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EXPERIENCE QUARTER,
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OXFORDSHIRE

Ecological Assessment

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ecology solutions for planners and developers

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1. INTRODUCTION

1.1. Background & Proposals

1.1.1. Ecology Solutions was commissioned by Bicester Heritage in 2018 to undertake Ecological Assessment work of lands at Bicester Heritage (Bicester Airfield), Bicester, Oxfordshire (see Plan ECO1), hereafter referred to as the wider site.

1.1.2. Development proposals for the wider site are proposed to come forward on a phased basis. At this stage it is anticipated that the Site will come forward across four development phases.

1.1.3. This current ecology report relates specifically to one of these development phases, known as the Experience Quarter. The proposed development will comprise an Experience Centre focused on 'Motion' and all forms of wings and wheel technologies. The proposed development will comprise an Automotive Experience Quarter comprising Commercial, Business and Services uses (Class E), Light Industrial (Class B2) and Local Community and Learning Uses (Class F) at Bicester Motion, Bicester, OX26 5HA. The red line boundary for the Experience Quarter Site is detailed on Plan ECO1.

1.1.4. An additional area of 'blue line land' is also identified and comprises the entirety of the grassland habitats within the central airfield. This blue line land represents additional land under the applicants control and which will be subject to habitat creation/enhancement as part of the Experience Quarter proposals.

1.1.5. Notwithstanding that the Experience Quarter proposals are to come forward as a standalone application, the importance of understanding ecological impacts as a result of Site wide development (i.e. the cumulative impacts and opportunities across all anticipated development phases) is acknowledged. To this end, Ecology Solutions have continued to advise on the formation of a Site wide masterplan, the implementation of which would ensure re-development of the Bicester Motion Site as a whole would avoid adverse ecological impacts and indeed, would ensure opportunities for biodiversity enhancement are realised, thereby complying with planning policy and legislation of relevance to biodiversity and nature conservation.

1.1.6. A copy of this 'guiding' masterplan is provided at Appendix 1 of this Ecological Report, with reference made to it where relevant within this report. It is noted that emerging proposals for a subset of the wider scheme known as FAST have previously been submitted to the LPA and benefit from a resolution to grant planning permission.

1.2. Site Characteristics

1.2.1. The wider site comprises a single piece of land located to the north-east of Bicester, Oxfordshire. It is bordered along its length to the

south by Skimmingdish Lane, beyond which lies an area of residential development, in addition to a school; to the west by the A4421, beyond which lies an area of residential and commercial development; to the north by Bicester Road, beyond which lie areas of agricultural land; and to the east by areas of agricultural land.

1.2.2. The wider site primarily comprises an airfield largely supporting short mown grassland, associated historical defence structures and infrastructure, in addition to Stratton Audley Quarry, a partially restored quarry and inert landfill, which supports a number of waterbodies, grassland, scrub and young woodland.

1.2.3. The Experience Quarter Site forms much of the north-western extent of the wider site, in addition to a circular band of land which comprises an existing hardstanding track (the perimeter track) alongside several large areas of grassland within the central airfield, an area of dense scrub, and a fishing lake.

1.3. Ecological Assessment

1.3.1. This document assesses the ecological interest of the Application Site as a whole. The importance of the habitats present is evaluated with regard to current guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[1].

1.3.2. The report also sets out the existing baseline conditions for the Application Site, setting these in the correct planning policy and legal framework and assessing any potential impacts which may occur from the proposed development. Appropriate mitigation where necessary is identified such that it will offset any negative impacts and, where possible, provide for the ecological enhancement of the Application Site, in accordance with relevant planning policy.

[1] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 3rd Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

2. SURVEY METHODOLOGY

2.1. The methodology utilised for the survey work can be split into three areas; namely desk study, habitat survey and faunal survey. These are discussed in more detail below. Unless otherwise noted, the ecological survey work detailed below was undertaken across the wider site, including for the Experience Quarter Site.

2.2. Desk Study

2.2.1. In order to compile background information on the Application Site and its immediate surroundings, Ecology Solutions contacted the Thames Valley Ecological Records Centre (TVERC). Other third party organisations that hold records for protected or notable species/species groups, such as the Oxfordshire Bat Group, were also contacted. These records are referred to where appropriate.

2.2.2. Information has been provided by TVERC and is included at Appendix 2. This information is referenced within this report, where appropriate. Information regarding designated sites is also shown where appropriate on Plan ECO1.

2.2.3. Further information on designated sites from a wider search area was also obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)[2] database. This information is reproduced at Appendix 3 and where appropriate on Plan ECO1.

2.3. Habitat Survey Methodology

2.3.1. Habitat surveys were carried out in May, June and August 2018 to ascertain the general ecological value of the land contained within the boundaries of the wider site and to identify the main habitats and associated plant species, with notes on fauna utilising the Site. Ecology Solutions have moreover undertaken updated Site visits in 2019 and 2020, with these confirming the habitats within the Experience Quarter Site remain broadly unchanged.

2.3.2. The Application Site was surveyed, based around extended Phase 1 survey methodology[3], as recommended by JNCC, 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.

[2] http://magic.defra.gov.uk
[3] Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

2.3.3. 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.

