

## 12 ECOLOGY AND NATURE CONSERVATION

### 12.1 INTRODUCTION

12.1.1 This chapter of the ES assesses the likely levels of significant effects of the Proposed Development in terms of Ecology and Nature Conservation. The chapter describes the assessment methodology; the baseline conditions at the Site and its surroundings; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. This chapter has been prepared by Aspect Ecology.

12.1.2 The scope of the assessment is largely focused on the Application Site itself, although consideration has been given to ecological features within the site surrounds. Notably, the desktop study has included a search for ecological designations up to 15km from the Application Site boundary.

### 12.2 ASSESSMENT APPROACH

#### **Methodology**

##### Survey and Evaluation Methodology

12.2.1 The methodology utilised for the survey work can be split into three main areas: a desktop study, habitat survey and faunal surveys. In addition, the assessment has been informed by a review of previous ecological survey work undertaken at the Application Site.

##### Desktop Study

12.2.2 In order to compile background information on the Application Site and its immediate surroundings, the following organisation was contacted, with data requested on the basis of a search radius of 2.5km for designations and 2km for species:

- Thames Valley Environmental Records Centre

12.2.3 Relevant information received from the above organisation has been reproduced at **Appendix 12.1** and where appropriate on **Figure 12.1**.

12.2.4 Information on statutory designated sites was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC) database, which utilises data provided by Natural England. This information is reproduced at **Appendix 12.2**, and where appropriate on **Figure 12.1**.

##### Habitat Survey

12.2.5 The Application Site was originally surveyed in May 2015 in order to ascertain the general ecological value of the land contained within the Application Site boundary and to identify the main habitats associated with the Application Site. An update survey was undertaken in June 2016 to assess if the habitats had significantly changed from the original survey.

12.2.6 The Application Site was surveyed based on extended Phase 1 survey methodology (Joint Nature Conservation Committee, 2010), as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic

habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

12.2.7 Using the above method, the Application Site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.

#### Faunal Surveys

12.2.8 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Specific attention was also paid to the potential presence of any protected, rare or notable species. Specific surveys have been undertaken in respect of bats, Badger, reptiles, and Great Crested Newts.

12.2.9 **Bats - Buildings.** The buildings/structures within the Application Site were subject to inspection surveys in May 2015 and June 2016. Exterior checks of all buildings/structures were undertaken in order to search for signs of any use by bats. Binoculars were used to inspect any inaccessible areas more closely.

12.2.10 Internal inspections were undertaken on all on-site buildings and the presence of bats was searched for with particular attention paid to any roof spaces and gaps between rafters and beams. Specific searches were made for bat droppings that can indicate present or past use and the extent of use, whilst other signs that can indicate the possible presence of bats were also searched for, e.g. presence of stained areas or feeding remains.

12.2.11 **Bats – Trees.** Trees were assessed for their potential to support roosting bats based on the presence of features such as holes, cracks, splits or loose bark. The trees were originally assessed in May 2015, but were subject to a reassessment in June 2016 against criteria set out within the publication 'Bat Surveys For Professional Ecologists - Good Practice Guidelines,' by the Bat Conservation Trust (BCT) (2016), and were categorised into:

- High;
- Moderate;
- Low; or
- Negligible.

12.2.12 Any potential roost features identified were also inspected for any signs indicating possible use by bats, e.g. staining, scratch marks, bat droppings, etc.

12.2.13 **Bats – Dusk emergence and Dawn re-entry.** Based on the findings from the May 2015 inspection surveys, further survey work was carried out on buildings B1, B17, and B10, in which feeding perches were recorded (Figure 12.3). These surveys were conducted during multiple visits between the 15<sup>th</sup> June 2015 and 25<sup>th</sup> June 2015. Each roost was subject to two dusk and two dawn surveys, the dawn surveys following within the same 24 hour period as the dusk surveys. Surveys were undertaken by multiple surveyors, using heterodyne bat detectors, positioned in close proximity to the roost locations. The timing of the surveys accords with Natural England's Standing advice for bats, and the Bat Conservation Trust's 2016 best practice guidelines. The dusk survey ~~commence~~commences approximately half an hour before sunset, finishing approximately 2 hours after, while the dawn surveys commenced 2 hours before sunrise, finishing just after sunrise. The survey work was undertaken during suitable weather conditions as set out in **Table 12.1** below.

12.2.14 See **Tables 12.3 to 12.5** to review results and note dates each building was surveyed.

12.2.15 To assist with the identification of bat species, records taken from the surveys were analysed using the computer program BatSound. BatSound provides a visual and acoustic representation of the bat recording, which allows the measurements of peak

amplitude and frequency characteristics of recorded waveforms to be compared against established parameters.

**Table 12.1.** Weather Conditions for Dusk and Dawn Survey Work

Date	Weather During The Night
15th - 16th June 2015	20% cloud cover at sunset becoming 90% by sunrise. BF1 and dry throughout the night, whilst the teperature dropped from 13 to 11°C.
22nd - 23rd June 2015	80% cloud cover at sunset becoming 10% by sunrise. BF2 and dry thughout the night, although occasional gusts at dusk noted. Temperature dropped from 12 to 11°C.
23rd - 24th June 2015	60% cloud cover at sunset becoming 80% by sunrise. BF1 and dry throughout the night, whilst the temperature dropped from 17 to 14°C
24th - 25th June 2015	20% cloud cover at sunset becoming 10% by sunrise. BF1 and dry throughout the night, whilst the teperature dropped from 17 to 15°C.

12.2.16 **Badgers.** A Badger survey was conducted in May 2015 and June 2016, and consisted of two main elements. Firstly, searching thoroughly for evidence of Badger setts. For any setts that were encountered each sett entrance was noted and plotted even if the entrance appeared disused. The following information was recorded:

- The number and location of well used or very active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.
- The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

12.2.17 Secondly, Badger activity such as well-worn paths and push-throughs, snagged hair, footprints, latrines and foraging signs was recorded to provide a picture of the Badger use of the Application Site.

12.2.18 **Great Crested Newts.** A single waterbody lies within the Application Site (see P1 on **Figure 12.2**), in the form of an oil-interceptor tank associated with the previous use of the Application Site by the RAF. A second waterbody (P2) lies 55m to the east of the Application Site. These waterbodies were subject to update survey work in 2015 and 2016 as part of a monitoring exercise (see **Appendix 12.3**); the results from which have been utilised to further inform the assessment of any potential effects on this species group from the Proposed Development.

12.2.19 **Reptiles.** In order to establish the presence/likely absence of reptiles the Application Site was subject to a detailed survey in June and July 2015. A total of 135 refugia in the form of 50x50cm squares of thick roofing felt were strategically placed at approximately 10m intervals at ground level in the suitable reptile habitat throughout the Application Site. Reptiles are ectothermic (cold blooded) and use the roofing felt to bask on or under so as to raise their body temperature which in turn allows them to forage earlier and later in the day. These refugia were checked on 7 separate occasions, in accordance with the Froglife Advice Sheet 10: Reptile Survey (November 1999), at appropriate times of the day (morning and afternoon/evening) during suitable weather conditions, e.g. intermittent or hazy sunshine, not too windy, sunny spells following wet or cloudy weather.

12.2.20 During refugia surveys reptiles were also actively searched for in suitable locations throughout the Application Site, such as under logs and sheets of corrugated metal.

**Table 12.2.** Survey times and prevailing weather conditions for reptile surveys

Date	Weather During the Survey
25 <sup>th</sup> June 2015	Warm and overcast, temperature 20°C, 95% cloud cover and wind BF 2.
29 <sup>th</sup> June 2015	Overcast but clearing, temperature 17°C, 80% cloud cover and wind BF 1.
1 <sup>st</sup> July 2015	A clear and calm day, temperature of 16°C, 20% cloud cover and wind BF 1.
5 <sup>th</sup> July 2015	A warm and clear morning, temperature 18°C, 10% cloud cover and wind BF 1.
7 <sup>th</sup> July 2015	Some rain preceding the survey, temperature 17°C, 70% cloud cover and wind BF 2.
15 <sup>th</sup> July 2015	Light rain at start of survey but clearing, temperature 18°C, 100% cloud cover and wind BF 1.

Evaluation of Ecological Baseline

12.2.21 The evaluation of ecological features and resources should be based on sound professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described in ‘Guidelines for Ecological Impact Assessment in the UK and Ireland’ published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2016<sup>1</sup>. In evaluating ecological features and resources the following key factors are taken into account:

12.2.22 **Geographic Frame of Reference.** The value of an ecological feature or resource is determined within a defined geographical context using the following frame of reference:

- International
- National
- Regional
- County (or Metropolitan)
- District (or Unitary Authority, City or Borough)
- Local (or Parish)
- At the Site level only

12.2.23 Within this frame of reference, certain sites may carry a statutory ecological designation, e.g. Special Area of Conservation (SAC) for internationally important sites or Site of Special Scientific Interest (SSSI) for sites of national importance.

12.2.24 Sites of more localised nature conservation importance do not receive statutory protection but may be designated by Local Planning Authorities or other bodies, e.g. Wildlife Trusts. Such non-statutory designations or “Local Sites”<sup>1</sup> include County Wildlife Sites (CWSs) and Sites of Nature Conservation Interest (SNCIs), for example.

12.2.25 **Biodiversity Value: Habitats** - In certain cases, the value of a habitat can be measured against known selection criteria, e.g. SAC selection criteria, “Guidelines for the selection of biological SSSIs” and the Hedgerows Regulations 1997. However, for the majority of commonly encountered sites, the most relevant habitat evaluation will be at a more localised level and based on relevant factors such as antiquity, size, species-diversity, potential, naturalness, rarity, fragility and typicalness (Ratcliffe, 1977). The ability to restore

<sup>1</sup> DEFRA (2006) “Local Sites – Guidance on their Identification, Selection and Management”

or re-create the habitat can also be an important consideration, for example in the case of ancient woodland.

12.2.26 Regard should also be given to habitats listed as priorities for conservation, so called "Priority Habitats", in accordance with Section 41 of the NERC Act 2006, as the likely effect of a development on such habitats is a potential material consideration within the planning process. Certain habitats may also be listed within more regionally or locally specific BAPs, albeit the listing of a particular habitat under a BAP does not in itself imply any specific level of importance.

12.2.27 *Species* - The assessment of the value of a species is based on factors including distribution, status, historical trends, population size and rarity. With respect to rarity, this can apply across the geographic frame of reference and particular regard is given to populations where the UK holds a large or significant proportion of the international population of a species.

12.2.28 For certain species groups, e.g. waterfowl, there are established criteria that can be used for defining nationally and internationally important populations.

12.2.29 Regard should also be given to species listed as priorities for conservation in the UK in accordance with Section 41 of the NERC Act 2006, so called "Priority Species". Certain species may also be listed within more regionally or locally specific BAPs, albeit as with habitats the listing of a particular species under a BAP does not in itself imply any specific level of importance.

12.2.30 **Secondary or Supporting Value.** Some habitats or features that are of no intrinsic biodiversity value may nonetheless perform an ecological function, e.g. as a buffer. In addition, certain features of the landscape which by virtue of their linear or continuous nature (e.g. rivers) or their function as "stepping stones" (e.g. small woods) may be of value for the migration, dispersal and genetic exchange of wild species.

12.2.31 **Other Value.** Other tertiary factors may also be relevant in evaluating the value of a particular ecological receptor including social and economic factors.

#### The Five Point Approach

12.2.32 The National Planning Policy Framework (NPPF)<sup>2</sup> describes the Government's national policies on the protection of biodiversity [and geological] conservation through the planning system. NPPF emphasises the need for planning authorities to ensure that the potential effects of planning decisions on biodiversity conservation are fully considered. A five-point best practice approach<sup>3,4,5</sup> to the assessment of such effects within the development control process is recommended:

- **Information** – gathering a sufficient evidence base on which to make sound planning decisions
- **Avoidance** – adverse effects on habitats and species should be avoided where possible
- **Mitigation** – where it is unavoidable, mitigation measures should be employed to minimise adverse effects
- **Compensation** – where residual effects remain after mitigation it may be necessary to provide compensation to offset any harm
- **New benefits** – many planning decisions present the opportunity to deliver

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<sup>2</sup> Department for Communities and Local Government (2012) "National Planning Policy Framework"

<sup>3</sup> Royal Town Planning Institute (1999) "Planning for Biodiversity – Good Practice Guide"

<sup>4</sup> ODPM (2006) "Planning for Biodiversity and Geological Conservation – A Guide to Good Practice"

<sup>5</sup> BSI Standard Publication (2013) "BS42020:2013 Biodiversity – Code of Practice for Planning and Development"

enhancements for habitats or species

12.2.33 The assessment of ecological effects set out within this report are based on the above five-point approach, where appropriate.

**Assessment of Significance**

12.2.34 The methodology utilised for assessing ecological impacts is based on the guidance contained within the 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2016) and the 'Biodiversity – Code of practice for planning and development' British Standard (BS 42020:2013), as described below.

12.2.35 In accordance with the CIEEM guidance and EIA Regulations, the detailed assessment of effects should be focused on those ecological resources for which a significant effect is likely to be generated. Therefore, ecological features or resources should only be selected for assessment where that feature or resource is sufficiently valuable (with value determined as described above), in terms of biodiversity, for an effect to be significant.

12.2.36 The magnitude of any given effect is determined through professional judgement taking into account factors including duration, reversibility (permanent or temporary), extent, timing, frequency and certainty (e.g. certain, probable or unlikely).

