the Site with designated alignment and through high quality landscape; beneficial
Landscape Character	Construction/ Operation	NCA 108	The site forms a very small part of the NCA, therefore any effects are likely to be insignificant
		CW/59 Middleton Stoney	Direct impact, but limited a very small area; impact upon the character of CW/59 is limited
Visual Receptors	Construction/ Operation	Users of the A4095 along the north-eastern boundary of the Site	Filtered and glimpsed views of the new built form and car park, short distance: limited adverse
		Users of the B4030, parts of Green Lane, the A4095 and others	Heavily filtered or glimpses of the Proposed Development
		Users of PROW in the wider landscape	Very limited or no views of the Proposed Development
Heritage Assets	Construction/ Operation	Chesterton Conservation Area	No views of the Proposed Development
		Listed buildings within Chesterton, and close to Chesterton Fields Farmhouse	No views of the Proposed Development
		Registered Parks and Gardens	No views of the Proposed Development

12.5. MITIGATION

12.5.1. The design mitigation will form an integral part of the iterative design process and will be considered when determining the likely effects. Mitigation measures will include the safe guarding of all the retained vegetation in accordance with Trees in Relation to Design, Demolition and Construction – BS5837:2012 and the development of a comprehensive Green Infrastructure Strategy, to comprise the following (the principles of which are illustrated on **Figure 6**):

- A buffer along the southern edge of the Site: which will offer a positive interface with the remaining golf course, hotel and spa – whilst minimising the landscape and visual impacts upon nearby receptors;
- Retention of landscape features in the northern part of the Site and enhancement to create a new area of wet parkland, enhancing the ecological, landscape and amenity value in this part of the Site;
- Retention of existing boundary vegetation, reinforced with additional planting to enhance the wooded setting of the Proposed Development; and
- Diversion of the existing public footpath and enhancement / signage to improve legibility and access, connected to the northern parkland to improve its amenity value.

12.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

12.6.1. There are also opportunities to create landscape and biodiversity enhancement, in particular associated with establishment of various habitats on Site to form an adequate buffer zone for wildlife. A number of ponds will form part of a Sustainable Drainage Strategy (SuDS) helping to reduce flood risk. In addition, the selection of planting species will be based on the native indigenous mixes found in the local area to assist in assimilating the development in the surrounding area.

12.6.2. These enhancements would contribute to improvements in the character of the landscape, with improved biodiversity and wildlife presence enhancing the degree of tranquillity and value of the landscape.

12.7. ASSESSMENT METHODOLOGY

12.7.1. The LVIA will comprise two interrelated parts:

- A landscape impact assessment, which considers the effects of the Proposed Development on the physical landscape and potential for changes in its character; and
- A visual impact assessment, which considers the potential changes to the visual context arising from the Proposed Development including general setting and views for local residents, walkers, horse riders, visitors and vehicular traffic, collectively these are described as ‘receptors’.

12.7.2. The LVIA will accord with the principles of good practice set out in the following published guidance produced by the relevant professional organisations in relation to the landscape and visual assessment:

- Guidelines for Landscape and Visual Impact Assessment Third Edition (2013) (GLVIA3), published by the Landscape Institute and the Institute of Environmental Management & Assessment;
- GLVIA3 Statement of Clarification 1/13 (2013), published by the Landscape Institute; and
- Landscape Institute Advice Note 01/11, Photography and Photomontage in Landscape and Visual Impact Assessment (2011), published by the Landscape Institute.

12.7.3. Full details of the methodology are included at **Appendix C**. In summary, the approach used to identify and assess landscape and visual effects is summarised as follows:

- Determine the scope of the assessment;
- Collate baseline information for landscape and visual receptors, including completing desk study research and undertaking field survey work;

- Review the type of development proposed and determine the susceptibility of the landscape and visual receptors to the type of change proposed;
- Combine value with susceptibility to determine the sensitivity of landscape and visual receptors to the nature of the Proposed Development;
- Describe the nature and magnitude of change (impact) likely to be experienced by landscape and visual receptors as a result of the Proposed Development;
- Assess the level (and significance) of effects for landscape and visual receptors in relation to the Proposed Development, through a clear description of judgements on sensitivity and magnitude of impact; and
- Describe any measures (mitigation) to avoid or reduce the magnitude of any adverse effect;
- Describe any residual effects, and their significance, following mitigation;
- Identify those effects that are considered important to decision making; and
- The contribution designated features make to the value / sensitivity of visual receptors will also be considered as part of the visual impact assessment.