2.3.4. All of the species that occur in each habitat would not necessarily be detected during survey work carried out at any given time of the year, since different species are apparent at different seasons. However, given the habitats present, it is considered that an accurate and robust assessment has been made.

2.4. Faunal Survey

2.4.1. General faunal activity observed during the course of the survey was recorded, whether visually or by call. Specific attention was paid to the potential presence of any protected, rare, notable or Priority Species. In addition, specific surveys were undertaken for Badgers *Meles meles,* birds (breeding and wintering), bats, reptiles, invertebrates and Great Crested Newts (GCN) *Triturus cristatus*.

2.4.2. **Bats**. Bat surveys were undertaken in May, June and August 2018 to assess the potential for roosting bats within trees within and adjacent to the wider site. The work was undertaken by an experienced bat worker and aimed to establish the likelihood of presence/absence of bats.

2.4.3. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (NE) (2004[4]), the Joint Nature Conservation Committee (JNCC) (2004[5]) and the Bat Conservation Trust (2016[6]).

2.4.4. The probability of a building/structure being used by bats as a summer roost site increases if it:

- is largely undisturbed;
- dates from pre 20th century;
- has a large roof void with unobstructed flying spaces;
- has access points for bats (though not too draughty);
- has wooden cladding or hanging tiles; and
- is in a rural setting and close to woodland or water.

2.4.5. Conversely, the probability decreases if a building/structure is of a modern or pre-fabricated design/construction, is in an urban setting, has small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.

2.4.6. The main requirements for a winter/hibernation roost site is that it maintains at a stable (cool) temperature and humidity. Sites commonly utilised by bats as winter roosts include cavities/holes in trees, underground sites and parts of buildings. Whilst different

[4] Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[5] Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[6] Collins, J. (Eds.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition)*. Bat Conservation Trust, London.

species may show a preference for one of these types of roost site, none are solely dependent on a single type.

2.4.7. All trees at the wider site were assessed for their potential to support roosting bats. For a tree to be classed as having some potential for roosting bats it must usually have one or more of the following characteristics:

- obvious holes, e.g. rot holes and old woodpecker holes;
- dark staining on the tree below a hole;
- tiny scratch marks around a hole from bats' claws;
- cavities, splits and/or loose bark from broken or fallen branches, lightning strikes etc.;
- very dense covering of mature Ivy *Hedera helix* over the trunk.

2.4.8. In addition, bat activity surveys and accompanying static monitoring surveys were undertaken throughout the wider site in order to establish whether there are any features of potential importance for foraging and commuting bats. Activity surveys were undertaken on a monthly basis between May and October 2018.

2.4.9. The evening activity bat surveys were conducted from sunset to approximately 2 hours after sunset. Surveyors utilised EchoMeter Touch 2 Pro (EMT 2 pro) bat detectors to aid identification of bats and record data. Surveyors walked transects in order to encompass all features of potential value to foraging and commuting bats, including hedgerows, treelines and scrub. All bat data recorded was subsequently analysed using Kaleidoscope bat sound analysis software.

2.4.10. Activity surveys undertaken between May and October 2018 were accompanied by static monitoring surveys. SongMeter SM4 bat detectors were deployed at strategic locations, as shown on Plan ECO3, for at least five consecutive nights. These surveys allowed for a longer term assessment of the use of the Site by foraging and commuting bats.

2.4.11. **Badgers.** Surveys were undertaken to search for evidence of Badgers in June and August 2018, and comprised two main elements. The first of these was a thorough search for evidence of Badger setts. For any setts encountered each sett entrance would be recorded and plotted, even if the entrance appeared disused. The following information was recorded if appropriate:

- The number and location of well used or very active entrances; these are clear of 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.

2.4.12. Secondly, evidence of Badger activity, such as well worn paths and run-throughs, snagged hair, footprints, latrines and foraging signs, was also searched for in order to build up a picture of the use of the Site by Badgers.

2.4.13. **Amphibians.** There are no suitable waterbodies present within the Experience Quarter Site (the presence of a fishing lake is noted). However, a number of waterbodies are present within the wider site which were considered to offer potential opportunities for breeding amphibian species (including GCN). The closest of these waterbodies is located adjacent to the Experience Quarter Site at its western edge (see Appendix 5).

2.4.14. As such, and given the presence of suitable terrestrial habitat within the FAST Site, detailed aquatic surveys were undertaken by Ecology Solutions between May and June 2018 to ascertain the presence or absence of this species from the Site. A summary of the dates of surveys and the weather conditions during these surveys is included at Table 1, below.

Date	Survey Number	Weather Conditions
10.05.2018	1	11C, 30% cloud cover, dry
14.05.2018	2	7C, 5% cloud cover, dry
16.05.2018	3	5C, 25% cloud cover, dry
07.06.2018	4	16C, 100% cloud cover, dry
19.06.2018	5	19C, 95% cloud cover, dry
21.06.2018	6	17C, 5% cloud cover, dry

Table 1: 2018 Great Crested Newt Survey Dates and Weather Conditions

2.4.15. All the surveys were undertaken in suitable weather conditions in accordance with the NE guidelines[7], to determine the presence or absence of GCN. Surveys undertaken by Ecology Solutions utilised three methods per visit (torch survey, bottle-trapping and egg searches), where possible.