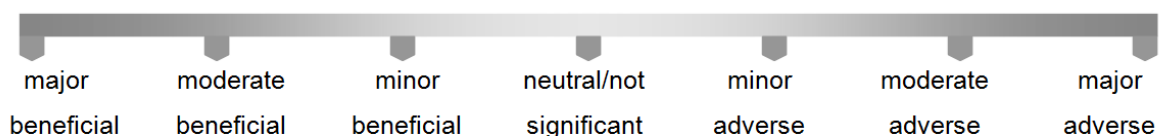
12.2.37 The magnitude of any effect is in turn used in conjunction with 'conservation status' to determine whether an effect on a habitat or species is likely to constitute an ecologically significant effect. Conservation status is defined as:

- For *habitats* – The sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area; and
- For *species* – The sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.

12.2.38 In the case of impacts on designated sites, e.g. SSSI's, SPA's, SAC's, it may be more relevant to consider effects on integrity, which is defined as follows<sup>6</sup>: **"the integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified"**.

12.2.39 Effects can be positive (beneficial), negative (adverse) or neutral in nature. Where the integrity of a designated site or the favourable conservation status of a habitat or species, is undermined, the effect could be negative and significant. A significant positive effect could be defined as one that prevented or slowed an existing decline in the integrity or the favourable conservation status of a habitat or population as much as one that permitted a population or habitat area to increase. A seven point scale has been used to record likely significant effects as follows:

**Diagram 12.1: Significance Scale**



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<sup>6</sup> Institute of Ecology and Environmental Management. (2006). "Guidelines for Ecological Impact Assessment in the United Kingdom" (version 7 July 2006)

12.2.40 The best practice guidance does not define or advocate the use of specific scales or matrices for assessing ecological effects and accordingly the above scale has been applied, based on professional judgement, solely to provide a broadly intuitive understanding of the relative significance of effects. For example, a 'major adverse' effect might occur where the integrity of an SAC or SPA is compromised, whereas a 'neutral / not significant' effect might be the temporary loss of breeding habitat for a common bird species that would not affect the long-term distribution and abundance of its populations within the given geographical area.

#### **Limitations of the Assessment**

12.2.41 All of the botanical species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of year, since different species are apparent during different seasons. However, the survey area was visited on at least two occasions, ensuring that detailed habitat information could be gathered during the appropriate botanical survey season for each habitat type. It is therefore considered that the survey work has allowed a satisfactory assessment of habitats and botanical interest across the Application Site. Furthermore, habitat survey work was updated in June 2016, ensuring that habitat survey information submitted in support of the application is current and up to date.

12.2.42 The specific Phase 2 surveys were undertaken at the appropriate time of year and during suitable weather conditions to an appropriate level of survey effort. Update work has been undertaken in 2016, where appropriate, to ensure that faunal survey information submitted in support of the application is current and up to date. Any specific limitations are noted in the relevant sections above or discussed in the results section, although no significant constraints were experienced. The surveys undertaken are therefore considered to allow a satisfactory assessment of the ecological interest of the Application Site to be made.

#### **Legislative and Policy Framework**

12.2.43 The planning policy framework that relates to nature conservation issues in Upper Heyford, Oxfordshire, is issued at two main administrative levels – Nationally through the National Planning Policy Framework, and locally through the Adopted Local Plan (1996), Non-Statutory Cherwell Local Plan 2011 and the emerging Cherwell Local Plan 2011 - 2030. Any Proposed Development will be considered in relation to the policies contained in these planning documents.

##### National Planning Policy Framework (NPPF)

12.2.44 Guidance on National Policy for biodiversity and geological conservation is provided within the National Planning Policy Framework, published by the Department for Communities and Local Government in March 2012. The National Planning Policy Framework confirms the Government's commitment to conserving and enhancing the natural and local environment through the planning system, including specific reference to maintenance and enhancement of biodiversity.

12.2.45 The NPPF requires Local Authorities to fully consider the effect of planning decisions on biodiversity and geodiversity, and ensure that appropriate weight is attached to statutory nature conservation designations, protected species and biodiversity and geological interests within the wider environment. In determining planning applications, Local Authorities should aim to conserve and enhance biodiversity by ensuring significant harm resulting from development is avoided, adequately mitigated or compensated. In addition, the planning system should seek to provide net gains in biodiversity, where possible.

### Local Policy

12.2.46 Planning policy in Upper Heyford at the local level in respect of Ecology and Nature Conservation is set out within The Cherwell Local Plan 2011 – 2031. In addition, the Local Plan 1996 has a number of saved policies which will remain in effect until replaced by part 2 of The Cherwell Local Plan 2011 – 2031.

*The Cherwell Local Plan 2011 – 2031 (July 2015)*

12.2.47 The Cherwell Local Plan sets out broadly how the district will grow and change in the period up to 2031 and the long term spatial vision for the local authority area and the objectives and strategic policies to deliver that vision. The Cherwell Local Plan incorporates two policies (**ESD9** and **ESD10**) concerned with ecology/biodiversity which are potentially relevant to the Application Site.

12.2.48 **Policy ESD9** is concerned with the protection of Oxford Meadows SAC:

**“Developers will be required to demonstrate that:**

- **During the construction of the development there will be no adverse effects on the water quality or quantity of any adjacent or nearby watercourse**
- **During operation of the development any run-off of water into adjacent or surrounding watercourses will meet Environmental Quality Standards (and where necessary oil interceptors, silt traps and Sustainable Drainage Systems will be included)**
- **New development will not significantly alter groundwater flows and that the hydrological regime of the Oxford Meadows SAC is maintained in terms of water quantity and quality**
- **Run-off rates for surface water from the development will be maintained at Greenfield rates.”**

12.2.49 **Policy ESD10** relates to the protection and enhancement of biodiversity and the natural environment:

**“Protection and enhancement of biodiversity and the natural environment will be achieved by the following:**

- **In considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new resources**
- **The protection of trees will be encouraged, with an aim to increase the number of trees in the district**
- **The reuse of soils will be sought**
- **If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or as a last resort, compensated for, then development will not be permitted.**
- **Development which would result in damage to or loss of a site of international value will be subject to the Habitats Regulations**



**Assessment process and will not be permitted unless it can be demonstrated that there will be no likely significant effects on the international site or that effects can be mitigated**

● **Development which would result in damage to or loss of a site of biodiversity or geological value of national importance will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site and the wider national network of SSSIs, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity**

● **Development which would result in damage to or loss of a site of biodiversity or geological value of regional or local importance including habitats of species of principal importance for biodiversity will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity**

● **Development proposals will be expected to incorporate features to encourage biodiversity, and retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity**

● **Relevant habitat and species surveys and associated reports will be required to accompany planning applications which may affect a site of known or potential ecological value**

● **Air quality assessments will also be required for development proposals that would significantly adversely impact on biodiversity by generating an increase in air pollution**

● **Planning conditions/obligations will be used to secure net gains in biodiversity by helping to deliver Biodiversity Action Plan targets and/or meeting the aims of Conservation Target Areas. Developments for which these are the principals aims will be viewed favourably**

● **A monitoring and management plan will be required for biodiversity features on site to ensure their long term suitable management."**

*Adopted Local Plan 1996*

12.2.50 The Local Plan incorporates three `saved` policies (**C1**, **C2** and **C4**) concerned with nature conservation in Upper Heyford, which will remain in effect until replaced by Local Plan Part 2 (under preparation).

12.2.51 **Policy C1** relates to the protection of areas of nature conservation interest and states:

**"The council will seek to promote the interests of Nature Conservation. Development which would result in damage to or loss of Sites of Special Scientific Interest or other areas of designated wildlife or scientific importance will not normally be permitted.**

**Furthermore, the Council will seek to ensure the protection of sites of local nature conservation value. The potential adverse affect of Development on such sites will be a material consideration in determining planning applications."**

12.2.52 **Policy C2** is concerned with protected species:

**"Development which would adversely affect any species Protected by Schedule 1, Schedule 5 and Schedule 8 of the 1981 Wildlife and Countryside Act, and by the E.C Habitats Directive 1992 will not normally be permitted."**

12.2.53 **Policy C4** refers to the promotion of creation of new habitats, particularly in urban areas and states:

**"The Council will seek to promote the creation of new habitats. In urban areas the Council will promote the interests of nature conservation within the context of new development and will establish or assist with the establishment of ecological and nature conservation areas, where such areas would further the opportunity for environmental education and passive recreation and would not conflict with other policies in the Plan."**

#### *Non-Statutory Cherwell Local Plan 2011*

12.2.54 The Non-statutory Cherwell Local Plan 2011 was approved by the Local Planning Authority as `interim policy`, although some of the policies have since been supersede by those within the Adopted Cherwell Local Plan 2011-2031. The policies within the Non-statutory Cherwell Local Plan 2011 that relate to ecology and nature conservation are **EN1, EN2, EN22, EN23, EN24, EN25, EN27** and **EN35**.

12.2.55 **Policy EN1** states:

**"In determining planning applications the Council will take into account the likely impact of a proposal on the natural and built environment and will seek to enhance the environment whenever possible. Development which would have an unacceptable environmental impact will not be permitted."**

12.2.56 **Policy EN2** states:

**"In exceptional circumstances, where a development proposal is essential, but is likely to result in demonstrable harm to the environment and has no acceptable alternative, then in addition to appropriate mitigation measures, the Council will seek compensation for the environmental resource harmed or lost in order to conserve and enhance the overall quality of the environment. The type of environmental compensation should be the same as the resource which is being replaced. Replacement of some environmental resources will not be appropriate in any circumstances."**

12.2.57 **Policy EN22** relates to enhancing biodiversity through development proposals incorporating features of nature conservation value within the Application Site and states:

**“Development proposals will be expected to incorporate features of nature conservation value within the site. Features of value should be retained and enhanced wherever possible. The use of planning conditions or planning obligations will be sought to secure their protection and management, or the provision of compensatory measures where appropriate.”**

12.2.58 **Policy EN23** relates to the submission of an ecological survey assessing the likely impacts on nature conservation resources within a Proposed Development site and states:

**“Before determining an application for development which may affect a known or potential site of nature conservation value, applications will be required to submit an ecological survey to establish the likely impact on the nature conservation resource.”**

12.2.59 **Policy EN24** relates to the control of development affecting sites or species of nature conservation importance to promote the interests of nature conservation and states:

**“The Council will seek to promote the interests of nature conservation through the control of development. Proposals which would result in damage to or loss of a site of ecological or geological value will not be permitted unless:**

- **In the case of an internationally important site, there is no alternative solution and there are imperative reasons of over-riding public interest for the development; or**
- **In the case of a nationally important site, the reasons for the development clearly outweigh the ecological or geological value of the site and the national policy to safeguard the national network of such sites; or**
- **In the case of a site or regional or local importance for its ecological or geological value, the reasons for the development clearly outweigh the ecological or geological value of the site.**
- **In all cases where development is permitted, damage must be kept to a minimum. The Council will use conditions or planning obligations to protect and enhance the site’s ecological or geological interest and to provide mitigation and compensatory measures where appropriate.”**

12.2.60 **Policy EN25** relates to protected species;

**“Development which would adversely affect any species protected by Schedule 1, Schedule 5 and Schedule 8 of the 1981 Wildlife and Countryside Act, and by the E.C. Habitats Directive 1992, or its Habitat will not be permitted.”**

12.2.61 **Policy EN27** relates to new habitat creation being incorporated into new developments;

**“Development proposals should incorporate the creation of new habitats, particularly those concerning priority habitats or species, wherever possible. The Council will promote the interest of nature conservation within the context of the new development and will establish or assist with the establishment of ecological and nature**

**conservation areas, where such areas would further the opportunity for environmental education and passive recreation.”**

12.2.62 **Policy EN35** relates to the retention of woodlands, trees, hedges, ponds, walls and any other features of ecological value and the design of mitigation and/or compensation for the loss of such features.

**“The Council will seek to retain woodlands, trees, hedges, ponds, wall and other features which are important to the character or appearance of the local landscape as a result of their ecological, historic or amenity value. Proposals which would result in the loss of such features will not be permitted unless their loss can be justified by appropriate mitigation and/or compensation measures to the satisfaction of the Council.”**

### **Legislation**

12.2.63 **Badger.** In the UK the relevant legislation pertaining to Badger is the Protection of Badgers Act 1992. The legislation aims to protect the species from persecution, rather than being a response to an unfavourable conservation status, as the species is in fact common over most of Britain. It should be noted that the legislation is not intended to prevent properly authorised development. It is the duty of planning authorities to consider the conservation and welfare impacts of development upon Badger and issue permissions accordingly.

12.2.64 Under the Protection of Badgers Act it is an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat\* a Badger, or attempt to do so;
- To intentionally or recklessly interfere with a sett# (this includes disturbing Badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it).

\* The intentional elimination of sufficient foraging area to support a known social group of Badgers may, in certain circumstances, be construed as an offence by constituting “cruel ill treatment” of a Badger.

# A sett is defined as “any structure or place which displays signs indicating current use by a Badger”. Advice issued by Natural England (June 2009) is that a sett is protected as long as such signs remain present, which in practice could potentially be for some time after the last actual occupation by Badger.

12.2.65 Licences can be obtained from the Statutory Nature Conservation Organisation (SNCO) for development activities that would otherwise be unlawful under the legislation. Guidance on the types of activity that should be licensed is laid out in the publications “Badgers and Development” (English Nature, 2002) and “Badgers and Development: A Guide to Best Practice and Licensing. Interim Guidance Document” (Natural England, 2011). For example, excavation work or use of heavy machinery within 20m of any entrance to an active Badger sett may require a licence.

12.2.66 **Bats.** All British bats are classed as European Protected Species and therefore receive protection under the Conservation of Habitats and Species Regulations 2010 (as amended), making it an offence *inter alia* to:

- Deliberately kill, injure or capture a bat;
- Deliberately disturb bats, including in particular any disturbance which is likely to impair their ability to survive, to reproduce or to rear or nurture

their young, or their ability to hibernate or migrate, or which is likely to affect significantly their local distribution or abundance;

- Damage or destroy a breeding site or resting place of a bat.