12.8. LIMITATIONS AND ASSUMPTIONS

12.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- The LVIA considers the contribution heritage and ecological features make to the character and value of the landscape and visual receptors, along with an assessment of the likely effect of the Proposed Development on the landscape character and views associated with heritage features. The LVIA will be carried out in landscape and visual terms only and does not assess direct or any other indirect effects on heritage or ecological resources (these would be covered by other chapters of the ES);
- The LVIA will be based on views from publicly accessible locations, where an impact on residential and other private views (e.g. commercial properties) is noted, this will, necessarily be estimated (unless access is provided by the land owner);
- The viewpoints identified in this scoping report (**Figure 5**) are intended to illustrate the potential impact from a representative range of receptors including residents, users of public rights of way, visitors to public / private open space, users of leisure facilities, users of the road network etc. The LVIA will not necessarily identify all locations from where the Proposed Development would potentially be visible; and
- In the absence of a detailed design and layout the effects of lighting cannot be accurately determined however, the LVIA will include an assessment of the likely effects of: temporary lighting resulting from construction; sky glow; and, change to the landscape and views as a result of the introduction of lighting as part of the Proposed Development.

13. WATER RESOURCES, FLOOD RISK AND DRAINAGE

13.1. STUDY AREA

13.1.1. This chapter assesses the likely significant effects of the Proposed Development on the environment in respect of water resources, flood risk and drainage. The study area is defined as generally within a 1km radius of the Site, although a number of issues are considered at a greater distance or at the river catchment level, where necessary. The assessment of effects includes surface water and groundwater quality, surface water and groundwater resources (in terms of water quantity) and flooding.

13.1.2. Based on current knowledge, the study area is not anticipated to change as the project progresses.

13.1.3. This assessment will be undertaken by Curtins.

13.2. BASELINE CONDITIONS

13.2.1. The sources of information used to define the baseline conditions are as follows:

- Site visits: 27th March 2019 and 1st May 2019
- Environment Agency Flood Map for Planning[101]
- Thames Water Asset Location Search[102]
- Oxfordshire County Council online resources[103]
- Cherwell District Council North Oxfordshire online resources[104]
- Geology of the Buckingham district: a brief explanation of the geological map sheet 219 Buckingham[105]
- Geology of the country around Chipping Norton. Memoir for 1:50 000 geological sheet 218, New Series (England and Wales)[106]
- The Geology of Oxford[107]
- Information from the British Geological Survey (BGS) Geoindex service: bedrock and superficial geology[108]
- Borehole records within and around the site downloadable from the BGS[109]
- Private water supplies within 5km of the site
- Information from the National River Flow Archive[110]

[101] Environment Agency. Flood Map for Planning. Available at: http://apps.environment-agency.gov.uk/wiyby/37837.aspx
[102] ALS/ALS Standard/2019_3986151
[103] https://www.oxfordshire.gov.uk/
[104] https://www.cherwell.gov.uk/
[105] Sumbler, M.G. (2002) “Geology of the Buckingham district: a brief explanation of the geological map sheet 219 Buckingham” Nottingham: British Geological Survey
[106] Horton, A & Poole, E.G. & Williams, B.J. & Illing, V.C. & Hobson, G.D. (1987) “Geology of the country around Chipping Norton. Memoir for 1:50,000 geological sheet 218, New Series (England and Wales)” British Geological Survey
[107] Arkell, W.J (1947) “The Geology of Oxford” Clarendon Press
[108] British Geological Society. Geoindex service: bedrock and superficial geology. Available at: http://www.bgs.ac.uk/Geoindex/
[109] British Geological Society. Borehole Scans. Available at: http://www.bgs.ac.uk/data/boreholescans/
[110] National River Flow Archive. Available at: https://nrfa.ceh.ac.uk/

- Information from Natural England Open Data Geoportal[111]

13.2.2. The site generally grades from north-west to south-east along the A4095 road at the eastern boundary of the Site; with levels falling from around 87 to 81 mAOD. The groundwater table is particularly shallow in south-east corner of the Site which has lower ground levels. The Site is a typical golf course with various landscaping features such as ponds, lakes and water features across the Site with the majority located towards the north. These are believed to provide groundwater storage.

13.2.3. The closest watercourse is Gagle Brook (Ordinary Watercourse) located 500m away, to the north-east of the Site. This watercourse flows to the south joining River Ray (Environment Agency main river) approximately 3km downstream.

13.2.4. The online Environment Agency flood map shows the Site is in Flood Zone 1 - Low probability of flooding. The risk of flooding from sewers, and reservoirs is low.

13.3. IDENTIFICATION OF SENSITIVE RECEPTORS

13.3.1. Below is a list of receptors identified as sensitive to this topic:

- Neighbouring properties;
- M40 and A4095;
- Thames Water public sewer;
- Gagle Brook;
- Cornbrash Formation Secondary A Aquifer;
- Private water abstractions at Bignell Park and Chesterton Field Farm; and
- Surface water ditches.

13.3.2. These sensitive receptors are presented on **Figure 4 – Sensitive Receptors in the Wider Area**.

13.4. SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

13.4.1. **Table 13-1** below outlines the elements proposed to be **scoped in** to the EIA.

Table 13-1 – Summary of Likely Significant Effects for Water Resources, Flood Risk and Drainage

Impact	Phase	Receptor	Justification
Risk of flooding from multiple sources including: - Climate change	Construction / Operation	Neighbouring properties / M40 / A4095 / Gagle Brook	Developers are responsible for ensuring that any new development does not increase the flood risk elsewhere.