2.4.16. Suitable survey weather conditions are deemed to be those nights when the night-time air temperature is more than 5°C, with little or

[7] English Nature (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

no wind, and no rain, and surveys were conducted during such conditions.

2.4.17. Torch counting involved the use of high powered torches to find and, if possible, count the number of adults of each amphibian species. As recommended by NE the entire margin of each waterbody was walked once, slowly checking for GCN.

2.4.18. Bottle-trapping involved setting traps made from two litre plastic bottles around the margin of each waterbody, and leaving the traps set overnight before checking them the following morning. A density of at least one trap per two metres of shoreline was utilised, where possible, as recommended by NE.

2.4.19. In addition, an egg search was undertaken of any aquatic vegetation to search for any evidence of breeding GCN.

2.4.20. It should also be noted that a significant density of reptile tins were deployed in suitable terrestrial habitat within the Site, which represents an additional form of survey work for amphibian species.

2.4.21. **Reptiles.** Specific surveys to identify the presence or absence of reptiles within the wider site (including the Experience Quarter Site) were undertaken between August and October 2018.

2.4.22. Following an initial assessment to identify areas of suitable reptile habitat within the Site, refugia surveys were undertaken. It was considered, given the size of the Site, that a complete tinning exercise would be impractical. On this basis a sampling survey was utilised. A total of 700 'tins' (0.5 x 0.5 metre squares of heavy roofing felt which are often used as refuges by reptiles) were distributed in groups of between 20 and 60 within specific areas of suitable reptile habitat within the wider site, in order to provide a representative sample of the use of these habitats by reptiles. The sample areas utilised for this tinning exercise included for suitable habitat within the Experience Quarter Site boundary.

2.4.23. These tins were left in place for two weeks to 'bed in' and subsequently surveyed for reptiles either beneath or upon the tins during suitable weather conditions.

2.4.24. Suitable weather conditions to carry out surveys are when the air temperature is between 9 and 18°C. Heavy rain and windy conditions should be avoided.

2.4.25. The tins provide shelter, heat up quicker than the surroundings in the morning, and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask and raise their body temperature, which allows them to forage earlier and later in the day.

2.4.26. **Breeding Birds.** Given the size of the Experience Quarter Site, and the habitats present (predominantly close mown grassland and hardstanding), it was not considered that the Experience Quarter Site in isolation would have the potential to provide a significant

resource for bird species present in the local area. Notwithstanding this conclusion, it is acknowledged that the Experience Quarter Site will comprise one phase of development across the wider site. Given the size of the wider site, and the variety of habitats present, the potential for significant impacts in cumulation could not be screened out.

2.4.27. As such, and in order to assess the importance of the Site to breeding birds, three early morning surveys were conducted between May and July 2018 in order to assess breeding bird activity within the Site. The weather conditions during the surveys are given in Table 2.

Date	Start Time	Weather Conditions
15 May 2018	04:45	7C, 70% cloud cover, dry
13 June 2018	04:30	7C, 30% cloud cover, dry
21 June 2018	04:30	10C, 0% cloud cover, dry

Table 2. Dates of breeding bird surveys and weather conditions.

2.4.28. On each survey an experienced ornithologist walked a circuitous route around the Site, covering all field margins, recording the locations, numbers and activity of all bird species present within the area during this time. Over the three visits this methodology should ensure the vast majority of species present at the Site are recorded, although some species which may use the Site as part of a larger territory (especially nocturnal species such as owls) may be missed. Consideration was also given to the potential presence of nocturnal bird species during the completion of nocturnal bat surveys.

2.4.29. To ascertain the breeding status of birds using the Site, the following criteria were applied following the methodology used in the 'Atlas' surveys of 1988 to 1991 (Gibbons et al, 1993). This accepts the following activities as denoting breeding (including those probably breeding although definite proof was lacking):

- Bird apparently holding territory.
- Courtship and display.
- Nest-building (including excavating nest-hole).
- Distraction display or feigning injury.
- Adult carrying faecal sac or food.
- Adult entering or leaving apparently occupied nest site.
- Nest with eggs or eggshells found, or bird sitting but not disturbed.
- Nest with young; or downy young of ducks, game birds, waders and other nidifugous species.
- Recently fledged young.

2.4.30. **Wintering Birds.** With the exception of the small area of lake present within the Site, the majority of habitats present within the Experience Quarter Site are not deemed to be of any significance for wintering birds. Nonetheless, the Experience Quarter Site was

subject to wintering bird surveys as part of Site wide assessment work, for which surveys were undertaken in January, February and March 2019. The adopted survey methodology includes for a walked transect of the wider site, with stops at numerous vantage points. The dates and weather conditions for the initial survey are detailed in Table 3 below.

Date	Weather Conditions
11 January 2019	50-90% high cloud cover, light air, 6C.
15 February 2019	Cloudless, light air, 14C
4 March 2019	60% Cloud, gentle breeze, 6C

Table 3. Dates of breeding bird surveys and weather conditions.

2.4.31. **Invertebrates.** The wider site supports a mosaic of habitats which were identified to be of potential value to invertebrate assemblage, including botanically diverse grassland as well as areas classified as Open Mosaic Habitat. The calcareous grassland within the Experience Quarter Site forms a component of this important habitat mosaic.