12.2.67 In addition, all British bats are also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which contains further provisions making it an offence to intentionally or recklessly:

- Obstruct access to any structure or place which any bat uses for shelter or protection; or
- Disturb bats while occupying a structure or place that it uses for that purpose.

12.2.68 If Proposed Development work is likely to result in an offence a licence will need to be obtained from Natural England which would be subject to appropriate measures to safeguard bats.

12.2.69 There are at least 17 breeding bat species in Britain. Many of them are considered threatened due to a variety of factors including habitat loss and disturbance/damage to roosts. Of these 17 species, a number regularly use buildings and trees as roost sites.

12.2.70 **Amphibians.** All British amphibian species receive a degree of protection under the 1981 Wildlife and Countryside Act (as amended). The level of protection varies from protection from sale or trade only, as is the case with species such as Smooth Newt *Triturus vulgaris* and Common Toad *Bufo bufo*, to the more rigorous protection afforded to species such as the Great Crested Newt.

12.2.71 Although Great Crested Newts are regularly encountered throughout much of lowland England and Wales, the UK holds a large percentage of the world population of the species. As such, the UK has an international obligation to conserve the species and it receives full protection under domestic and European legislation. Specifically, Great Crested Newt is classified as a European Protected Species and therefore receives protection under the Conservation of Habitats and Species Regulations 2010 (as amended), making it an offence *inter alia* to:

- Deliberately kill, injure or capture a Great Crested Newt;
- Deliberately disturb Great Crested Newts, including in particular any disturbance which is likely to impair their ability to survive, to reproduce or to hibernate, or migrate, or which is likely to affect significantly their local distribution or abundance;
- Deliberately take or destroy the eggs of a Great Crested Newt;
- Damage or destroy a breeding site or resting place of a Great Crested Newt.

12.2.72 In addition, the Great Crested Newt is also listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which contains further provisions making it an offence to intentionally or recklessly:

- Obstruct access to any structure or place which any Great Crested Newt uses for shelter or protection; or
- Disturb any Great Crested Newt while occupying a structure or place which it uses for that purpose.

12.2.73 If Proposed Development work is likely to result in an offence a licence may need to be obtained from Natural England which would be subject to appropriate measures to safeguard Great Crested Newt.

12.2.74 **Reptiles.** All six species of British reptile are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). However, a higher level of protection is afforded

to Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* than to Adder *Vipera berus*, Grass Snake *Natrix natrix*, Slow-worm *Anguis fragilis* and Common Lizard *Lacerta vivipara*.

12.2.75 For all British reptile species, Section 9 of the Wildlife and Countryside Act 1981 (as amended) contains provisions making it an offence to intentionally:

- Kill or injure; or to
- Sell, offer for sale or trade any British reptile.

12.2.76 Because Slow-worm, Common Lizard, Grass Snake and Adder are relatively widespread British species, their habitat is not directly protected. Nevertheless, because of their partial protection, disturbing or destroying their habitat whilst they are present may lead to an offence.

12.2.77 **Birds.** Section 1 of the Wildlife & Countryside Act 1981 (as amended) is concerned with the protection of wild birds. With certain exceptions, all wild birds are protected such that it is an offence to intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird whilst in use\* or being built;
- Take or destroy an egg of any wild bird.

\*The nests of birds that re-use their nests as listed under Schedule ZA1, e.g. Golden Eagle, are protected against taking, damage or destruction irrespective of whether they are in use or not.

12.2.78 Species listed under Schedule 1 of the Act receive greater protection such that they are also protected against intentional or reckless disturbance whilst building a nest or whilst they are in, on or near a nest containing eggs or young. The dependent young of Schedule 1 birds are also protected against intentional or reckless disturbance. Offences in respect of Schedule 1 species are subject to special, i.e. greater, penalties.

12.2.79 *Conservation Status.* The RSPB categorise British bird species in terms of conservation importance based on a number of criteria including the level of threat to a species' population status<sup>7</sup>. Species are listed as Green, Amber or Red. Red Listed species are considered to be of the highest conservation concern being either globally threatened and or experiencing a high/rapid level of population decline (≈50% over the past 25 years).

## 12.3 BASELINE CONDITIONS

### Site Description and Context

12.3.1 The Application Site is located in a semi-rural context in Oxfordshire. The Application Site is bound to the north by Camp Road, beyond which lies Heyford Park, to the east by existing residential development, and to the west by Kirtlington Road. Beyond Kirtlington Road and also bounding the Application Site to the south is arable land.

12.3.2 The Application Site itself is part of previously developed land, which formed the school grounds for the RAF base. Accordingly building complexes are present throughout the Application Site, providing class rooms and other amenities. Surrounding the buildings are pockets of amenity planting, and a network of hard-surfaced roads which provide access from Camp Road. Areas of grassland are present throughout the Application Site, the largest areas of which lie within the east and south of the Application Site. Lines of trees are present along the Application Site boundaries and partially around the sports pitch that lies just beyond the eastern site boundary. Hedgerows also demarcate the

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<sup>7</sup> RSPB "The population status of birds in the UK - Birds of Conservation Concern: 2009"

boundaries where roads lie immediately beyond, and recolonising ground and scattered scrub are also present.

### **Baseline Survey Information**

#### Nature Conservation Designations

12.3.3 The Application Site is not subject to any statutory or non-statutory nature conservation designation; the nearest nature conservation designations to the Application Site is set out below and shown on **Figure 12.1**.

12.3.4 **Statutory Designations.** The nearest statutory nature conservation designation is Ardley Cutting and Quarry Site of Special Scientific interest (SSSI) located approximately 2.9km to the north-east of the Application Site, and is a section of the disused London to Birmingham railway line which is composed of calcareous grassland, ancient woodland and wetland. The next nearest statutory nature conservation designation is Ardley Trackways SSSI, located approximately 3.0km to the east of the Application Site. These and other statutory nature conservation designations in the local area are separated from the Application Site by existing development and arable land. The proposed development area largely lies outside the zone of influence for the Ardley Cutting and Quarry SSSI and only just within the zone of influence for Ardley Trackways SSSI. However, both of these zones relate to the construction of airports, helipads or other aviation proposals, and from potential air pollution from pig/poultry units, and slurry lagoons. Accordingly, the proposed residential development is considered unlikely to impact on either of the SSSIs.

12.3.5 Oxford Meadows Special Area of Conservation (SAC) lies approximately 15km to the south of the Application Site, and as such is well separated from the Application Site by development and open countryside.

12.3.6 **Non-statutory Designations.** The nearest non-statutory nature conservation designation is Rush Spinney Local Wildlife Site (LWS), a small area of marsh within improved pasture, located approximately 0.8km to the west of the Application Site.

12.3.7 The next nearest non-statutory designation is Upper Heyford Airfield LWS, which is designated based on the presence of the Priority Habitat 'Lowland Calcareous Grassland', is also noted to be utilised by a number of Priority Species of bird, including Skylark, Curlew, Grey Partridge, Corn Bunting, and Tree Sparrow, and lies approximately 1.4km to the north-east of the Application Site. Rush Spinney LWS is not readily accessible by car with a lack of parking facilities, whilst Upper Heyford LWS lies within privately owned land with a security controlled entrance, such that neither designation are likely to be subject to significant increases in recreational pressure from the proposed development. A section of this LWS in Upper Heyford is subject to a planning application for re-development to become an area for new employment buildings. An Environmental Statement also accompanied this application and at the time of submission of this application had not been determined.

#### Habitats and Ecological Features

12.3.8 The following main habitat/vegetation types were identified within/adjacent to the Application Site (see **Figure 12.2**):

- Buildings and Hard-surfacing;
- Semi-improved Grassland;
- Hedgerows;
- Trees;
- Amenity Planting;

- Amenity Grassland;
- Scattered Scrub;
- Invasive Species;
- Waterbodies.

**12.3.9 Buildings and Hard-surfacing.** Buildings are present throughout the Application Site, mainly as complexes providing school facilities and associated amenities, and to a lesser extent as recreational sports buildings/structures associated with the baseball pitches. During the update survey in 2016, the buildings were in a similar condition as described below with a slightly increased level of vandalism and dilapidation.

**12.3.10 Buildings B1-B57.** The building complexes are all of the same design and construction, being of brickwork construction with externally rendered walls, forming interconnected single-storey structures connected via corridors. Each single-storey structure is typically 18m in length and 7m in width, with a ceiling to ridge height of approximately 4m, and features a relatively shallow pitched roof supported by a steel 'fink' style framework. The majority of the rooves are open-vaulted with boarding on the underside of the roof, whilst the external surface is lined with corrugated sheet concrete/asbestos. Within a small number of the buildings, a void has been created, and is separated from the room environment below by polystyrene foam ceiling tiles supported by a metal framework. However, the exterior and interior of the buildings are in such a derelict condition, that any void is exposed to the room below due to damaged/deteriorating tiles. These buildings/structures typically have windows on the eastern and western elevations, and doors on the northern and southern elevations either leading to a corridor, which connects all the rooms in the complex, or to the outside. In the majority of cases, the windows are broken and the doors are either open or damaged. Evidence is present to indicate that the buildings were subject to regular bouts of vandalism since the vacation of the Application Site.

**12.3.11** A secondary corridor links two series of buildings/rooms, off from which are typically toilet facilities. The facilities have been vandalised, and any windows associated within these sections of the buildings are generally either broken or open.

**12.3.12 Building B58.** The building lies centrally within the Application Site, and is of brickwork construction and supports a pitched roof supported internally by a steel framework. The external fabric of the building, including the roof, is clad with corrugated prefabricated materials. Windows are present along the southern and northern elevations below the roof line, and doors are present on the western, southern and eastern elevations. The windows are largely broken and the doors, although attempts have been made to secure them, were open at the time of survey. Internally the walls are painted white, although vandalised through graffiti and attempts of arson. The floor is obscured due to the extent of sand present within the building, which itself indicates the buildings was previously used for recreation.

**12.3.13 Building B59.** The building lies centrally within the Application Site, immediately south of building B58. The building is of brickwork construction, and is formed from a number of interconnected sections of varied height. Each section of the building supports a pitched roof clad externally with corrugated sheet concrete/asbestos. Single storey extensions have been integrated into the building and support a flat roof lined externally with roofing felt with weatherboarding at the edges. A large brick built chimney is associated with one of the southern sections of the building. As with other buildings within the Application Site, the windows and doors have been damaged or left open from acts of vandalism.

**12.3.14 Building B60.** The building lies in the south east of the Application Site, and is in a derelict condition. The remainder of the building which still stands is limited to the



internal wooden framework, and an open chimney of brick and concrete construction which lies at the southern end of the building. The section of the roof structure, which would have been a shallow pitch design, that remains is largely limited to wooden boards.

12.3.15 **Building B61.** A small brick built structure with a flat roof, located at the southern Application Site boundary, which contains an electric substation.

12.3.16 **Buildings B62.** These buildings are small open sided structures associated with the baseball pitches in the east of the Application Site. The structures are of breezeblock construction and support a gentle sloping roof formed from corrugate sheet steel. The frontage of the structures have a wide wire mesh screen, and lack doors. The roof to one of the structure has become detached.

12.3.17 **Hard-surfacing.** The access road, and internal road system, are constructed from tarmac and bound by kerbs, whilst pedestrian walkways are formed from concrete and paving slabs. These areas are becoming encroached by vegetation from the adjacent grassland areas, and by opportunistic species utilising cracks within the hard-surfacing.

12.3.18 Overall, the buildings and areas of hard-surfacing are of negligible botanical interest at the site level. In the absence of development, it is anticipated that the buildings would fall further into dilapidation and the condition of the hard-surfacing would further decline, increasing opportunities for recolonisation. However, based on the species recorded within dilapidated areas of hardstanding within the Application Site, further recolonisation would be expected to be by species which are common and widespread in the local context, such that the future botanical interest of this habitat type is unlikely to be ecologically significant. The loss of the buildings and hardstanding to the proposed development would therefore not be considered a significant adverse effect in ecological terms, and therefore does not require further consideration.

12.3.19 **Semi-improved Grassland.** Areas of grassland are present throughout the Application Site, although the largest areas occur adjacent to the western and southern boundaries. At the time of the 2015 survey, the grassland had developed a tussocky character with a sward height averaging 40cm; in June 2016 the height of the grassland was noted to be only marginally taller. The species composition is fairly similar throughout the Application Site, with only a small variation along tracks and pathways in the south of the Application Site.

12.3.20 The grassland is composed of Cock's-foot *Dactylis glomerata*, Perennial Rye-grass *Lolium perenne*, Annual Meadow-grass *Poa annua*, Tufted Hair-grass *Deschampsia cespitosa* and fine-leave fescues *Festuca* spp., which a reasonable coverage of herb species including Daisy *Bellis perennis*, Ribwort Plantain *Plantago lanceolata*, Field Madder *Sherardia arvensis*, Bird's-foot Trefoil *Lotus corniculatus*, Common Mouse-ear *Cerastium fontanum*, Crane's-bill *Geranium* sp., Meadow Buttercup *Ranunculus acris*, Field Forget-me-not *Myosotis arvensis*, Common Fleabane *Pulicaria dysenterica*, Yarrow *Achillea millefolium*, Germander Speedwell *Veronica chamaedrys*, Common Vetch *Vicia sativa*, Common Speedwell *Veronica crista-galli*, Creeping Buttercup *Ranunculus repens*, Campion *Silene* sp., and Yellow Loosestrife *Lysimachia vulgaris*. Ruderal species were also present throughout the sward and include, Creeping Cinquefoil *Potentilla reptans*, Ragwort *Senecio jacobaea*, Creeping Thistle *Cirsium arvense*, Spear Thistle *Cirsium vulgare*, Dandelion *Taraxacum officinale*, Cleavers *Galium aparine*, Common Nettle *Urtica dioica*, Red Dead-nettle *Lamium purpureum*, White Dead-nettle *Lamium album*, Teasel *Dipsacus fullonum*, Black Medick *Medicago lupulina*, Weld *Reseda luteola*, and Burdock *Arctium* sp.