[111] Natural England. Natural England Open Data Geoportal. Available at: https://naturalengland-defra.opendata.arcgis.com/

Impact	Phase	Receptor	Justification
- Groundwater - Adopted sewers - Private drainage - Surface water - Reservoirs, canals and artificial sources			Developers are typically required to consider the 100 year storm event, with an allowance for climate change, to ensure the runoff can be managed safely on-site and to restrict any flows leaving the Site to the current discharge rates or less.
Drainage discharge from the Proposed Development	Operation	Thames Water public sewer / Gagle Brook	The impact of the proposed development on the capacity of the Thames Water public sewer and the Gagle Brook needs to be assessed.
Cornbrash aquifer	Construction	Neighbouring properties	Short term dewatering will affect some flow but will not affect local properties. The potential for high groundwater to affect construction and deep excavations is significant.
Wells	Construction	Other well users	Only effected if abstraction is required.
Water Consumption	Operation	Thames Water public sewer / aquifer	An initial runoff analysis and groundwater analysis has been undertaken to understand what water resources are available to meet the Development water demand. Further analysis will be undertaken to understand what processes can be successfully put in place to reuse the available natural water resource.

INSIGNIFICANT EFFECTS

13.4.2. No insignificant effects to be scoped out of the assessment.

13.5. MITIGATION

- The risk of groundwater flooding can be mitigated by groundwater level monitoring and providing adequate drainage capacity.
- The Proposed Development will include Sustainable Drainage Systems (SuDS) to reduce the impermeable area and manage levels to direct flows away from buildings to reduce increasing the risk of flooding.
- The drainage strategy will include the attenuation of surface water on-site with controlled discharge from the Site at a rate to be agreed with the Lead Local Flood Authority to ensure that the risk of flooding from surface water is maintained at an acceptable level.
- The surface water drainage network will be designed to accommodate all storm events up to the 1 in 100 year storm event (plus 40% climate change).

- All surface water inlet features will have suitably sized sumps to catch silts and will be subject to a documented routine maintenance and cleansing regime.
- Groundwater to be managed during construction via dewatering measures to avoid floatation or flooding of excavations.
- Dewatering groundwater could be recycled into existing ponds, keeping water balance equal during construction.
- Water balance measures such as re-use of rainwater and abstraction could be used for sustainable water usage.

13.6. OPPORTUNITIES FOR ENHANCING THE ENVIRONMENT

13.6.1. The drainage strategy will aim, where possible, to control the surface water at its source, replicating the hydraulic characteristics of a greenfield site. That is, the surface water does not enter the drainage system or is delayed and attenuated before it enters the drainage system. This can be achieved through use of SuDs features. SuDs mimic natural drainage regimes and aim to reduce surface water flooding, improve water quality and enhance the amenity and biodiversity value of the environment. SuDS achieve this by lowering flow rates, increasing water storage capacity and reducing the transport of pollution to the water environment.

13.7. ASSESSMENT METHODOLOGY

13.7.1. A Flood Risk Assessment will be prepared in accordance with the standing advice and requirements of the Environment Agency for Flood Risk Assessments as outlined in the Communities and Local Governments Technical Guidance to the National Planning Policy Framework (NPPF).

13.7.2. The assessment will:

- Investigate all potential risks of current or future flooding to the Site;
- Consider the impact the Proposed Development may have elsewhere with regards to flooding; and
- Identify suitable mitigation for any potential risk of flooding.

13.7.3. A Drainage Strategy will be prepared in accordance with CIRIA C753 The SuDS Manual[112] and Building Regulations Part H[113]. The strategy will aim, where possible, to deal with surface water at its source so that it does not enter the drainage system or is delayed and attenuated before it enters the drainage system. This can be achieved through use of permeable surfaces which manage runoff as soon as water falls on the Site.

13.7.4. A Hydrogeological Desk Study will be prepared. The objective of the desk study is to determine the effect of the construction works on the groundwater regime.

[112] Woods Ballard, B. & Wilson, S. & Udale-Clarke, H. & Illman, S. & Scott, T. & Ashley, R. & Kellagher, R. (2015) “The SuDS Manual” Ciria
[113] HM Government (2015) “Approved Document H: drainage and waste disposal” NBS, RIBA Enterprises Ltd

13.8. LIMITATIONS AND ASSUMPTIONS

13.8.1. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:

- Capacity within the Thames Water public network. A pre-development enquiry has been made to Thames Water to ascertain the capacity. Currently, the assumption is there is capacity within the public network.

14. CUMULATIVE EFFECTS

14.1. PROPOSED ASSESSMENT METHODOLOGY

14.1.1. The EIA Regulations require the likely significant cumulative environmental effects of a development to be considered. The following types of cumulative effects will be considered within the ES:

- Combined effects: The interaction and combination of environmental effects, and indirect effects of the Proposed Development affecting the same receptor, either within the Site or in the local area; and
- Cumulative effects: The interaction and combination of environmental effects of the Proposed Development with committed projects and activities affecting the same receptor. Committed development is defined as development for which planning consent has been granted or in some instances may include foreseeable development currently under planning determination.