2.4.32. Noting the above, specific invertebrate surveys were undertaken at the Site by Colin Plant Associates to assess the importance of the Site for a range of invertebrates. A total of 4 surveys were undertaken in 2018, with this allowing for full seasonal coverage of the Site. The dates of these surveys are as follows:

- 13 June 2018
- 9 July 2018
- 14 August 2018
- 11 September 2018

2.4.33. Due to unseasonal weather conditions in early 2018, and the later commencement of the spring survey work, an additional two surveys were undertaken on 7 May and 10 June 2019 to ensure thorough and robust full season coverage across the Site.

2.4.34. The sampling methodology for the 2018 and 2019 surveys is detailed at Appendix 4 and is summarised below:

***Sweep-netting**. A stout hand held net is moved vigorously through vegetation to dislodge resting insects. The technique may be used semi-quantitatively by timing the number of sweeps through vegetation of a similar type and counting selected groups of species.*

***Beating trees and bushes**. A cloth tray, held on a folding frame, is positioned below branches of trees or bushes and these are sharply tapped with a stick to dislodge insects. Black or white trays are used depending upon which group of invertebrates has been targeted for search. Insects are collected from the tray using a pooter – a mouth-operated suction device.*

***Grubbing/hand searching**. Important host plants may be searched by hand. This is particularly useful for species which live on, or even below, the ground surface and can be found by grubbing around and underneath basal leaf rosettes. Other invertebrate microhabitats such as loose bark, litter, fungi and various decay features associated with dead wood can also be productive when searched by hand. Turning large stones, pieces of wood and other refuse often reveal species which are nocturnally active, in particular ground beetles and rove beetles.*

***Suction Sampling** consists of using a converted leaf blower to collect samples from grass and other longer ground vegetation. The sample is then everted into a net bag and the invertebrates removed with a pooter. The advantage of suction sampling is that it catches species, which do not fly readily, or which live in deep vegetation. It is particularly productive for Coleoptera, some Diptera and Arachnida.*

***Pitfall trapping**. Vending machine cups or similar are placed in the ground with the rim flush with, or slightly below, the surface. A fluid is added, containing ethylene glycol, sodium chloride and formalin with a little detergent to reduce surface tension. Traps may be covered or uncovered and are typically left in position for a month at a time. Holes made in the sides of the cups a couple of centimetres below the rim permit flood or rain water to drain without the traps over-flowing and the catch becoming lost. Invertebrates simply fall into the traps. This is the single most effective means of recording ground beetles (Carabidae) but is also effective for rove beetles (Staphylinidae), some other beetle groups, spiders and most non-insect soil-dwelling arthropods.*

***Malaise trapping**. A tent like net is erected on poles, using guy ropes, in the habitat to be sampled. The two, long side walls of the tent are absent and a long central wall is present. Insects collide with the central net wall and are funnelled upwards to a catching chamber. Traps are usually left for several months and the catching chamber, which is filled with isopropyl alcohol (propan-2-ol), emptied fortnightly or monthly depending on site, habitat and weather. This is the single most effective sampling method for all flying insects and frequently catches species that have not been found by any other method. A malaise trap was set at calcareous grassland south of the working airfield and operated throughout the survey period*

2.4.35. ***Pond netting**. Pond nets on wooden poles, with a mesh diameter of one millimetre, are used to capture invertebrates from all available aquatic habitats, including open water and amongst emergent, floating and submerged vegetation. Net samples are sorted in white trays on the bankside and stored in 50% isopropyl alcohol for subsequent identification. All three water bodies inside the Stratton Audley Quarry survey boundary were sampled in June and September 2018, with the exception of P1, which was dry following the first visit.*

2.5. **Consultation**

2.5.1. Ecology Solutions have engaged with Cherwell District Council's Ecology Officer as part of formal pre-application submissions, both in relation to the Experience Quarter (previously referred to as BRAND Experience), as well as for previous development phases (FAST). Previous consultation has given regard to the wider site and masterplan aspirations.

2.5.2. Comments and recommendations received from the Ecology Officer as part of previous consultation have been given careful consideration as part of these proposals, with appropriate information provided as part of this outline planning application.

2.5.3. For clarity, the following matters have been discussed with the Ecology Officer during pre-application discussions in relation to both the Experience Quarter and/or the wider site (including the FAST proposals):

- Ensuring that consideration is given to Priority Species including European Hedgehog *Erinaceus europaeus* and Brown Hare *Lepus europaeus* (see Sections 4 and 5 of this Ecological Assessment);
- Details on proposed impacts, mitigation and enhancement opportunities (see Section 5 of this Ecological Assessment);
- Recommendation to undertake a Biodiversity Impact Assessment Metric for the scheme and to target a biodiversity net gain (see Section 5.2.31 of this report and the BIA submitted alongside this application); and
- Consideration given to 'less traditional methods of habitat gain such as Green Roofs' (see Section 5 of this Ecological Assessment).

3. ECOLOGICAL FEATURES

3.1. The wider site was subject to an ecological habitat survey by Ecology Solutions in May, June and August 2018. Informal update checks of habitats were also undertaken during the completion of Site visits in 2019 and 2020. The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.