12.3.21 The grassland was in a similar condition during the 2016 update survey as originally recorded in 2014 and there appeared to have no recent management. Additional species observed include Soft-brome *Bromus* sp., Yorkshire-fog *Holcus lanatus*, Timothy *Phleum pratense*, Selfheal *Prunella vulgaris*, Greater Plantain *Plantago major*, White

Campion *Silene latifolia*, Creeping Bent *Agrostis stolonifera*, Lady's Bedstraw *Galium vernum* and Common Sorrel *Rumex acetosa*. An isolated patch of Bee Orchid *Ophrys apifera* was also noted in the south-east corner of the Application Site, adjacent to pond P1.

12.3.22 On average, the species diversity is indicative of semi-improved grassland, with the majority of areas dominated by common grass species and a relatively low abundance of herbs. Overall, the semi-improved grassland is considered to be of low ecological value at the local level. In the absence of development, the species diversity of the grassland would gradually decrease, as the absence of management would allow the taller coarser grass species to become increasingly dominant. In the long term, and without intervention, the grassland would eventually be lost to encroachment by scrub. Accordingly, the loss of the grassland is not considered to result in a significant adverse effect to ecology under the proposals, particularly as grassland of equivalent value will be incorporated within the development as gardens, and retained areas will be enhanced through seeding with an appropriate wildflower grassland seed mixture.

12.3.23 **Hedgerows.** Two hedgerows are associated with the Application Site, which are labelled H1 and H2 on **Figure 12.2**, and described below.

- Hedgerow **H1** lies at the northern Application Site boundary adjacent to Camp Road and is dominated by Hawthorn *Crataegus monogyna*, with frequent Elder *Sambucus nigra* and Ivy *Hedera helix*. The hedgerow was approximately 3m in height at the time of survey and cut to a box-shape through flail cutting. There are gaps within the hedgerow, but these are estimated to cover less than 10% of its entire length. A number of mature trees are associated with the hedgerow including Ash *Fraxinus excelsior*, Sycamore *Acer pseudoplatanus* and Horse Chestnut *Aesculus hippocastanum*.
- Hedgerow **H2** demarcates the western Application Site boundary and lies adjacent to Kirtlington Road. The hedgerow is dominated by Hawthorn, with frequently occurring Elder, Elm *Ulmus* sp., Ivy and Bramble *Rubus fruticosus*. The hedgerow has a varied height, but appears to have been subject to modern management in the recent past. The hedgerow is relatively dense, with few gaps. A number of mature trees are associated with the hedgerow, including Ash, Whitebeam *Sorbus aria* and Horse Chestnut.

12.3.24 The ground beneath the hedgerows is largely composed of a limited number of coarse grasses and ruderal herbs which have colonised from the adjacent grassland.

12.3.25 The two hedgerows associated with the Application Site are composed of a limited range of native species, and whilst H1 is intensively managed, the management regime to H2 appears more relaxed. In addition, the flora beneath is limited to a few grasses and herbs encroached from the adjacent grassland. Although both hedgerows lie adjacent to public roads, connect with other hedgerows, and feature trees (albeit not at the required average of one per 50m), the hedgerows do not have at least 4 wood species, on average, within a 30m length. Accordingly, the hedgerows are unlikely to be classified as important under the Hedgerows Regulations (1997) criteria.

12.3.26 Hedgerows are included within the Section 41 list of the Natural Environmental and Rural Communities (NERC) Act 2006 as a Priority Habitat, and are likely to qualify as such based on the UK BAP Priority Habitat Descriptions (BRIG 2008) for hedgerows. However, the hedgerows are considered not to represent particularly good examples of this habitat type given their limited botanical interest and current management regimes. On balance, the hedgerows are considered to be of ecological value at the local level. In the absence of development, it is anticipated that hedgerow H1 will remain essentially the same, being subject to intensive management with no known future intension for enhancement. In regards to H2, it is anticipated that the structure will eventually exhibit

uneven growth between the managed western side adjacent to the road and the unmanaged eastern side within the Application Site, resulting in a poor structure. The loss of a small sections of H1 to provide additional points of access to the Application Site under the Proposals is not considered to be a significant adverse effect, particularly as the hedgerow will be bolstered in other areas where gaps are present with appropriate native shrub species.

**12.3.27 Trees.** The trees within the Application Site are largely associated with the boundaries and areas of amenity planting (see paragraph 12.3.27). A line of young to semi-mature Sycamore trees demarcate part of the eastern Application Site boundary. Along the northern Application Site boundary, a line of semi-mature Sycamore stand opposite a line of Whitebeam, either side of a public footpath. Along the remainder of the northern boundary, and along the western boundary, trees occur more sporadically and include Sycamore, Ash, Whitebeam, Horse-chestnut, and Birch *Betula* sp.. The remainder of the trees associated with the Application Site occur within pockets of amenity planting, or sporadically amongst areas of amenity grassland. Trees which occur amongst areas of amenity planting are largely Cherry *Prunus* sp., with Willow *Salix* sp., Birch and Sycamore occurring to a lesser extent. The trees are not considered to be of significant ecological value on an individual basis, and indeed there are no trees of a particularly noteworthy age, nonetheless, collectively the trees are considered to be of ecological value at the site/local level. In the absence of development, little change would be expected from the tree interest associated with the Application Site, although in the long-term trees may establish from the areas of encroaching scrub. The loss of a selection of trees from the Application Site to facilitate development would not result in a significant adverse effect under the proposals. In any event, these losses will be compensated through new tree planting within the development.

**12.3.28 Amenity Planting.** Pockets of amenity planting are present in the north of the Application Site and are largely positioned adjacent to, and opposite, the access road. The areas of amenity planting are composed of Cherry Laurel *Prunus laurocerasus*, Firethorn *Pyracantha coccinea*, Forsythia *Forsythia suspensa*, Rose *Rosa* sp., and Privet *Ligustrum ovalifolium*, amongst which Copper Beech *Fagus sylvatica* Purpurea, Purple Sycamore *Acer pseudoplatanus* Atropurpureum, and various conifers have established.

**12.3.29** Overall, the pockets of amenity planting are composed of plants commonly found within gardens, and therefore are likely to occur locally within the residential areas, and in consideration the species recorded are non-native/ornamental, the areas of amenity planting are considered to be of ecological value at the site level. In the absence of development, the pockets of amenity planting will become overgrown due to lack of management and it is likely that seeding from these plants will occur in the immediately vicinity of the amenity planting, resulting in the gradual spread of these non-native/ornamental species throughout the Application Site. The loss of amenity planting within the Application Site would not result in a significant adverse effect in ecological terms, and in any event it is expected that new areas of amenity planting will be created by owners of the new dwellings.

**12.3.30 Amenity Grassland.** Areas of closely mown amenity grassland are present within the north eastern section of the Application Site, at the location of the former baseball pitches. The sward height was generally 5cm with longer sward heights recorded at the peripheries of the habitat in 2015 and 2016. These areas are species-poor and dominated by common grass species such as Perennial Rye-grass, with a very limited abundance of herbaceous species, including Daisy and Dandelion. A local walking a dog over the area of amenity grassland was noted on passing the Application Site in August 2016.

**12.3.31** Given the amenity grassland's regular management and poor species diversity, it is considered to be of ecological value at the local level. In the absence of development and further management, the grassland would likely develop into semi-improved grassland

and eventually become encroached by scrub. The loss of amenity grassland within the Application Site would not result in a significant adverse effect in ecological terms, and in any event this habitat type will be present as lawns associated with the new dwellings, and therefore will be present to a similar extent within the Application Site post-development.

12.3.32 **Scattered Scrub.** Scrub has established extensively throughout the Application Site, scattered throughout areas of amenity grassland, but occurring to a greater extent immediately adjacent to buildings. The scrub is composed of the same species which occur as tress and within the hedgerows and include Ash, Sycamore, Hawthorne, Elder, Cherry, Birch and Dog-rose *Rosa canina*. In 2016, scrub was noted to have colonised further around the buildings in the north of the Application Site.

12.3.33 The scrub present comprises a limited diversity of native species, all of which are common and widespread in the local and national context. Accordingly, this habitat type is considered to be of ecological value at the site level. In the absence of development, it is likely that the scrub would further encroach the Application Site accelerating the decline of the condition of the buildings as it establishes within and then pushes apart brickwork, and would also likely result in the eventual loss of the grassland. The loss of the scattered scrub would not be considered a significant adverse effect in ecological terms, and in any case it is anticipated that scrub would re-establish at the boundaries of the Application Site in the long-term.

12.3.34 **Invasive Species.** Cotoneaster was recorded at three locations within the Application Site. One stand of Cotoneaster was present within an area of amenity planting and was likely planted, whilst the other two were found within areas of scrub and may have self-seeded. Irrespective of their origins, the plants are likely to be invasive, although it's difficult to discern without sufficient flowering and fruiting material, and therefore their value reduces the overall ecological value of the Application Site. During the update survey in 2016, the abundance of Cotoneaster had slightly increased within the areas it was originally recorded. In the absence of development, it is likely that the Cotoneaster plants would gradually spread throughout the Application Site as part of the encroachment by scrub. The loss of the Cotoneaster from the Application Site would be considered a beneficial at the site level.

12.3.35 **Waterbodies.** A single waterbody is present within the Application Site, in the form of an oil interceptor tank (P1), which is located at the southern boundary. A second waterbody (P2), also an oil interceptor tank, lies off-site adjacent to Camp Road approximately 55m east of the Application Site. Both waterbodies are of the same design and construction, being brick built, with steep vertical sides, with internal chambers through which water originally flowed. Waterbody P1 was noted to be holding water at the time of the 2015 and 2016 surveys, to a depth of approximately 0.5m, and some vegetation had established. The tank is surrounded by a hard-surfaced path created from concrete with a grass verge beyond.

12.3.36 Waterbody P2 is enclosed by close-board wooden fencing with extensive Elder scrub overhanging the tank and the fencing, blocking light and largely obscuring the view of the tank itself. Nonetheless, standing water could be seen within the tank.

12.3.37 Overall, given the current condition of the waterbodies, the limited aquatic vegetation, and separation from surrounding habitats by close-board wooden fencing, the water tanks are considered to be of ecological value at the local level. The loss of the watertank under the proposals would therefore not be considered a significant adverse effect in ecological terms.

Faunal Use of the Site

12.3.38 General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Specific attention was also paid to the potential presence of any protected, rare or notable species. Specific surveys have also been undertaken within the Application Site in respect of bats, Badger, reptiles, and Great Crested Newts.

*Bats*

12.3.39 **Background information.** Information returned from TVERC includes records for Common Pipistrelle *Pipistrellus pipistrellus* and Brown Long-eared Bat *Plecotus auritus*, the nearest of which are located 0.35km west and 0.25km east of the Application Site respectively.

12.3.40 **Roosting.** Buildings are present throughout the Application Site and mature trees lie at the boundaries. In regard to the buildings, these are all of modern construction, the majority of which are of the same design, being single-storey and brick built with an open vaulted pitched roof. Overall, the buildings/structures are not of a traditional architectural design, such that enclosed voids with timber framework and features such as mortise joints suitable for roosting bats are not present. In addition, the buildings are generally in poor condition with ingress from rainwater in places, and with open, broken and missing doors and windows such that the internal environment is subject to rapid fluctuating temperatures. In combination with the use of prefabricated materials in the roof structure and absence of insulation, the buildings are unlikely to maintain a stable internal environment and would therefore be unfavourable to roosting bats for hibernation or maternity/nursing.

12.3.41 The 2015 internal inspection surveys identified bat droppings within a number of the buildings, largely in very small numbers and the droppings themselves were very old, such that this activity would be attributed to the exploratory behaviour of bats and not indicative of the presence of roosts. However, at three locations (see **Figure 12.3**), the droppings were present in greater abundance (~15-20), of varied age and interspersed with butterfly/moths wings. DNA analysis confirms two of the feeding perches (FP1 and FP2) were in use by Brown Long-eared Bat *Plecotus auritus*, whilst the third (FP3) was in use by Natterer's Bat *Myotis nattereri*. The extent of droppings and feeding remains recorded indicates the feeding perches had been used on an infrequent basis over the previous year or two. All three feeding perches were subject to dusk emergence and dawn re-entry survey work during June 2015; the results from which are provided in summary in **Tables 12.3 to 12.5** below.

12.3.42 In summary, the 2015 survey results show no bats were recorded emerging from or re-entering the buildings where the feeding perches had been recorded, confirming that the feeding perches were likely being used on an infrequent basis and therefore were at most of low conservation significance. Update inspection surveys undertaken in 2016, did not record any new use of the buildings by bats. Droppings and feeding remains were noted in all three feeding locations identified in 2015, although all droppings appeared to be old, accordingly it was deemed that updating the dusk emergence and dawn re-entry survey work in 2016 was unlikely to yield data which would have significant bearing on the assessment of the use of the buildings by bats.

12.3.43 In the absence of development, it is likely that the feeding perches will continue to be used on an infrequent basis, eventually becoming abandoned as the buildings fall further into disrepair.

12.3.44 A number of mature trees are present within the Application Site and are associated with the boundaries. However, none of the trees exhibit features, such as rot

holes, wood pecker holes, or split limbs, etc., which would provide roosting opportunities for bats. Therefore, in accordance with latest Bat Conservation Trust guidelines, these trees are considered to afford negligible, if any, potential to support roosting. In the absence of development, the mature trees may develop features with potential to support roosting bats in the long-term.