14.1.2. Guidance indicates that a cumulative effects assessment should only consider those schemes that can reasonably be presumed to go ahead and for which sufficient information is available.

14.1.3. There is no single widely accepted published methodology for the assessment of cumulative environment effects. However, several best practice guidance documents are available, including those published by Department of Communities and Local Government and the European Commissions and these will be referred to during the completion of this element of the ES. The '*Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*' provides the following guidance on cumulative effects.

- '*In practical terms, the extent of the assessment in terms of how far into the past and into the future will be dependent upon the availability and quality of information…*'; and
- '*…it is only reasonable to consider current events and those that will take place in the foreseeable future. Furthermore, the assessment can only be based on the data that is readily available*'.

14.1.4. The guidance above identifies that a cumulative effects assessment should only consider those schemes that can reasonably be presumed to go ahead and for which sufficient information is available. This is usually taken to be those schemes that have a benefit of Planning Permission as identified on CDC's Planning Application Register.

14.1.5. Cumulative effects will be identified and assessed through a desk based study using professional expertise to make a judgement as to the likely significance of changes in baseline conditions in the area surrounding the Site arising from the completion of the Proposed Development together with relevant committed developments. A quantitative assessment approach will be adopted where appropriate and possible, and where data is available. Consideration will be given to the timing and spatial influence of the Proposed Development and the identified committed developments.

14.1.6. The committed developments to be assessed as part of the EIA are those that have the benefit of planning permission or are reasonably foreseeable (i.e. resolution to grant). The committed developments have been agreed with CDC and OCC in relation to the scope of the Transport Assessment.

14.1.7. In general, where the Committed Developments are under construction, these will be considered as part of the baseline scenario of the technical assessments. In relation to transport, the baseline

scenario will be based on the recently undertaken traffic surveys, which will include a proportion of traffic associated with the part built-out (and occupied) elements of the Committed Developments, as appropriate.

The committed developments will be considered in the technical cumulative assessments where appropriate. It is requested that CDC confirm the reference numbers for each committed development are appropriate and that they believe should be included as part of the cumulative assessment within their formal EIA Scoping Opinion. The committed developments that have identified are outlined in **Table 13-1**.

14.1.8. The result of the cumulative effect assessment will be provided in the ES which will summarise the interactions between effects (as assessed in the individual chapters for each topic) and will describe the findings of the assessment of cumulative effects arising from the combination of the development together with relevant committed developments in the locality.

14.1.9. The key potential cumulative effects for consideration in the ES are expected to include the following:

- Road traffic generation during construction and operation, and associated effects on noise and air quality;
- Changes to views and landscape setting;
- Effects on identified habitats and species;
- Demand on water resources; and
- Potential effects arising from demolition and construction works, including disturbance from dust, noise and vehicle movements.

14.1.10. The assessment of interaction between effects that may occur between different environmental components (such as air, noise and road traffic) will be inherent within the EIA process and will be presented in the ES chapter specific to each topic, with cross references made between topics where appropriate.

14.1.11. The traffic assessment and traffic data utilised for the assessment of road traffic effects in respect of local air quality and noise will include the predicted future traffic generation on the local highway network (including relevant committed developments within the local area).

Table 14-1 – List of Cumulative Developments to be Assessed

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
1	Bicester Golf And Country Club Bicester Golf and Country Club, Akeman Street, Chesterton, Bicester, Oxfordshire, OX26 1TE	15/01068/F	Erection of two storey extension to existing hotel to form 62 new bedrooms (60 net increase).	Adjacent to the Site	Permission Granted with Conditions (12th February 2016) Not Under Construction
2	Kingmere Land South West Of Bicester Adjoining Oxford Road And Middleton Stoney Road, Bicester	06/00967/OUT	Outline - Up to 1585 no. dwellings; health village to include health and employment uses and elderly persons nursing home; B1 and B2 employment uses; local centre comprising of shops, a pub/restaurant, children's day nursery, offices and a community centre; 2 no. primary schools and 1 no. secondary school; a hotel; a sports pavilion; formal and informal open space; a link road between A41 and Middleton Stoney Road/Howes Lane junction; associated new roads, junctions, parking, infrastructure, earthworks and new accesses to agricultural land.	1.1km north east	Permission Granted with Conditions (30th June 2008) Under construction ()
3	South West Bicester Phase 2 Phase 2 SW Bicester Parcel 7849 North Of Whitelands Farm Adjoining Middleton	13/00847/OUT	Outline - Residential development within use Class C3, Extra care facility, primary school, retail, formal and informal public open space, play facilities, sports pitches, allotments and associated infrastructure including landscaping, highways, footpaths/cycleways, drainage utilities and parking iated works.	1.1km east	Permission Granted with Conditions (12th February 2016) Under construction