3.2. The ecological baseline gathered for the wider site is detailed at Appendix 5 and is given due regard as part of this assessment work. The following sections of this report consider the baseline specifically within the Experience Quarter Site boundary.

3.3. The following main habitat/vegetation types were identified within the Experience Quarter Site:

- Semi-improved calcareous grassland;
- Species-poor semi-improved calcareous grassland mosaic;
- Hedgerows/treelines;
- Dense scrub and grassland mosaic;
- Woodland;
- Waterbody; and
- Hardstanding/recolonising hardstanding.

3.4. The location of these habitats is shown on Plan ECO2.

3.5. Each habitat present is described below, with an account of their representative plant species.

3.6. **Species-poor semi-improved calcareous grassland**

3.6.1. As with the wider site, a significant component of the Experience Quarter Site comprises short grassland, located within the airfield itself, which due to the ongoing management regime which involves regular mowing with the arisings left in-situ, supports a species poor sward of variable composition including species indicative of neutral and calcareous soils.

3.6.2. Species recorded within this habitat include Perennial Rye-grass *Lolium perenne* (F), Smooth meadow-grass *Poa pratensis* (A), Yorkshire fog *Holcus lanatus* (F), Red fescue *Festuca rubra* (A), Cock's-foot *Dactylus glomerata* (O), Upright brome *Bromopsis erecta* (O), Meadow fescue *Schedonorous pratensis* (O), False oat-grass *Arrhenatherum elatius* (O), Creeping bent *Agrostis stolonifera* (O), Common bent *Agrostis capillaris* (O), Lady's bedstraw *Gallium verum* (R), Yarrow *Achillea millefolium* (O), White clover *Trifolium repens* (O), Red clover *Trifolium pratense* (O), Dandelion *Taraxacum officinale agg.* (O), Common knapweed *Centaurea nigra* (R), Ribwort plantain *Plantago lanceolata* (O), Field bindweed *Convolvulus arvensis* (O), Creeping thistle *Cirsium arvense* (O), Broad-leaved dock *Rumex obustifolius* (R), Creeping cinquefoil *Potentilla reptans* (O), Hogweed *Heracleum sphondylium* (R),

Mugwort *Artemisia vularis* (R), Dove's-foot cranesbill *Geranium molle* (O), Daisy *Bellis perennis* (O) and Bird's-foot trefoil *Lotus corniculatus* (R).

3.7. **Semi-improved Calcareous Grassland**

3.7.1. Areas of grassland which lie outside of the central airfield appear to be subject to an annual hay cut, following which the arisings are removed from the Site. It is considered likely this management has been ongoing for a significant period, and this has led to the establishment of a calcareous grassland sward indicative of more nutrient poor and calcareous soils. While areas of this grassland are relatively herb-rich, the majority of this grassland is dominated by grasses with a relatively low number of forb species supported, in addition a number of species indicative of improved and neutral conditions are present.

3.7.2. The species composition of this grassland across the wider site is variable. However, the grassland present along the boundary with Stratton Audley Quarries in the north (i.e. within the Experience Quarter Site), supports a relatively herb-rich structure.

3.7.3. Species recorded within this habitat include Upright Brome *Bromopsis erecta* (D), Red Fescue (D), Meadow Fescue (F), Tall Fescue *Schedonorous arundinaceus* (R), Smaller Cat's-tail *Phleum bertolonii* (O), Timothy *Phleum pratense* (R), Creeping Bent (R), Common Bent (O), Tor Grass *Brachypodium pinnatum* (O), Tufted Hair-grass *Deschampsia cespitosa* (O), Meadow Oat-grass *Avenula pratensis* (O), Downy Oat-grass *Avenula pubescens* (O), False Oat-grass *Deschampsia cespitosa* (O), Crested Dog's-tail *Cynosurus cristatus* (R), Smooth Meadow-grass *Poa pratensis* (O), Rough Meadow-grass *Poa trivialis* (R), Perennial Rye-grass (O), Cock's-foot (O), Yorkshire Fog (R), Fern Grass *Catapodium rigidum* (R), Yarrow (A), Wild Carrot *Daucus carotta* (O), Oxeye Daisy *Leucanthemum vulgare* (F), Daisy *Bellis perennis* (O), Common Knapweed *Centaurea nigra* (O), Greater Knapweed *Centaurea scabiosa* (O), Field Scabious *Knautia arvensis* (O), Burnet Saxifrage *Pimpinella saxifraga* (O), Salad Burnet *Sanguisorba minor* (O), Bird's-foot Trefoil, Lesser Trefoil *Trifolium dubium* (R), Hop Trefoil *Trifolium campestre* (R), Meadow Vetchling *Lathyrus pratensis* (R), Black Meddick *Medicago lupulina* (R), Red Clover *Trifolium pratense* (R), White Clover *Trifolium repens* (R), Common Vetch *Vicia sativa* (O), Common Restharrow *Ononis repens* (R), Wild Mignonette *Reseda lutea* (O), Weld *Reseda luteola* (R), Mouse-ear Hawkweed *Hieracium pilosella* (O), Smooth Hawk's-beard *Crepis capillaris* (R), Common Sorrel *Rumex acetosa* (O), Curled Dock *Rumex crispus* (R), Broad-leaved Dock (R), Field Bindweed (O), Ribwort Plantain (O), Greater Plantain (R), Hoary Plantain *Plantago media,* Selfheal *Prunella vulgaris* (R), Wild Onion *Allium vineale* (R), White Campion *Silene latifolia* (O), Cow Parsley *Anthriscus sylvestris* (O), Wild Parsnip *Pastinaca sativa* (O), Dandelion (R), Cleavers *Galium aparine* (R), Mugwort (R), Creeping Thistle, Spear Thistle *Cirsium vulgare* (R), Nodding Thistle *Carduus nutans* (R), Perforate St. John's Wort *Hypericum perforatum* (O), Wild Marjoram *Origanum*