**Table 12.3 – Building B1 Bat Survey Results**

Date	Sunset / Sunrise	Species Recorded	First /Last Bat Recorded	Activity
15th June 2015	Sunset: 21:26	Common Pipistrelle <i>Pipistrellus pipistrellus</i>	22:23 (57 min a.s.*) 22:36 (1h 13min a.s.*)	Sporadic infrequent foraging and commuting passes along the northern elevation of the building.
16th June 2016	Sunrise: 04:45	No bats recorded		
24th June 2015	Sunset: 21:29	No bats recorded		
25th June 2015	Sunrise: 04:46	No bats recorded		

\*b.s. - before sunset/sunrise; a.s. - after sunset/sunrise

**Table 12.4 – Building B17 Bat Survey Results**

Date	Sunset / Sunrise	Species Recorded	First /Last Bat Recorded	Activity
15th June 2015	Sunset: 21:26	No bats recorded		
16th June 2015	Sunrise: 04:45	No bats recorded		
22nd June 2015	Sunset: 21:29	No bats recorded		
23rd June 2015	Sunrise: 04:46	No bats recorded		

\*b.s. - before sunset/sunrise; a.s. - after sunset/sunrise

**Table 12.5 – Building B10 Bat Survey Results**

Date	Sunset / Sunrise	Species Recorded	First /Last Bat Recorded	Activity
15th June 2015	Sunset: 21:26	Unknown	22:20 (50 min a.s.*) 23:20 (1hr 53 mins a.s. *)	Feint registrations of bats outside of building.
16th June 2015	Sunrise: 04:45	No bats recorded		
23rd June 2015	Sunset: 21:29	Common Pipistrelle <i>Pipistrellus pipistrellus</i>	21:25 (4mins b.s.*) -	A single bat was recorded foraging around scrub adjacent to the building.
24th June 2015	Sunrise: 04:45	No bats recorded		

\*b.s. - before sunset/sunrise; a.s. - after sunset/sunrise

**12.3.45 Foraging / Commuting.** Little bat activity was recorded during the survey work undertaken, although the focus of the survey was on the feeding perches, and was limited to a few commuting passes and a short period of foraging activity by Common Pipistrelle at 22:23 on the 15<sup>th</sup> June 2015 and 21:25 on the 23<sup>rd</sup> June 2015, respectively.

12.3.46 Overall, given the presence of three roosts of low conservation significance, which are used on an infrequent basis, and in consideration that other bat activity, in the form of commuting and foraging, within the Application Site was relatively low, the Application Site is at best considered to be of low value to bats at the local level.

*Badgers*

12.3.47 **Background information.** Information obtained from TVERC included 8 records of Badger *Meles meles*, the nearest of which is dated 2006 and is located approximately 3.25km to the east of the Application Site. This, and the majority of the other records, relate to dead Badgers found along Ardley Road.

12.3.48 No active Badger setts have been recorded within the Application Site. Mammal paths were recorded through the grassland, and a dung pit was recorded in 2015 close to the southern Application Site boundary, indicating that Badgers pass through the Application Site; an assumption supported by anecdotal evidence from Heyford Park security. During the 2016 update survey, Badger prints were recorded in several locations within the buildings within the Application Site, indicating that Badgers continue to pass through the Application Site. Overall, the Application Site is likely used by Badgers commuting between foraging grounds, although the grassland within the Application Site is considered to afford foraging potential for Badgers also. On balance, given the absence of a sett and lack of evidence to indicate foraging on-site, the Application Site is considered to be of low value to Badgers at the local level.

*Other Mammals*

12.3.49 **Background information.** Information returned from TVERC includes records for Hedgehog *Erinaceus europaeus*, Water Vole *Arvicola amphibius* and Otter *Lutra lutra*, the nearest records for which are located approximately 0.20km west, 0.75km west and 0.70km east of the Application Site respectively.

12.3.50 A number of mammal holes are present within the Application Site which are associated with Rabbits, evidenced by the presence of droppings and small tunnels which lead from the entrances. However, no evidence of any other protected, rare or notable mammal species was recorded within the Application Site.

12.3.51 In consideration of the context of the local area, Rabbit, Fox and other common mammal such as Field Vole *Microtus agrestis* are likely to utilise the Application Site. Overall, the Application Site is considered to be of low value to other mammals at the local level. The proposals will result in the disturbance to and temporary displacement of rabbits which are known to utilise the Application Site, however, it is anticipated that rabbits will continue to remain present at the periphery of the Application Site throughout the construction phase. This adverse effect to 'other mammals' is not considered to be significant in ecological terms.

*Amphibians*

12.3.52 **Background Information.** Information obtained by TVERC includes 31 records of Great Crested Newt, the nearest of which is associated with a water tank within Heyford Park located approximately 1.2km to the east of the Application Site. The most recent records are dated 2014, and the majority of these are associated with the known breeding populations associated within Heyford Park's northern bomb stores, southern bomb stores and Letchmere Farm ponds.

12.3.53 A single waterbody, in the form of an oil-interceptor, is present within the Application Site, and a second waterbody lies approximately 55m to the east of the Application Site; these waterbodies are labelled P1 and P2 respectively on **Figure 12.2**. Both waterbodies are man-made, being of brick construction, forming a series of chambers, in total measuring approximately 20x7m each. A very slow flow of water was passing through P1 at the time of 2015 and 2016 surveys, to an off-site drain.

12.3.54 Both waterbodies were subject to presence/likely absence surveys (and population surveys where appropriate) between April and June 2015 to confirm any use by Great Crested Newts. The survey work was repeated between March and May 2016 for P1, but not P2 and this pond was deemed unsuitable. No Great Crested Newts were recorded during the detailed survey work (see **Appendix 12.3**), indicating that Great Crested Newts are unlikely to be present. Two large and one moderate sized metapopulations of Great Crested Newts have been recorded in association with Heyford Park, although the nearest population, which is centred on Letchmere Farm ponds, is located approximately 1.3km to the east of the Application Site and is separated from the Application Site by existing built development and a road.

12.3.55 Suitable terrestrial habitat within the Application Site is present in the form of the tussocky grassland interspersed with scrub which could provide opportunities for foraging and shelter. In addition, the hedgerows at the northern and western Application Site boundaries, connect with other hedgerows which pass through arable land and open countryside, potentially providing potential for migrating Newts. It is recognised that Great Crested Newts can be found up to 1000m from a pond, although Natural England guidance<sup>8</sup> states that habitats within 250m of a breeding pond are most likely to be used most frequently by Great Crested Newts, and in addition the Great Crested Newt Conservation Handbook (2001) emphasises the difficulties of Great Crested Newts colonising ponds over 1000m, indicating this could take several years. Accordingly, in the absence of development and given the distance (1.3km) of the Application Site to the nearest known breeding ponds, and separation of the ponds from the Application Site by existing development, it is unlikely that the terrestrial habitat is presently utilised by this species, or that the on-site waterbody would be colonised by Great Crested Newts in the immediate future.

12.3.56 Overall, the Application Site is considered to be of low value to Great Crested Newts at the local level.

Reptiles

12.3.57 **Background Records.** Information returned from TVERC includes a single record of Grass Snake *Natrix natrix*, which is dated 2010 and is located approximately 4km to the east of the Application Site.

12.3.58 The grassland within the Application Site has developed a tussocky character, which in combination with the scattered scrub, provides foraging and sheltering opportunities for reptiles within the Application Site, whilst opportunities for basking are afforded by the mound of sand adjacent to building B58, areas of bare ground and tarmac road sections close to the grassland. Accordingly, a specific survey to record the presence/likely absence of reptiles was undertaken at the Application Site in June and July 2015; the results from which are set out in **Table 12.6** below.

**Table 12.6:** Reptile survey results 2015

Date	Results
25 <sup>th</sup> June 2015	No reptiles
29 <sup>th</sup> June 2015	No reptiles
1 <sup>st</sup> July 2015	No reptiles
5 <sup>th</sup> July 2015	No reptiles
7 <sup>th</sup> July 2015	No reptiles
15 <sup>th</sup> July 2015	No reptiles

<sup>8</sup> English Nature (2001) Great Crested Newt Mitigation Guidelines



12.3.59 In summary, no reptiles were recorded during the specific survey work undertaken in June and July 2015, or from an inspection of general refugia within the Application Site during the extended Phase 1 Habitat Survey undertaken in May 2015, or during the update survey in June 2016.

#### *Birds*

12.3.60 **Background Records.** Information provided by TVERC included a number of records for a range of bird species within the search area, primarily concentrated around Lower Heyford, which is located approximately 1.3km south-west of the Application Site. The species recorded include species of conservation concern, such as Skylark *Alauda arvensis*, Starling *Sturnus vulgaris*, Song Thrush *Turdus philomelos*, Yellowhammer *emberiza citrinella* and Corn Bunting *Emberiza calandra*. Records of species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were also provided, including Barn Owl *Tyto alba*, Whimbrel *Numenius phaeopus* and Kingfisher *Alcedo atthis*.

12.3.61 During the 2015 Phase 1 habitat survey, Wood Pigeon *Columba palumbus* were seen flying from a small number of trees at the western Application Site boundary, whilst Great Tit *Parus major* and Blue Tit *Cyanites caeruleus* were observed flying between scrub and areas of amenity planting, and Pied Wagtail *Motacilla alba* were recorded in small numbers within the open grassland within the east of the Application Site. Wood Pigeon and corvids were also seen flying over the Application Site, and anecdotal evidence indicates Curlew *Numenius arquata*, a Priority Species under Section 41 of the NERC Act 2006, has also been sighted within the Application Site. Wood Pigeon, Great Tit and Blue Tit, were also observed within the Application Site during the 2016 Phase 1 habitat survey, as was Magpie *Pica pica*, and Blackbird *Merula turdus*, however, Curlew was not observed within the Application Site.

12.3.62 In general, the trees, hedgerows, shrubs and to a limited extent the scrub afford some nesting opportunities for common birds. Additional nesting opportunities are afforded by the buildings, as access is easily obtainable through missing, broken and open doors and windows, and indeed active bird nests were recorded sporadically throughout the buildings at the time of the 2015 and 2016 surveys.

12.3.63 All bird species recorded within the Application Site are common and widespread nationally and locally, with no status as birds of conservation concern. Anecdotal evidence indicates Curlew has been sighted within the Application Site, albeit in small numbers, however, Curlew was not observed within the Application Site during the 2015 or 2016 survey work, and on balance is deemed unlikely to utilise the Application Site to any significant extent. Overall, the Application Site is not considered to be of greater ornithological value than similar habitat in the surrounding area, and on balance, the Application Site is considered to be of low ecological value to birds at the local level.

#### *Invertebrates*

12.3.64 **Background Records.** Records of a variety of invertebrates were returned by TVERC, including the Priority Species Dingy Skipper *Erynnis tages*, Wall *Lasiommata megera* and Small Heath *Coenonympha pamphilus*. The majority of these records originate from areas within the former RAF base, approximately 1.4km south-east of the Application Site.

12.3.65 The amenity and intensively managed nature of the Application Site whilst previously in operation, indicates that important assemblages of invertebrates are unlikely to have been present. Since the Application Site was vacated, the Application Site has become unkempt, with the grassland developing a tussocky character and scattered scrub establishing throughout, however, the habitats within the Application Site have not significantly changed, and whilst hard-surfaced areas are becoming recolonised, the species present are common and relatively few in number. Nonetheless, the Application Site is

considered to afford opportunities for a range of common invertebrates, and indeed during the survey work Peacock *Aglais io* and Large White *Pieris brassicae* were observed flying along the western boundary, whilst Green Shield Bug *Paloma prasina* was found on Cherry Laurel within a section of amenity planting.

12.3.66 Overall, given the historical use of the Application Site, its current condition, and the number of common invertebrates recorded, the Application Site is considered to be of low ecological value to invertebrates at the site/local level. In the absence of development, it is anticipated that invertebrate interest would increase as the grassland became more diverse and as the recolonising areas establish further. However, in the long-term, the Application Site would become dominated by scrub, which would overshadow any remaining areas of grassland and reduce the diversity of on-site habitats, resulting in a decline in invertebrate diversity also. The features of relatively greatest interest, in regard to invertebrates within the Application Site, are being retained, such that the temporary displacement of invertebrates from the central area of the Application Site during development is considered not to be a significant adverse effect in ecological terms. It is anticipated that the same invertebrate species will quickly recolonise the Application Site as the new dwellings are built and the development landscaped.

**12.4 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS**

12.4.1 This section sets out the potential significant effects of demolition / construction and completed development phase works on ecological receptors identified as being of ecological importance, as summarised in Table 12.9 below.

12.4.2 Where it has been demonstrated above that significant effects will not occur, or where receptors are not considered to be of importance at the local level or above (of site importance only), the ecological receptors are scoped out of this assessment, although consideration of mitigation and legislative requirements for protected species is provided.

**Table 12.7:** Ecological Receptors Scoped In/Out of the Impact Assessment

Ecological Resource	Geographic Frame	Value
<i>Scoped in</i>		
Bats	Local	Low
Badger	Local	Low
Great Crested Newts	Local	Low
Reptiles	Local	Low
Birds	Local	Low
<i>Scoped out</i>		
Oxford Meadows SAC	National	High
Ardley Cutting and Quarry SSSI	National	High
Rush Spinney LWS	County	High
Buildings and Hard-surfacing	Site	Negligible
Semi-improved Grassland	Local	Low
Hedgerows	Local	Low
Trees	Site	Low - Moderate
Amenity Planting	Site	Negligible
Recolonising Ground	Site	Negligible
Scattered Scrub	Site	Low - Negligible
Invasive Species	None	None
Waterbodies	Local	Low
Other Mammals	Local	Low
Invertebrates	Site/Local	Low

12.4.3 Information relating to the construction and operational phases as presented in Chapter 4 'The Proposed Development' forms the basis of this assessment. The extent of areas affected by the Proposed Development is therefore based on the Parameters Plan (Figure 4.1), which shows built development areas (e.g. residential development) within which habitats are likely to be lost, and landscape and open space areas within which habitats can likely be retained, subject to play areas and landscaping and SuDS features. This would be further informed at the detailed stage, which extent of development areas would be confirmed.