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
	Stoney Road, Bicester, Oxfordshire				
4	Bicester Gateway Retail Park Land South of and Adjoining Bicester Services, Oxford Road, Bicester	16/02505/OUT	Bicester Gateway (Kingsmere - Retail) Four Class A1 (retail) units, one Class A3 (cafe/restaurants) unit, a Class D2 (gym) unit, surface level car parking, access, servicing and associated works.	2.24km east	Permission Granted with Conditions (13th November 2017) Not Under Construction
5	Bicester Office Park, Land North Of Bicester Avenue Garden Centre, Oxford Road, Bicester	17/02534/OUT	Outline - The construction of a business park of up to 60,000 sq.m (GEA) of flexible Class B1(a) office / Class B1(b) research & development floorspace; associated vehicle parking, landscaping, highways, infrastructure and earthworks.	2.3km east	Resolution to grant planning permission subject to S106 in August 2018. Awaiting decision
6	Graven Hill Site C Ploughley Road & Site D & E Ambrosden Road, MOD Bicester, Upper Arncott, Oxfordshire	11/01494/OUT	Outline - Redevelopment of former MOD sites including demolition of existing buildings, development of 1900 homes; local centre to include a 2 form entry primary school (class D1), a community hall of 660sqm, five local shops or facilities to include A1, A2, A3, A5 and D1 uses totalling up to 1358sqm, up to 1000sqm gross A1 uses, a pub/restaurant/hotel (class A4/A3/C1) up to 1000sqm and parking areas; employment floorspace comprising up to B1(a) 2160sqm, B1(b) 2400sqm, B1(c) and B2 20520sqm and B8 uses up to 66960sqm; creation of public open space and associated highway improvement works,	2.7km south east	Permission Granted with Conditions (8th August 2014) Under construction

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
			sustainable urban drainage systems, biodiversity improvements, public transport improvements and services infrastructure. Erection of a 70400sqm fulfilment centre on 'C' site and associated on site access improvement works, hardstanding, parking and circulation areas.		
7	Wretchwich Green South East Bicester, Wretchwick Way, Bicester	16/01268/OUT	Outline application with all matters reserved apart from access for residential development including up to 1,500 dwellings, up to 7ha of employment land for B1 and/ or B8 uses, a local centre with retail and community use to include A1 and/ or A2 and/ or A3 and/ or A4 and/ or A5 and/ or D1 and/ or D2 and/ or B1, up to a 3 Form Entry Primary School, drainage works including engineering operations to re-profile the land and primary access points from the A41 and A4421, pedestrian and cycle access, circulation routes, related highway works; car parking; public open space and green infrastructure and sustainable drainage systems.	4km south east	Awaiting decision
8	Audley Gardens, Chesterton	14/01737/OUT and 16/00219/REM	Outline - With means of access for consideration (layout, scale, appearance and landscaping reserved for subsequent approval) for the erection of up to 45 dwellings served via a new vehicular and pedestrian access; public open space and associated earthworks to facilitate surface water drainage; and all other ancillary and enabling works.	530m south east	Under construction
9	RAF Bicester	18/01253/F	Erection of hotel and conference facility with associated access, parking, and landscaping.	4.9km north east	Awaiting decision

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
	Bicester Heritage, Buckingham Road, Bicester	18/01333/F	Extension to existing Technical Site to provide new employment units comprising flexible B1(c) light industrial, B2 (general industrial), B8 (storage or distribution) uses with ancillary offices, storage, display and sales, together with associated access, parking and landscaping	4.7km north east	Awaiting decision
10	Heyford Park	18/00825/HYBRID	Demolition of buildings and structures as listed in Schedule 1; Outline planning permission for up to 1,175 new dwellings (Class C3); 60 close care dwellings (Class C2/C3); 929 m2 of retail (Class A1); 670 m2 comprising a new medical centre (Class D1); 35,175 m2 of new employment buildings, (comprising up to 6,330 m2 Class B1a, 13,635 m2 B1b/c, 9,250 m2 Class B2, and 5,960 m2 B8); 2.4 ha site for a new school (Class D1); 925 m2 of community use buildings (Class D2); and 515 m2 of indoor sports, if provided on-site (Class D2); 30m in height observation tower with zip-wire with ancillary visitor facilities of up of 100 m2 (Class D1/A1/A3); 1,000 m2 energy facility/infrastructure with a stack height of up to 24m (sui generis); 2,520 m2 additional education facilities (buildings and associated external infrastructure) at Buildings 73, 74 and 583 for education use (Class D1); creation of areas of Open Space, Sports Facilities, Public Park and other green infrastructure; Change of Use of the following buildings and areas: Buildings 357 and 370 for office use (Class B1a); Buildings 3036, 3037, 3038, 3039, 3040, 3041, and 3042 for employment use (Class B1b/c, B2, B8); Buildings 217, 3102, 3136, 3052, 3053, 3054, and 3055 for employment use (Class B8); Buildings 2010, 3008,	4.7km north west	Awaiting decision