vulgare (R), Basil Thyme *Clinopodium acinos* (R), Ploughman's Spikenard *Inula conyza* (O), Blue Fleabane *Erigeron acer* (O), Agrimony *Agrimonia eupatoria* (R), Hogweed (O), Creeping Cinquefoil (O), Common Toadflax *Linaria vulgaris* (R), Small Toadflax *Chaenorhinum minus* (R), Thyme-leaved Sandwort *Arenaria serpyllifolia* (O), Fairy Flax *Linum catharticum* (R), Common Nettle *Urtica dioica* (R), Lady's Bedstraw, Hoary Ragwort *Senecio erucifolia* (R), Ragwort *Senecio jacobaea* (O), Hedgerow Cranesbill *Geranium pyrenaicum* (R), Germander Speedwell *Veronica chamaedrys* (R), Meadow Buttercup *Ranunculus acris* (R), Moss *Rhytidiadelphus squarrosus,* Field Forget-me-not *Myosotis arvensis* (R), Cowslip *Primula veris* (F), Common Centaury *Centaurium erythraea* (O), Eyebright *Euphrasia sp.* (R), Common Mouse-ear *Cerastium fontanum* (R), Sticky Mouse-ear *Cerastium glomeratum* (R) and Field Mouse-ear *Cerastium arvense* (O).

3.8. **Hedgerows/Treelines**

3.8.1. The wider site supports a number of hedgerows and treelines which constitute boundaries to the airfield, and also the Stratton Audley Quarry. None would qualify as species rich under the Hedgerow Regulations 1997.

3.8.2. There are three hedgerows adjacent to the Experience Quarter Site boundary at its northern edge. To ensure consistency with numbering of the wider site, these hedgerows are identified as **H9, H10** and **H11** for the purpose of this application. Descriptions of the hedgerows within/adjacent to the Experience Quarter Site are provided below, with their locations identified on Plan ECO2.

3.8.3. **H1** is located along the western boundary of the airfield, along the A4421, and comprises a gappy unmanaged narrow treeline, up to 13m tall, and comprising English Elm *Ulmus minor var. vulgaris*, Ash *Fraxinus excelsior*, Hazel, Hawthorn *Crategus monogyna*, Blackthorn, Sycamore *Acer pseudoplatanus*, Ivy and Field maple *Acer campestre*. Gappy areas are dominated by dense stands of Bramble *Rubus*.

3.8.4. **H2** is located along the north-western boundary of the airfield, along Bicester Road, and is of similar composition to H1 with a number of more mature Ash and Sycamore present.

3.8.5. **H3** is located along the northern boundary of the Stratton Audley Quarry area, along Bicester Road, and comprises a band of scrub, including Hawthorn, Blackthorn, Sycamore, Dog Rose *Rosa canina* and Bramble. It is unmanaged, up to 5 metres in height, and grades into continuous dense scrub to the south.

3.8.6. **H9** is an unmanaged hedgerow and associated bands of scrub, and varies in height between 2 and 4 metres. It comprises Blackthorn, Hawthorn, Hornbeam *Carpinus betulus,* Bramble, Dog Rose, Field maple, Ash and Elder *Sambucus nigra*.

3.8.7. **H10** comprises the northern boundary of the airfield and separates it from the adjacent Stratton Audley Quarries site. It is an

unmanaged hedgerow, up to 4 metres in height and comprises Blackthorn, Hawthorn, Hornbeam, Bramble, Dog Rose, Field Maple, Ash, Elder and Sweet Chestnut *Castanea sativa.* In its south-western extent it becomes wider and more scrubby, encroaching upon areas of adjacent grassland.

3.8.8. **H11** is an unmanaged young treeline, up to 8 metres in height, with associated scrub below. It is comprised of Ash, Sycamore, Hornbeam, Blackthorn, Hawthorn, Dog Rose and Goat Willow *Salix caprea*.

3.9. Dense Scrub/Grassland Mosaic

3.9.1. A single area of established scrub and grassland mosaic lies in the north-west of the Stratton Audley Quarry site. This area has presumably been recolonised following its previous use as a landfill site. It largely supports established scrub with pockets of grassland.

3.9.2. Scrub species are largely comprised of Alder *Alnus glutinosa*, Hawthorn, Blackthorn, Dog Rose, Bramble, Goat Willow, Grey Willow *Salix cinerea,* Apple *Malus sp.*, Ash and Oak *Quercus robur*.