#### **Construction Phase Effects**

##### Design Solutions and Assumptions

12.4.4 The potential effects considered within this section are those relating to temporary factors arising from the construction process, such as construction site noise or dust production, and which will cease to apply following completion of the Proposed Development (referred to as 'Operational Phase'). Thus loss of habitats through permanent land take for development is considered as an 'Operational Phase' effect, although the land take actually occurs during the construction phase of the Proposed Development.

##### Habitats and Ecological Features

12.4.5 Large parts of the Site will be subject to construction works resulting in the loss of existing habitats. This permanent land-take of habitats (and resultant effects on fauna supported by such habitats) is discussed in the Operational Phase section below. This section relates to effects during the construction phase, which are largely temporary in nature.

12.4.6 Retained habitats of relative importance within the Application Site including trees and hedgerows may be subject to potential effects such as dust deposition and damage to trees from compaction or other damage from construction machinery or vehicles. However, such effects would be only temporary in nature, and are unlikely to result in any long-term deterioration in habitats.

12.4.7 *Likely significant effects:* Prior to mitigation, construction effects on retained habitats are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**.

##### Fauna

12.4.8 **Bats.** During construction works, there is potential for any commuting/foraging bats to be disturbed through the use of lighting of construction areas. However, such effects would only be for the duration of the construction phase, and the requirement for lighting during construction works is expected to be minimal given general restrictions on working to daylight hours. Further, lighting requirements are likely to be mostly during the winter months when bats are hibernating and less likely to be using these habitats. Foraging and commuting bats could also be affected by noise disturbance, although this would be mostly during the day when foraging or commuting bats would be absent. Other construction effects such as airborne pollutants are unlikely to result in a direct effect on foraging or commuting bats.

12.4.9 *Likely significant effects:* Prior to mitigation, construction effects on bats are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**.

12.4.10 **Badgers.** No Badger setts have been recorded within the Application Site, although signs of use recorded within the Application Site in 2015 and 2016 indicates that Badgers pass through the Application Site on occasion. During the construction works, disturbance

from noise and lighting is deemed unlikely given general restrictions on working to daylight hours, although there is potential for the movement of any Badgers through the Application Site to be disrupted.

12.4.11 *Likely significant effects:* Prior to mitigation, construction effects on Badgers are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**.

12.4.12 **Great Crested Newts.** A single waterbody is present within the Application Site, and a second lies off-site approximately 55m to the east. The results of specific survey work undertaken within 2015 and 2016 indicate that Great Crested Newts are unlikely to be present, as no Great Crested Newts were recorded. In addition, given the distance and separation of the Application Site from the nearest known breeding population of Great Crested Newts, despite the presence of suitable terrestrial habitat, this species is considered unlikely to utilise the Application Site.

12.4.13 *Likely significant effects.* No construction or operational adverse effects on the local population status of Great Crested Newts are anticipated under the proposals.

12.4.14 **Reptiles.** The tussocky grassland and scattered scrub within the Application Site provides suitable habitat for reptiles to forage, shelter and bask. However, no reptiles were recorded within the Application Site during specific survey work to determine presence/likely absence in 2015, nor were any reptiles observed within the Application Site during a check of general site refugia at the time of the 2015 extended Phase 1 habitat survey, and 2016 update survey.

12.4.15 Despite no reptiles being found within the Application Site, and given the context of the local area, there is potential for reptiles to move through the Application Site. Accordingly, Reptiles moving through the Application Site would be at risk of mortality or injury from construction activities such as vegetation clearance and tracking of vehicles, which could also constitute an offence under the relevant legislation. Nevertheless, no actual reptile population has been recorded, any impact is at most considered to be low.

12.4.16 *Likely significant effects:* Prior to mitigation, construction effects on reptiles are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**.

12.4.17 **Birds.** Potential effects on bird species during the construction phase relate to a direct loss of active nests, resulting in a direct effect on local populations and also constituting an offence under the Wildlife and Countryside Act 1981 (as amended), which affords protection to wild birds and their eggs. Construction activities could also result in noise and visual disturbance to nesting birds in close proximity to construction areas, albeit these effects are anticipated to be highly localised.

12.4.18 Retention of the established boundary vegetation, namely the hedgerows and trees, under the proposed development will maintain suitable habitat for the majority of species recorded within the Application Site. The creation of new habitats within the gardens and areas of green space could increase nesting and foraging opportunities for bird species.

12.4.19 *Likely significant effects:* Prior to mitigation, construction effects on birds are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**.

12.4.20 **Invertebrates.** The generation of dust from construction activities and its subsequent deposition on vegetation could potentially affect invertebrates and egg-laying sites within retained habitats. However, such effects would be temporary in nature.

12.4.21 *Likely significant effects:* Prior to mitigation, construction effects on invertebrates are anticipated to be **minor adverse** at the **site level**, and **temporary** over the **short term**.

#### **Operation Phase Effects**

12.4.22 The potential effects considered within this section are those relating to the 'operational' phase of the Development. This includes the loss of habitats through permanent land take for development, in addition to potential effects resulting from the operation of the Proposed Development such as recreational pressure and noise and light disturbance.

12.4.23 **Bats.** The three bat feeding perches will be destroyed when the buildings are demolished, which would constitute an offence under relevant legislation.

12.4.24 Whilst large areas of habitat are to be affected by the Proposed Development, this largely comprises species-poor grassland which is of relatively low value to foraging and commuting bats. Boundary habitats providing commuting routes and foraging areas are largely retained, although there will be some minor losses associated with creation of gaps for highways access. However, gaps will be relatively narrow, and given the residential nature of the scheme, with low traffic speeds and limited use at night, the risk of traffic collisions is considered to be minimal.

12.4.25 Foraging and commuting areas could however be affected by lighting during the operational phase. Effects of lighting vary between species, with some bat species such as Pipistrelles able to cope with relatively high light levels (of up to 14 lux) (Fure, 2006)<sup>ii</sup> and known to utilise lights as a foraging focus for insects attracted to lights (BCT and ILE, 2008)<sup>iii</sup>. However, many bat species (particularly late emerging species such as *Myotis* bats) will avoid lit areas, and attraction of insects to lit areas can result in adjacent habitats supporting reduced numbers of insects, further impacting on the ability of bats being able to feed. The bat activity recorded at the Application Site was limited to Pipistrelle species, such that bats are likely to continue foraging and commuting across the Application Site, although substantial lightspill, particularly at road crossings, could adversely affect bat activity.

12.4.26 *Likely significant effects:* Prior to mitigation, operational effects on bats are anticipated to be **minor adverse** at the **local level**, and **permanent**.

12.4.27 **Badgers.** The development will result in the loss of approximately 2.6ha of suitable foraging habitat in the form of grassland. However, alternative foraging habitat within the development will incorporate grassland as lawns, whilst landscape planting will include nut and fruit yielding shrubs, such that impact is expected to be low.

12.4.28 *Likely significant effects:* Prior to mitigation, operational effects on Badgers are anticipated to be **not significant**.

12.4.29 **Great Crested Newts.** It is considered unlikely this species utilises the Application Site.

12.4.30 *Likely significant effects:* No construction or operational adverse effects on the local population status of Great Crested Newts are anticipated under the proposals.

12.4.31 **Reptiles.** The proposed development will result in the loss of approximately 2.6ha of grassland, with some scattered scrub, which affords limited opportunities for foraging and shelter. However, suitable reptile habitat will be maintained within the landscape buffer along the Application Site boundaries, and along the green corridors where practicable, to facilitate the movement of this species around the Application Site.

12.4.32 *Likely significant effects:* Prior to mitigation, operational effects on reptiles are anticipated to be **minor adverse** at the **local level**, and **permanent**.

12.4.33 **Birds.** The retention of hedgerows and trees under the proposals will maintain suitable habitat for the majority of species recorded within the Application Site, whilst the creation of new habitats within gardens and areas of green space could increase nesting and foraging opportunities for bird species. Birds may also be affected by cat predation, disturbance associated with recreational use and residential areas, and increased risk of road traffic accidents (albeit, as set out above, this is less likely given the low traffic speeds which will be in place). Some bird species may also be affected by lightspill from roads and areas of built development.

12.4.34 *Likely significant effects:* Prior to mitigation, operational effects on birds are anticipated to be **minor adverse** at the **local level**, and **permanent**.

12.4.35 **Invertebrates.** In terms of operational effects, the key areas likely to be of value to invertebrates including the hedgerows and trees are largely retained, whilst invertebrates are also likely to benefit from opportunities provided by newly created open spaces and gardens as they establish in the long-term.

12.4.36 *Likely significant effects:* Prior to mitigation, operational effects on invertebrates are anticipated to be **not significant**.

## 12.5 MITIGATION AND ENHANCEMENT

### Mitigation by Design

12.5.1 Ecological mitigation is accommodated within the design of the development as follows:

12.5.2 **Landscape buffer and green corridors** – A landscape buffer will be created around the development, and will be designed to incorporate the hedgerows and larger trees along the vegetated boundaries. Green corridors will be created internally and on the eastern edge of the development, connecting internal green spaces with the landscape buffers, facilitating the movement of wildlife through and around the Application Site.

12.5.3 **Landscape Planting** – New tree planting incorporated within the design will compensate for the loss of trees to the development. In addition, new shrub planting will utilise fruit and nut yielding species, which will increase the foraging potential of the Application Site above the current situation for a range of species.

12.5.4 **Birds** – The Proposed Development will incorporate the construction of new buildings, which will naturally provide nesting opportunities for birds which adapt well to the urban environment, including House Sparrow *Passer domesticus* and House Martin *Delichon urbica*.

12.5.5 **Lighting** – The Proposed Development will incorporate a sensitive lighting scheme so as to avoid the excessive illumination of retained habitats, which would continue to provide corridors for the movement of wildlife around the Application Site.

12.5.6 **Attenuation Pond** – An attenuation pond will be created in the south-east of the Application Site, which will provide a replacement and larger source of open water, compared to the oil interceptor tank which will be lost to the proposed development. The attenuation pond will be linked to the off-site drainage ditch to ensure this off-site feature receives a flow of water.

12.5.7 Any water feed to the attenuation pond from the SUDs will pass through appropriate filters to remove any contaminants, toxic metals and oil, ensuring the water quality is of a high standard and would not be detrimental to wildlife.

### **Additional Mitigation**

12.5.8 Mitigation measures will be employed to minimise adverse effects, where these are anticipated to occur during the construction and operational phases of Proposed Development. The mitigation measures detailed below are proposed in accordance with relevant best practice guidelines.

### **General Construction Safeguards**

12.5.9 A number of effects on retained habitats within the Site and its immediate surrounds during the construction phase were identified including dust deposition, and damage to vegetation. In order to reduce such effects, standard mitigation measures will be put in place during the construction phase, including:

- Erection of tree protection fencing around hedgerows and trees in accordance with BS5837:2012;
- Storage of materials and vehicles away from watercourses and the newly created attenuation pond;
- Dampening down of potential sources of dust;
- Adherence to EA Pollution Prevention Guidelines;
- Implementation of safeguards as part of construction works to control surface water run-off and avoid contamination of watercourses.

12.5.10 Furthermore, a number of general safeguarding measures will be implemented in relation to faunal species:

- All contractors will be briefed as to the possible presence of protected and notable faunal species within the Site, with particular reference to the implications of legislation and licensing;
- Any temporarily exposed open pipe system should be capped in such a way as to prevent Badgers gaining access as may happen when contractors are off-site;
- Any trenches or deep pits within the Site that are to be left open overnight will be provided with a means of escape should a Badger or other mammal enter. This could simply be in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water;
- Any trenches/pits will be inspected each morning to ensure no animals have become trapped overnight;
- The storage of topsoil or other 'soft' building materials in the Site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of any mounds, these will be kept to a minimum and will be subject to inspections by site contractors with consideration given to temporarily fencing any such mounds to exclude Badgers;
- The storage of any chemicals at the Site will be contained in such a way that they cannot be accessed or knocked over by any roaming animals;
- Fires will only be lit in secure compounds and not allowed to remain lit during the night;

- Food and litter will not to be left within the working area overnight;
- To minimise adverse effects as a result of lighting during the construction phase, temporary lighting will be minimised, wherever practical. Where required for health and safety, security or other reasons, it will be positioned so as to minimise light spill on to woodlands, hedgerows and other boundary features;
- Disturbance from noise will be minimised by the adoption of good working practice.

12.5.11 It is proposed that such measures are detailed in a Construction Environmental Management Plan (CEMP) produced at an appropriate stage prior to works commencing – further details regarding the CEMP are presented in Chapter 3. This could be secured by a planning condition.

#### Habitats and Ecological Features

12.5.12 A number of measures will be implemented in regard to habitats to minimise adverse effects during the operational phase. This will include:

- Where practical, the detailed layout of housing areas adjacent to retained habitats will be designed so that houses face out onto wildlife habitat areas, providing visual surveillance and avoiding gardens backing onto habitats, preventing issues such as informal garden extensions and flytipping. This will be further reinforced by provision of a hard edge to the built development where practical, in the form of roads or footpaths;
- New residents will be provided with information relating to wildlife habitats in the form of leaflets and signage, educating them on the value of this habitat and how to avoid impacts upon it;
- Long-term management of wildlife habitat areas will also allow for remedial action or alleviation of any recreational issues;
- A SUDS scheme will be implemented to manage run-off from built development areas, comprising a network of swales, soakaways, infiltration trenches and attenuation pond, as appropriate. The use of SUDS features will help to reduce the potential effect of point source pollution incidents from garden chemicals and/or domestic chemicals. Pollution control measures such as filter drains or petrol / water interceptors will also be used to minimise the risk of polluted surface water runoff entering local watercourses. Attenuation areas are also proposed to control surface water runoff rates to the required greenfield rate and to attenuate pollutants prior to discharge into the wider surface water network.