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
			and 3009 for filming and heritage activities (Sui Generis/Class D1); Buildings 2004, 2005 and 2006 for education use (Class D1); Buildings 366, 391, 1368, 1443, 2007, 2008 and 2009 (Class D1/D2 with ancillary A1-A5 use); Building 340 (Class D1, D2, A3); 20.3ha of hardstanding for car processing (Sui Generis); and 76.6ha for filming activities (Sui Generis); the continuation of use of areas, buildings and structures already benefiting from previous planning permissions, as specified in Schedule 2; associated infrastructure works including surface water attenuation provision and upgrading Chilgrove Drive and the junction with Camp Road		
		19/00446/F	Erection of up to 57 residential units (Use Class C3) comprising a mix of open market and affordable housing, together with associated works including provision of vehicular and pedestrian accesses, public open space, landscaping, infrastructure and site clearance.	4.9km north west	Awaiting decision
		15/01357/F	Erection of 79 dwellings, creation of new access from Camp Road, creation of new open space, hard and soft landscaping and ancillary works.	4.6 km north west	Awaiting decision
		16/02446/F	Erection of 296 residential dwellings (Use Class C3) comprising a mix of open market and affordable housing, together with associated works including provision of new and amended vehicular and pedestrian accesses, public open space, landscaping, utilities and infrastructure, and	5.3 km north west	Awaiting decision

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
			demolition of existing built structures and site clearance works.		
		16/00196/F	Demolition of existing bungalows and erection of 13 dwellings with associated car parking and landscaping.	4.8 km north west	Permission Granted with Conditions (17th August 2016) Under construction
		16/00263/F	Demolition of Buildings 485 and 488 and the erection of 43 dwellings with associated parking, infrastructure, landscaping and public open space.	4.7 km north west	Permission Granted with Conditions (8th May 2017)
		10/01642/OUT	Proposed new settlement of 1075 dwellings including the retention and change of use of 267 existing military dwellings to residential use Class C3 and the change of use of other specified buildings, together with associated works and facilities, including employment uses, a school, playing fields and other physical and social infrastructure.	4.7 km north west	Permission Granted with Conditions (22nd December 2011) Under construction
		13/01811/OUT	Up to 60 dwellings and public open space with associated works	4.8 km north west	Permission Granted with Conditions (31st March 2016)

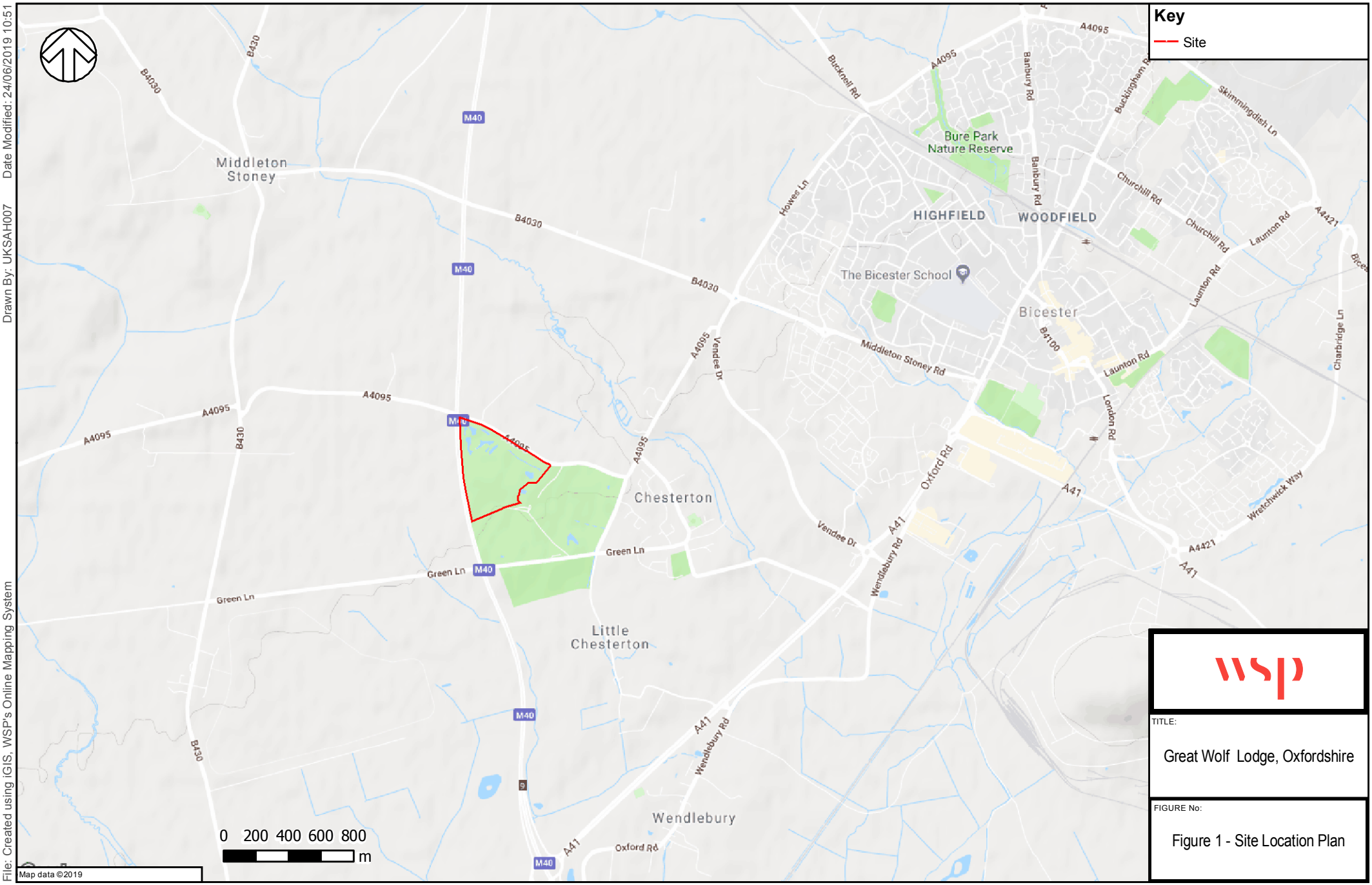
Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
11	NW Bicester	10/01780/HYBRID	Development of Exemplar phase of NW Bicester Eco Town to secure full planning permission for 393 residential units and an energy centre (up to 400 square metres), means of access, car parking, landscape, amenity space and service infrastructure and outline permission for a nursery of up to 350 square metres (use class D2), a community centre of up to 350 square metres (sui generis), 3 retail units of up to 770 square metres (including but not exclusively a convenience store, a post office and a pharmacy (use class A1)), an Eco-Business Centre of up to 1,800 square metres (use class B1), office accommodation of up to 1,100 square metres (use class B1), an Eco-Pub of up to 190 square metres (use class A4), and a primary school site measuring up to 1.34 hectares with access and layout to be determined.	3.9 km north east	Permission Granted with Conditions (10th July 2012) Under construction
		18/00484/OUT	Outline planning permission for up to 75 homes, pedestrian and cycle routes, creation of new access point from Charlotte Avenue, provision of open space, play space, allotments, orchard, parking and associated works.	4.1km north east	Awaiting decision
		14/01675/OUT	Erection of up to 53,000 sqm of floor space to be for B8 and B2 with ancillary B1 (use classes) employment provision within two employment zones covering an area of 9.45ha; parking and service areas to serve the employment zones; a new access off the Middleton Stoney Road (B4030); temporary access of Howes Lane pending the	1.4km north east	Approved at appeal.