3.9.3. Grassland species largely comprise a range of species which are also present in the adjacent areas of neutral and calcareous grassland mosaic. In addition, some marshy areas are supported which are dominated by Soft and Hard Rush *Juncus effusus* and *Juncus inflexus*. These grassland areas appear to be subject to continuing succession, resulting in a gradual decline in area.

3.10. Broadleaved Semi-natural Woodland

3.10.1. The wider site supports a number of areas of broad-leaved semi-natural woodland. These habitats are typically comprised of a limited range of woody species and are considered to be relatively young and arising from the development of long established scrub, in addition to areas of historical planting.

3.10.2. Areas of woodland are variable in composition however the canopy layer is typically comprised of Hawthorn*,* Field Maple*,* Crab Apple *Malus sylvestris,* Apple *Malus domestica,* Sycamore*,* Silver Birch *Betula pendula,* Cherry *Prunus avium,* Alder*,* Oak**,** Ash and Crack Willow *Salix fragilis.*

3.10.3. Understorey and shrub layers within these woodlands are of variable structure and composition but are broadly comprised of Blackthorn *Prunus spinosa,* Damson *Prunus domestica sbsp. insititia,* Dog Rose *Rosa canina,* Spindle *Euonymus europaea,* Alder Buckthorn *Rhamnus frangula,* Elder*,* Dogwood *Cornus sanguinea,* English Elm*,* Gorse *Ulex europaeus,* Broom *Cytisus scoparius,* Redcurrant *Ribes rubrum,* Buddleia *Budleja davidii,* Bramble and Goat Willow*.*

3.10.4. Ground flora is variable given the changes in light levels between more open areas and those with a more closed canopy and include dense carpets of Common Striated Feather-Moss *Eurynchium*

striatum, Bramble, Ground Ivy, Lords and Ladies and Bracken *Pteridium aquilinum.* Wood Avens, Ivy, Lesser Burdock, Hogweed, False Brome *Brachypodium sylvaticum*, Teasel *Dipsacus fullonum*, Common Nettle and Ploughman's Spikenard.

3.11. **Waterbody**

3.11.1. The Experience Quarter Site includes for a single waterbody, **P1**. **P1** is a large (around 14,000m²) and deep waterbody which was created through historical mineral extraction at the wider site. It supports little aquatic vegetation and is currently utilised as a stocked fishing lake.

3.12. **Hardstanding/Re-colonising Hardstanding**

3.12.1. The Experience Quarter Site includes an existing circular track associated with the historic use of the Site as an airfield. Other areas of hardstanding including for 'pan handles' associated with the circular track, in addition to several smaller lengths of track.

3.12.2. Areas of hardstanding are of varying composition with some areas formed of tarmac, concrete and gravel.

3.12.3. Areas of hardstanding are largely bare, particularly along the circular track, and subject to minimal colonisation by a limited number of species including Basil Thyme, White Stonecrop *Sedum album*, Field Bindweed, Weld and Knotgrass *Polygonum aviculare.*

3.12.4. Smaller areas of hardstanding within the Experience Quarter Site have been subject to more significant levels of colonisation and are identified as '*Re-colonising hardstanding'* on Plan ECO2. Within these areas a range of plant species have been recorded including Basil Thyme, White Stonecrop, Field Bindweed, Prickly Sow-thistle *Sonchus asper*, Perennial Rye-grass, Weld , Wintercress *Barbarea vulgaris*, Creeping Thistle, Lady's Bedstraw, Fat Hen *Chenopodium album,* Oxeye Daisy, Dove's-foot Cranesbill, Knotgrass, Blue Fleabane, Parsley Piert *Aphanes sp.*, Teasel, Thyme-leaved Sandwort *Arenaria serpyllifolia* and Bird's-foot Trefoil.

3.13. **Open Habitat Mosaic**

3.13.1. As is frequently the case for areas of brownfield land, the wider site supports a range of early successional habitats, many of which, in the absence of management (targeted or not) are succeeding into more mature or established vegetation.

3.13.2. This ecological succession, whilst likely to be harmful to the Sites nature conservation in the longer term, has allowed a gradation of habitats to establish, in particularly within the Stratton Audley Quarry site. Given the gradation in habitats present, it is considered that significant areas would qualify as *Open Mosaic Habitat* (OMH) *on Previously Developed Land*. The Experience Quarter Site supports a subset of the OMH.

3.13.3. Whilst many of the early successional habitats which form a component of this mosaic are of reduced ecological interest in isolation, combined these habitats support a wide and varied floral community, alongside a diverse habitat structure.

3.14. **Background Information**

3.14.1. The desk study undertaken with TVERC returned a large number of local plant records, including a relatively high number from within the wider site. Records of notable or protected plant species from within the wider site include that of Basil Thyme, Hoary Plantain, Quaking Grass *Briza*, Corn Mint *Mentha arvensis* and Field Scabious, all returned from 2014. Additionally, Jacob's Ladder *Polemonium caeruleum,* Hairy Rock-cress *Arabis hirsuta* and Bluebell *Hyacinthoides non-scripta* were returned from within the Stratton Audley Quarry site from 2009.