12.5.13 It is proposed that such measures are secured as part of the detailed design, and could be detailed in an Ecological Mitigation and Management Plan to be secured by planning condition.

#### Fauna

12.5.14 **Bats – roosting.** The proposed development will result in the loss of three feeding perches; roosts deemed to be of low conservation significance. Nonetheless, each building which supports a roost will be demolished under ecological supervision and under licence from Natural England. The three buildings will be demolished during the winter months, when the feeding perches are least likely to be in use. Alternatively, should the demolition need to occur in Spring, Summer or Autumn, the buildings will be subject to a pre-demolition inspection survey to identify and remove any bats present. Suitable replacement roosting opportunities will be provided within the development.



12.5.15 *Likely residual effects:* Following mitigation, construction effects on roosting bats are anticipated to be **neutral**. Following mitigation, operational effects on roosting bats are anticipated to be **minor adverse** to **not significant** at the **local level**, and **permanent**.

12.5.16 **Bats – foraging/commuting.** Temporary lighting during the construction phase will be minimised. Where lighting is required for health and safety, security or other reasons, it will be positioned so as to minimise light spill on to the retained habitats, particularly the boundary vegetation.

12.5.17 To avoid significant effects on foraging and commuting bats (and other nocturnal species) as a result of lightspill, a lighting design for the Proposed Development will be prepared at the detailed design stage incorporating measures to reduce the effects of lighting on bats. This will be reviewed by a suitably qualified ecologist to ensure that effects on sensitive habitats are avoided. Measures which will be incorporated into the lighting design include:

- Adjacent to boundary hedgerows, careful siting of lighting columns together with design measures such as louvres, shields or hoods will be used to direct lighting away from the sensitive areas;
- Where road crossings are proposed through hedgerows consideration will be given to spacing of lighting columns or other lighting control measures to maintain a central dark or low light area;
- Low pressure sodium lights will be used where appropriate, as these have a lower attraction to insects;
- In addition, the location and orientation of buildings, the proposed landscape treatment and the retention and enhancement of the existing vegetation within the Application Site will further act as secondary mitigation to screen and soften the effects of installed artificial light sources. Where necessary, further shrub and tree planting will be provided to create screening against lighting from roads and residential areas.

12.5.18 The creation of landscape buffers and green corridors will maintain potential bat flightpaths around and through the Application Site.

12.5.19 *Likely residual effects:* Following mitigation, construction and operational effects on foraging/commuting bats are anticipated to be **neutral**.

12.5.20 **Badgers.** In consideration of the level of Badger activity recorded, and context of the local area, Badgers are considered likely to roam through the Application Site. However, the general construction safeguards set out above will ensure this species is safeguarded during the construction works.

12.5.21 The loss of potential grassland foraging habitat under the proposals is unlikely to significantly affect the Badgers' overall foraging resource given the abundant habitat in the immediate surrounding the area, and the proposed landscaping which would include grassland lawns and fruit and nut yielding shrubs; thereby increasing the foraging potential of the Application Site for this species. A landscape buffer will be retained and enhanced around the Proposed Development to facilitate the movement of this species. The lighting scheme for the Application Site will be sensitively designed so as not to excessively illuminate the retained vegetation which could act as a Badger corridor.

12.5.22 *Likely residual effects:* Following mitigation, construction effects on Badgers are anticipated to be **neutral**, whilst operational effects on Badgers will be **minor beneficial** at the **local level**, and **permanent**.

12.5.23 **Great Crested Newts.** No Great Crested Newts have been recorded within the on-site waterbody, or nearby off-site waterbody, such that adverse effects on the local population status of Great Crested Newts are not anticipated to occur. The loss of the on-site waterbody and suitable terrestrial habitat will therefore not require special measures or a licence from Natural England. Nonetheless, the precautionary measures employed to safeguard reptiles (see paragraph 12.5.24) will also serve to protect Great Crested Newts in the unlikely event they are passing through the Application Site at the time of construction.

12.5.24 **Reptiles.** No reptiles have been recorded within the Application Site during the specific survey work undertaken, nonetheless, given the context of the local area there is potential that reptiles move through the Application Site on occasion and therefore precautionary measures will be undertaken prior to the commencement of construction works. The precautionary measures would be focused on a habitat manipulation exercise of grassland habitat to be lost, strimming the sward to a low height unfavourable to reptiles. The strimming exercise could be undertaken in a single phase if undertaken during the winter months, but would be undertaken in a two-stage process and supported by ecological supervision if undertaken during the active reptile season (March to October inclusive). Following the habitat manipulation exercise, the grassland would need to be maintained as a very short sward to avoid use by reptiles. In the unlikely event reptiles are encountered during the habitat manipulation works, they would either be encouraged to move out of the construction zone, or would be physically moved to suitable retained habitat within the Application Site.

12.5.25 *Likely residual effects:* Following mitigation, construction effects on reptiles are anticipated to be **not significant**. Following mitigation, operational effects on reptiles are anticipated to be **neutral**.

12.5.26 **Birds.** The potential loss of active nests during construction will be avoided by either undertaking clearance of potential bird nesting habitat outside of the bird nesting season (March to August inclusive) or, if necessary, preceding any clearance with an inspection by a suitably qualified ecologist. Any nests identified will be cordoned off and protected until they cease to be active. Disturbance from noise will be minimised by the adoption of good working practice, such as restricted hours of working and noise-reducing construction measures.

12.5.27 *Likely residual effects:* Following mitigation, construction effects on birds are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**. Following mitigation, operational effects on birds are anticipated to be **minor adverse to not significant** at the **local level**, and **permanent**.

**Table 12.8:** Mitigation

Ref	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measure would be secured		
		By Design	By S.106	By Condition
1	<b>Retained Habitats</b> - Retained habitats are to be protected in accordance with arboricultural best practice guidelines, Environmental Agency’s pollution prevention Guidelines and relevant updated documents.	X		X
2	<b>Roosting Bats</b> – The buildings which contain feeding roosts are to be subject to special measures during demolition, which will include the appropriate timing			X

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	of works and/or ecological supervision. These works will be undertaken under a Natural England licence, where necessary.			
3	<b>Foraging/Commuting Bats</b> – Temporary lighting during construction works will be positioned to minimise lightspill on to retained habitats.			X
4	<b>Foraging and Commuting Bats /Badgers</b> – Any new lighting scheme for the development will be sensitively designed to avoid excessive illumination of boundary vegetation and wildlife corridors.	X		
5	<b>Badgers</b> – General measures to be undertaken during construction to safeguard Badgers.			X
6	<b>Reptiles</b> – Measures are to be undertaken prior to construction to safeguard reptiles.			X
7	<b>Birds</b> - The new buildings will provide new roosting opportunities for urban birds including House Sparrow and House Martin, both of which are birds of conservation concern.			X
8	<b>Birds</b> – Any clearance of suitable nesting habitat is to be undertaken outside the bird nesting season (outside March to August inclusive).			X

### 12.6 Enhancements

12.6.1 The National Planning Policy Framework (NPPF) encourages new developments to maximise the opportunities for biodiversity through incorporation of enhancement measures. The proposals present the opportunity to deliver ecological enhancements at the Application Site for the benefit of local biodiversity, thereby making a positive contribution towards the broad objectives of national conservation priorities, the Oxfordshire BAP and the Cherwell BAP. Such measures will also help to offset non-significant habitat losses and other effects of the proposed development, helping to achieve an overall net gain in biodiversity. The enhancements summarised below are considered appropriate given the context of the Application Site and the scale and nature of the proposals.

12.6.2 It is proposed that such measures are detailed in an Ecological Enhancement and Management Plan to be produced at the detailed stage and secured by planning condition.

12.6.3 **Hedgerow Margins.** It is proposed that existing hedgerows be subject to supplementary tree and shrub planting to fill any gaps and strengthen the ecological connectivity provided by these features, whilst wildflower grassland is seeded along the edges to provide a floristic resource. The margins should be subject to low-intensity mowing (every 1-2 years) to allow establishment of long-sward grassland and a varied habitat structure along the hedgerow edge. This will form a valuable ecotone (a transitional area between two different plant communities, often supporting a higher diversity of wildlife and valuable for activities such as courtship or foraging). Hedgerows should be

subject to low-intensity cutting every 2-3 years on rotation to allow establishment of a wide, bushy hedgerow structure. Where practical, hedgerow cutting will be carried out at the end of winter to retain feeding opportunities for wildlife.

**12.6.4 Wildflower Grassland** – Retained grassland within the Application Site will be enhanced, where appropriate, to provide swathes of species-rich wildflower grassland through seeding with an appropriate seed mixture such as Emorsgate's EM3 species-rich general purpose meadow mixture, or similar. This enhancement will increase summer foraging opportunities for nectar and pollen feeding invertebrates.

**12.6.5 New Tree and Shrub Planting** – New tree and shrub planting will utilise native species of local occurrence, particularly in areas of green open space. Tree planting will incorporate Crab Apple *Malus sylvestris* and Bird Cherry *Prunus padus*, to provide spring blossoms, which will encourage pollinating invertebrates into the Application Site and provide a spring nectar resource for saproxylic invertebrates. Where practicable, nut and fruit yielding species will be incorporated to increase foraging potential at the Application Site for other wildlife.

**12.6.6 Attenuation Pond** – An attenuation pond is proposed to be constructed in the south-east of the Application Site. The feature will be created as part of the SUDS scheme and will be primarily designed and managed for drainage, although benefits to biodiversity will be incorporated where practical, with measures such as shallow, sinuous margins, areas of permanent water and planting with native vegetation. This will provide additional habitat for species such as amphibians, wetland birds and aquatic invertebrates.

**12.6.7 Garden Planting for Bats** - Garden planting close to the retained grassland areas will include night-scented flowers such as Aubretia *Aubrieta deltoidea*, Field Poppies *Papaver rhoeas*, Honesty *Lunaria annua*, Michaelmas Daisy *Aster x salignus*, Night-scented Stock *Matthiola longipetala*, Mexican Aster *Cosmos bipinnatus*, and Verbena *Verbena sp.*, or similar, which will attract nocturnal invertebrates throughout much of the year, thereby providing a foraging resource for bats.

**12.6.8 Bat Boxes** – The development provides the opportunity to increase potential roost sites within the area for bats, including the Priority Species Soprano Pipistrelle *Pipistrellus pygmaeus*, Brown Long-eared Bat and Natterer's Bat, which have been recorded within the local area. It is proposed that 8 number bat boxes (see **Appendix 12.4** for specifications) be incorporated into a proportion of the new build, where architectural design permits. Alternatively bats boxes could be erected onto retained trees at the western and northern boundaries. So as to maximise their potential use, the bat boxes should ideally be erected as high up as possible and sited in sheltered wind-free areas that are exposed to the sun for part of the day, facing either a south-east, south or south-westerly direction.

**12.6.9 Bird Boxes** - New nesting opportunities for birds will be provided in the form of 8 Avianex nest boxes and 8 Sparrow Terraces (see **Appendix 12.5** for specifications) to be erected onto the new buildings, where architectural design permits. Sparrow Terraces would provide new nesting opportunities for birds such as House Sparrow *Passer domesticus*, which is listed as an RSPB Red list species due to a decline of at least 50% over the last 25 years. Consideration will also be given to the installation of 10 number swift nest boxes, to increase nesting opportunities for this species in accordance with the aims and objectives of the Cherwell Swifts conservation Project. The bird boxes will be erected on the northern, eastern or western elevation of a proportion of new buildings.

**12.6.10 Invertebrates.** Any hedgerow sections or trees removed to facilitate development, will be used to create loggeries and wood piles (see **Appendix 12.6** for specifications) for saproxylic invertebrates. The loggeries/wood piles will be located at the bases of hedgerows. In addition, a total of 8 insect boxes will be erected onto the new

buildings, or installed onto retained trees, to provide sheltering opportunities for invertebrates.

### **12.7 CUMULATIVE AND IN-COMBINATION EFFECTS**

12.7.1 A number of developments have been identified within the vicinity of the Application Site to be considered in terms of potential for cumulative or interactive effects as detailed at Chapter 2. The nearby developments are phased to be undertaken in two stages; namely Stage 1 and Stage 2. The cumulative and in-combination effects are therefore considered in respect of the two tranches.

#### **Stage 1**

12.7.2 Of the developments proposed within Stage 1, only a few are located within the immediate surrounds of the Application Site, whilst the remainder are located further to the east and north and are well separated from the Application Site by existing built development associated with Heyford Park. Consideration of potential cumulative effects arising from these developments is set out below, with an assessment made of any significant cumulative effects and whether any mitigation is required.

#### **Ecological Designations**

12.7.3 The proposed development area largely lies outside the zone of influence for the potential impact of residential development on the nearby SSSIs, such that development within this area is unlikely to contribute to cumulative effects on these designations. In regard to non-statutory nature conservation designations, Rush Spinney LWS is not readily accessible by car with a lack of parking facilities, and Upper Heyford LWS lies within privately owned land with a security controlled entrance, such that neither designation are likely to be subject to significant cumulative increases in recreational pressure.

#### **Habitats and Ecological Features**

12.7.4 Habitats lost to the proposed development within the Application Site are of low intrinsic value, such that no cumulative losses of rare or notable habitat types are anticipated. In addition, the losses of semi-natural habitats under the proposals, will be compensated through a considered landscaping strategy, such there will be no adverse residual effects in regard to habitats and ecological features. Accordingly, there is no mechanism by which cumulative or in-combination effects could occur to rare or notable habitat types.