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
			delivery of the realigned Howes Lane; 4.5ha of residential land; internal roads, paths and cycleways; landscaping including strategic green infrastructure (G1); provision of sustainable urban systems (suds) incorporating landscaped areas with balancing ponds and swales. Associated utilities and infrastructure.		
		14/01384/OUT	Development comprising redevelopment to provide up to 2600 residential dwellings (Class C3), commercial floorspace (Class A1 - A5, B1 and B2), social and community facilities (Class D1), land to accommodate one energy centre, land to accommodate one new primary school (Up to 2FE) (Class D1) and land to accommodate the extension of the primary school permitted pursuant to application (reference 10/01780/HYBRID). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure, ancillary engineering and other operations.	2.9 km north east	Awaiting decision
		14/01641/OUT	To provide up to 900 residential dwellings (Class C3), commercial floor space (Class A1-A5, B1 and B2), leisure facilities (Class D2), social and community facilities (Class D1), land to accommodate one energy centre and land to accommodate one new primary school (up to 2 FE) (Class D1), secondary school up to 8 FE (Class D1). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure, ancillary engineering and other operations.	2.1 km north east	Awaiting decision

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
		14/01968/F	Construction of new road from Middleton Stoney Road roundabout to join Lord's Lane, east of Purslane Drive, to include the construction of a new crossing under the existing railway line north of the existing Avonbury Business Park, a bus only link east of the railway line, a new road around Hawkwell Farm to join Bucknell Road, retention of part of Old Howes Lane and Lord's Lane to provide access to and from existing residential areas and Bucknell Road to the south and associated infrastructure.	1.5 km north east	Awaiting decision
		14/02121/OUT	Development to provide up to 1,700 residential dwellings (Class C3), a retirement village (Class C2), flexible commercial floorspace (Classes A1, A2, A3, A4, A5, B1, C1 and D1), social and community facilities (Class D1), land to accommodate one energy centre and land to accommodate one new primary school (up to 2FE) (Class D1). Such development to include provision of strategic landscape, provision of new vehicular, cycle and pedestrian access routes, infrastructure and other operations (including demolition of farm buildings on Middleton Stoney Road)	1.3 km north east	Awaiting decision
12	Bicester Sports Association The Tudor Jones Building Akeman Street Chesterton Bicester OX26 1TH	19/00934/F	Change of Use of Agricultural land and extension of the existing Bicester Sports Association facilities for enhanced sports facilities including relocation and reorientation of existing pitches and archery zone, 2 No training pitches with floodlighting, 2 No match pitches, new flexible sports pitch, new rugby training grids, new clubhouse with events space, new rifle and shooting range, cricket scorers building, storage and maintenance buildings and provision of	350m south	Awaiting decision

Ref Number	Development	Planning Application Reference	Description	Approximate Distance from the Site	Status as of June 2019
			associated car parking, amended access, landscaping and other associated works		

Figures



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Date Modified: 24/06/2019 10:51

wsp

TITLE:

Great Wolf Lodge, Oxfordshire

FIGURE No:

Figure 1 - Site Location Plan


Key
Red Line Boundary
0 25 50 75 100
m
Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
wsp
TITLE:
Great Wolf Lodge, Oxfordshire
FIGURE No:
Figure 2 - Red Line Boundary
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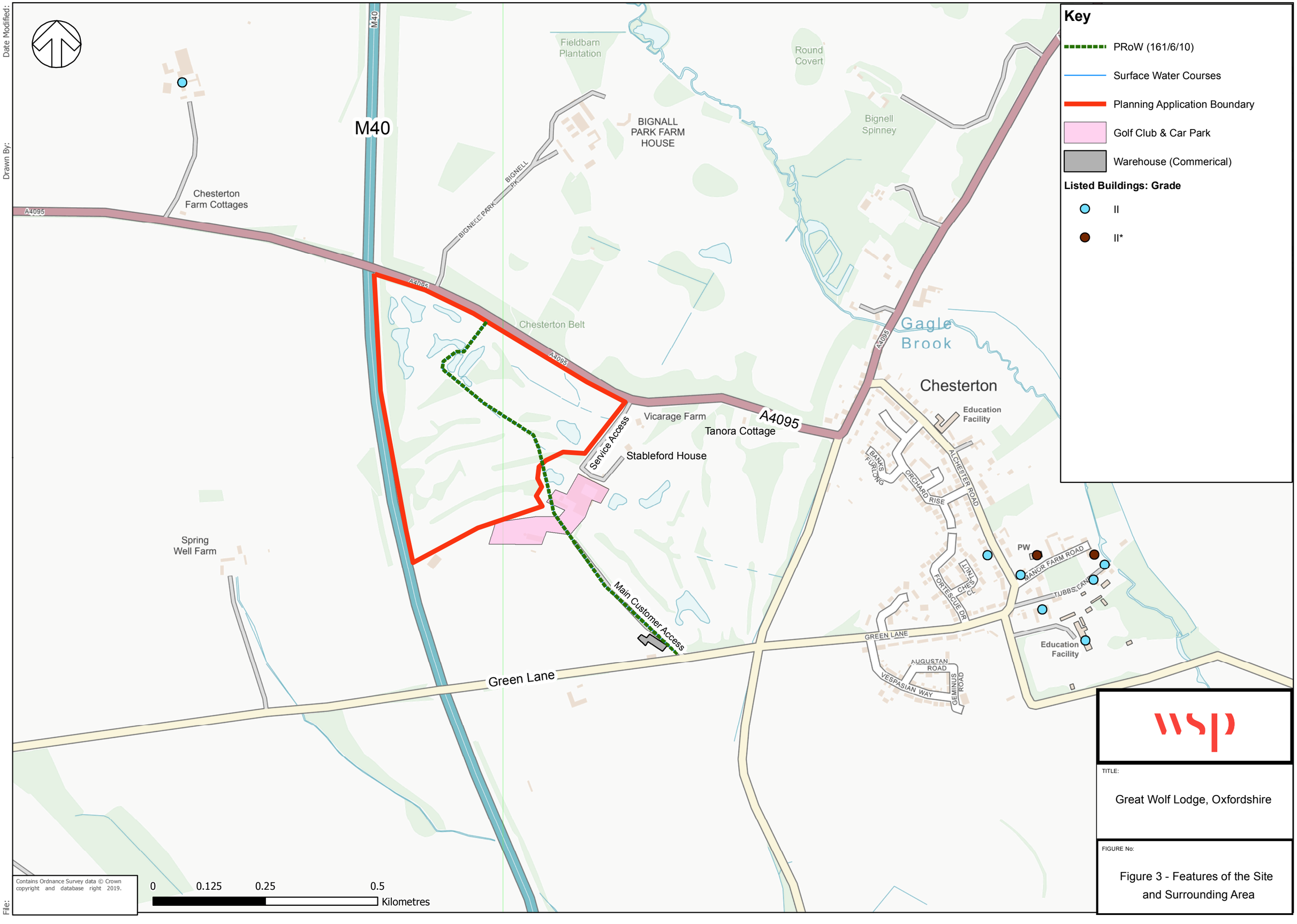

Key

- PRoW (161/6/10)
- Surface Water Courses
- Planning Application Boundary
- Golf Club & Car Park
- Warehouse (Commerical)

Listed Buildings: Grade

- II
- II*

0 0.125 0.25 0.5 Kilometres

wsp

TITLE:

Great Wolf Lodge, Oxfordshire

FIGURE No:

Figure 3 - Features of the Site and Surrounding Area