#### **Faunal Species**

12.7.5 Cumulative effects on faunal species are largely relevant in terms of the other developments located within the immediate vicinity of the Application Site, which have a greater potential to impact on the same population or social group. Only two developments lie in the immediate vicinity of the Application Site, one of which lies opposite the Application Site on the northern side of Camp Road, whilst the second lies immediately adjacent to the site's southern boundary.

12.7.6 For European protected species recorded across this area, including bats, it is a requirement of licensing that favourable conservation status is maintained, such that other developments will need to mitigate or compensate for potential effects, such as habitat loss, avoiding any significant cumulative effects resulting from in combination development.

12.7.7 Badger may experience a cumulative reduction in area of foraging habitat, although this species is of low conservation significance, and habitat losses are unlikely to be significant. In regard to other faunal species, cumulative effects are unlikely to occur as the proposed development will be mitigated for adverse effects.

### Stage 2

12.7.8 As mentioned at paragraphs 12.7.4, there is no mechanism by which cumulative or in-combination effects could occur to rare or notable habitat types, as the habitats being lost under the proposals are of low intrinsic value, and no residual effects are anticipated.

12.7.9 In regards to fauna, potential impacts are expected to largely affect different populations/social groups, such that cumulative and in-combination effects are considered unlikely to occur.

### Summary

12.7.10 As set out above, given the nature of the other sites to be developed, and the legislative and policy requirements relating to notable habitats and species, it is considered unlikely that significant effects will arise as a result of the Proposed Development in combination with other development in the vicinity

## 12.8 SUMMARY

### Introduction

12.8.1 The Application Site was surveyed in May 2015 based on extended Phase 1 methodology as recommended by Natural England, with update surveys undertaken in June 2016. In addition, a general appraisal of faunal species was undertaken to record the potential presence of any protected, rare or notable species. Specific surveys have been undertaken within the Application Site during 2015 in respect of bats, Badger, reptiles, and Great Crested Newts. An update survey for Great Crested Newts was undertaken in 2016.

### Baseline Conditions

12.8.2 **Ecological Designations.** The Application Site is not subject to any statutory nature conservation designation. The nearest statutory nature conservation designation is Ardley Cutting and Quarry Site of Special Scientific interest (SSSI) located approximately 2.9km to the north-east of the Application Site, whilst the nearest non-statutory nature conservation designation is Rush Spinney Local Wildlife Site (LWS) located approximately 0.8km to the west of the Application Site. These and other designations are separated from the Application Site by development and open countryside.

12.8.3 **Habitats.** The trees and hedgerows associated with the Application Site are considered to be of low to moderate ecological value at the local level, whilst all other habitats including buildings, hard-surfacing, semi-improved grassland and recolonising ground are deemed to be of low – negligible ecological value at the site/local level.

12.8.4 **Fauna.** The habitats within the Application Site provide opportunities for bats, Badger, Great Crested Newts, reptiles and nesting birds:

- **Bats.** Three feeding perches were recorded within three buildings within the Application Site. The feeding perches have been used by common species on an infrequent basis and are therefore of low conservation significance. In addition, foraging/commuting activity was low and limited to a few registrations of Common Pipistrelle. Overall, the Application Site is considered to be of low value for bats at the local level.
- **Badgers.** No Badger setts are present within the Application Site, although the Application Site affords foraging potential for Badgers and the mammal paths present indicate Badgers roam through the Application Site. Overall, the Application Site is considered to be of low value for Badgers at the local level.
- **Great Crested Newts.** A single waterbody is present within the Application Site and a second waterbody lies off-site 55m to the east. No Great Crested Newts have been recorded during specific survey work undertaken in 2015 and 2016. The Application

Site supports suitable terrestrial habitat in the form of tussocky grassland with scrub, although the Application Site is separated from the nearest known breeding population by existing development. Overall, the Application Site is considered unlikely to support Great Crested Newts, although there is possibility they migrate through the Application Site on occasion, and therefore the Application Site is considered to be of low value to Great Crested Newts at the local level.

- **Reptiles.** Suitable reptile habitat is present within the Application Site, although no reptiles have been recorded within the Application Site. Accordingly, the Application Site is considered to be of low value to reptiles at the local level.
- **Birds.** The trees, hedgerow, shrubs, scrub and buildings afford nesting opportunities for birds, such that overall, the Application Site is considered to be low value for birds at the local level.

#### **Likely Significant Effects**

**12.8.5 Ecological Designations.** The nearest ecological designations are separated from the Application Site by existing development and the open countryside, and therefore no likely significant effects on the designations are anticipated from the Proposed Development.

**12.8.6 Habitats.** The Proposed Development will result in the loss of approximately 2.6ha of semi-improved grassland, recolonising ground, and a 10m section of hedgerow, as well as all the buildings, hard-surfacing and amenity planting areas. The hedgerows and trees associated with the northern and western boundaries will largely be retained, although there is potential for these habitats to be adversely affected during construction works by accidental incursion and polluted run-off.

**12.8.7 Likely significant effects:** Prior to mitigation, general construction effects on habitats are anticipated to be at most **minor adverse** at the **local level**, and **temporary** over the **short term**. Prior to mitigation, general operational effects on habitats are anticipated to be at most **minor adverse** at the **local level**, and **permanent**.

**12.8.8 Fauna.** Due to their legal protection, protected species have been considered irrespective of the value level, and safeguarding measures are proposed.

- **Bats.** During construction works, there is potential for any commuting/foraging bats to be disturbed through the use of lighting at night. In terms of operational effects, three feeding perches will be lost, as will a section of hedgerow with trees which may be used by commuting/foraging bats.
- *Likely significant effects:* Prior to mitigation, construction effects on bats are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**. Prior to mitigation, operational effects on bats are anticipated to be **minor adverse** at the **local level**, and **permanent**.
- **Badgers.** During the construction works, there is potential for the movement of any Badgers through the Application Site to be disrupted. In addition, in terms of operational effects, the Proposed Development of the Application Site will result in the loss of 2.6ha of suitable foraging habitat.
- *Likely significant effects:* Prior to mitigation, construction effects on Badgers are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**. Prior to mitigation, operational effects on Badgers are anticipated to be **not significant**.
- **Great Crested Newts.** A single waterbody is present within the Application Site, with a further waterbody located 55m from the eastern boundary. The on-site waterbody

will be lost to the development, as will suitable terrestrial habitat. However, given the distance and separation of the Application Site from the nearest known breeding pond, Great Crested Newts are unlikely to occur within the Application Site, and therefore no likely significant effects on this species is anticipated from the Proposed Development.

- **Reptiles.** During construction works there is potential for the movement of reptiles to be disrupted, and for harm to reptiles to occur during works, whilst retained areas of suitable habitat could be adversely affected by polluted run-off. In terms of operational effects, a proportion of the grassland which affords limited opportunities for foraging and shelter, and a section of hedgerow which could assist movement around the Application Site, will be lost.
- *Likely significant effects:* Prior to mitigation, construction effects on reptiles are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**. Prior to mitigation, operational effects on reptiles are anticipated to be **minor adverse** at the **local level**, and **permanent**.
- **Birds.** The proposals will result in the loss of the buildings, amenity shrubs, scrub and a section of hedgerow, which would reduce general nesting opportunities. There is also potential for nesting birds to be disturbed during the construction works.
- *Likely significant effects:* Prior to mitigation, construction effects on birds are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**. Prior to mitigation, operational effects on birds are anticipated to be **minor adverse** at the **local level**, and **permanent**.

#### Mitigation

12.8.9 **Retained Habitats.** Standard arboricultural best practice guidelines (BS5837:2012) will be adhered to during construction to safeguard retained habitats, whilst best management practice will be followed in accordance with the advice issued by the Environment Agency in its Pollution Prevention Guidelines or relevant updated documents in order to safeguard against any potential run-off or pollution events during construction.

12.8.10 **Fauna.** Mitigation to safeguard protected species interest at the Application Site is summarised below:

- **Roosting Bats.** All three feeding perches recorded within the Application Site will be lost during the demolition of the on-site buildings. The buildings will therefore either be demolished at a time of year when bats are unlikely to be using the roosts, or subject to a careful deconstruction by hand and under ecological supervision. Replacement roosting opportunities will be incorporated within the Proposed Development.
- *Likely residual effects:* Following mitigation, construction effects on roosting bats are not anticipated. Following mitigation, operational effects on roosting bats are anticipated to be **minor adverse** to **not significant** at the **local level**, and **permanent**.
- **Foraging/commuting bats.** Measures will be taken to minimise lightspill onto retained habitats during construction. Any new lighting scheme for the Proposed Development will be sensitively designed to avoid the excessive illumination of boundary vegetation, utilising directional lighting, reduced wattage lamps and fitted louvres, where appropriate. New hedgerow planting will be undertaken within the Proposed Development to maintain connectivity across the Application Site.



- *Likely residual effects:* Following mitigation, construction and operational effects on foraging/commuting bats are anticipated to be **neutral**.
- **Badgers.** Measures will be undertaken during construction to avoid disturbing Badgers roaming through the Application Site and to avoid harm occurring to this species. The landscape planting will include fruit and nut yielding plants to maintain foraging interest at the Application Site, whilst green open space will be retained to enable Badgers to move around the Proposed Development.
- *Likely residual effects:* Following mitigation, construction effects on Badgers are anticipated to be **neutral**, whilst operational effects on Badgers will be **minor beneficial** at the **local level**, and **permanent**.
- **Reptiles.** Measures, focusing on a habitat manipulation exercise, will be undertaken prior to construction to safeguard reptiles.
- *Likely residual effects:* Following mitigation, construction effects on reptiles are anticipated to be **neutral**. Following mitigation, operational effects on reptiles are anticipated to be **minor adverse** at the **local level**, and **permanent**.
- **Birds.** The demolition of the buildings and clearance of suitable nesting vegetation will be undertaken outside of the nesting season (i.e. outside March to August inclusive) or if within the nesting season only following the negative result of a nesting bird survey, conducted by a suitably qualified ecologist. As an enhancement, bird boxes will be incorporated within the Proposed Development to provide new nesting opportunities for birds.
- *Likely residual effects:* Following mitigation, construction effects on birds are anticipated to be **minor adverse** at the **local level**, and **temporary** over the **short term**. Prior to mitigation, operational effects on birds are anticipated to be **minor adverse to not significant** at the **local level**, and **permanent**.

### Conclusion

12.8.11 In conclusion, based on the evidence obtained to date from ecological survey work and the implementation of the safeguards/mitigation described above, there is no reason to conclude that any ecological designations, habitats of nature conservation interest or any protected species will be significantly harmed by the proposals.

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**Table 12.9:** Summary of Effects, Mitigation and Residual Effects.

Receptor / Receiving Environment	Description of Effect	Nature of Effect *	Sensitivity Value **	Magnitude of Effect **	Geographical Importance ***	Significance of Effects ****	Mitigation / Enhancement Measures	Residual Effects ****
<b>Construction</b>								
Bats	Lighting may disrupt commuting/ foraging activity.	Temporary	Low	-	Local	Minor Adverse	Lighting during construction works will be minimised, and positioned so as not to excessively illuminate retained vegetation.	Neutral
Badger	Lighting may disrupt commuting activity, and harm may occur to Badgers passing through the construction works.	Temporary	Low	-	Local	Minor Adverse	Lighting during construction works will be minimised, and positioned so as not to excessively illuminate habitats used by Badgers. Construction safeguards to be implemented to avoid harm occurring the Badgers during	Neutral

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							construction works.	
Reptiles	Potential for harm to occur to reptiles during construction works.	Temporary	Low	-	Local	Minor adverse	Precautionary measures to be taken as a habitat manipulation exercise, to remove reptiles from the construction zone.	Not Significant
Birds	Birds may be disturbed/injured/killed or nests damaged/destroyed during site clearance	Temporary	Low	-	Local	Minor adverse	Suitable bird nesting habitat, including buildings, to be cleared outside bird nesting season.	Minor adverse
Invertebrates	Generation of dust and subsequent deposition on vegetation and egg-laying sites.	Temporary	Low	-	Local	Minor adverse	Undertake pollution prevent measures such as dampening down potential dust sources.	Not significant
<b>Operation</b>								
Bats	Loss of three feeding perches. Disruption to foraging/commuting bats by new lighting.	Permanent	Low	-	Local	Minor Adverse	Buildings containing roosts to be subject to special measures to safeguard bats.	Minor Adverse to Not Significant

# ENVIRONMENTAL STATEMENT

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							New lighting scheme for the Proposed Development will be sensitively designed to avoid excessive illumination of habitats used by bats.	
Badgers	Loss of foraging habitat	Permanent	Low	-	Local	Not Significant	Enhancement of retained habitats, including new tree and shrub planting of fruit and nut bearing species.	Beneficial
Reptiles	Loss of foraging habitat	Permanent	Low	-	Local	Minor Adverse	Retained grassland to be enhanced.	Neutral
Birds	Loss of nesting habitat	Permanent	Low	-	Local	Minor adverse	The majority of the semi-natural nesting habitat will be retained. New roosting opportunities will be provided by the new buildings.	Minor Adverse to Not Significant
Invertebrates	Loss of habitat	Permanent	Low	-	Local	Not Significant	New habitats created as	Not Significant

# ENVIRONMENTAL STATEMENT

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							gardens and green open space.	
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Notes:

\* Enter either: Permanent or Temporary / Direct or Indirect

\*\* Only enter a value where a sensitivity v magnitude effects has been used – otherwise 'Not Applicable'

\*\*\* Enter either: International, European, United Kingdom, Regional, County, Borough/District or Local

\*\*\*\* Enter either: Major / Moderate / Minor / Negligible AND state whether Beneficial or Adverse (unless negligible)

i Chartered Institute of Ecology and Environmental Management (IEEM) (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland. CIEEM.

ii Fure, A. (2006) Bats and Lighting. The London Naturalist: No. 85

iii BCT and Institute of Lighting Engineers (ILE) (2009) Bats and Lighting in the UK (v3). BCT