3.14.2. With the exception of Corn Mint, Jacob's Ladder and Bluebell, all of these species were recorded during the habitat surveys undertaken in 2018.

3.14.3. A small number of notable plants were also recorded by TVERC during updated habitat survey work undertaken within the Stratton Audley Quarry site in 2018. Additional species recorded in this survey included for Galingale *Cyperus* and Lesser Spearwort *Ranunculus flammula*.

4. WILDLIFE USE OF THE APPLICATION SITE

4.1. During the surveys undertaken across the wider site, general observations have been made of any faunal use, with specific attention paid to the potential presence of protected or notable species. Moreover, specific surveys were completed for bats, Badgers, amphibians, reptiles, invertebrates, breeding and wintering birds across the wider site.

4.2. As stated in Section 2, faunal surveys were completed across the wider site, allowing for a holistic assessment of the Sites value, alongside consideration of opportunities within specific development phases.

4.3. The ecological baseline gathered for the wider site is detailed at Appendix 5, and is given due regard as part of this assessment work. The following Sections of this report consider the baseline specifically within the Experience Quarter Site boundary.

4.4. Bats

4.4.1. There are no trees or buildings within the Site, nor within close proximity of the Site, which offer potential roosting opportunities for bats.

Bat Activity Surveys

4.4.2. Bat activity surveys were undertaken across the wider site between June and October 2018, in line with the methodology outlined in Section 2 above. Table 4 below outlines the weather conditions during this survey visit.

Date	Weather Conditions
26.06.2018	23C, 0% cloud cover, dry, light breeze
19.07.2018	22C, 40% cloud cover, dry, light breeze
29.08.2018	14C, 5% cloud cover, dry, light breeze
25.09.2018	15C, 0% cloud cover,dry, light breeze
15.10.2018	11C, 100% cloud cover, occasional drizzle, light to moderate breeze

Table 4: Weather conditions during bat activity surveys

4.4.3. In addition to transect surveys, static detectors were also deployed across the wider site in June, July, August, September and October 2018.

4.4.4. A description of the survey findings from the bat activity survey work, including the locations of static detector deployment, are provided at Appendix 5 of this ecology report.

4.4.5. As set out at Appendix 5, and in summary, generally low levels of bat activity were recorded across the wider site, with activity unsurprisingly higher in close proximity to linear vegetation,

waterbodies and wooded areas. Whilst a good range of bat species were recorded during the course of the surveys, activity was found to be dominated by *Pipistrelle* bat species, with only a low level of registrations pertaining to other species.

4.4.6. Within the Experience Quarter Site, bat activity was noted to be relatively higher adjacent to the woodland and hedgerows along the northern and western boundaries of the Site. Very little bat activity was observed within the open grassland areas, particularly that within the inner track.

4.4.7. **Background Information.** The desk study undertaken with TVERC returned a number of bat records from the local area. The closest roost records were of unidentified bat species from within the wider Bicester Heritage Site in its western extent (albeit in an area outside the red line to which the emerging masterplan relates). These records consisted of the presence of droppings only, and were both returned from 2017. Other records from the locality include activity records of Common Pipistrelle *Pipistrellus pipistrellus* returned from a location approximately 100 metres to the south-west of the wider site, from 2017.

4.5. **Badgers**

4.5.1. No Badger setts have been recorded within the Experience Quarter Site or within close proximity. Indeed, given the flat and predominantly open nature of the habitats present, it is not considered that the Experience Quarter site offers any significant opportunities for sett building. Some improved opportunities are offered within areas of woodland and dense scrub within the northern part of the Site (within Stratton Audley Quarry).

4.5.2. Several Badger setts or potential setts are known within the wider site, albeit all of which are well distanced from the Experience Quarter site (in excess of 30 metres away at their closest points). In addition, a small number of push-throughs were recorded within the wider site.

4.5.3. With the exception of a Badger noted to be foraging, during the course of the May bat activity survey, no other evidence of Badgers, in the form of setts, foraging pits, latrines, footprints or well-worn pathways were recorded within the Site or the wider locality during any of the surveys undertaken.

4.5.4. **Background Information.** The desk study undertaken with TVERC returned a number of Badger records from the local area. The closest record was returned from within the wider site, in its southern extent, and comprises an individual record returned from 2005. An additional record of Badger was returned from within the Stratton Audley Quarry area, in the north of the site, from 2008. Additional records, including sett records were returned from several locations to the east of the wider site.

4.6. **Amphibians**

4.6.1. GCN are known to travel up to 500 metres – without barriers that inhibit dispersal – to a breeding pond. However, it is widely accepted they most commonly utilise suitable terrestrial habitat within a much closer distance, and activity is usually concentrated within 100 metres of breeding ponds, with key habitat being located within 50 metres[8]. Indeed, Research Report 576 produced by English Nature concludes that "Captures on fences (and by other methods) at distances between 100m and 200-250m from breeding ponds tended to be so low as to raise serious doubts about the efficacy of this as an approach".

4.6.2. The only waterbody within the Experience Quarter Site is P1, a large, stocked fishing lake which is unsuitable to support GCN. There are a number of suitable ponds in the wider site, the closest such feature being located adjacent to the Experience Quarter Site boundary at its closest point (this being P9).

4.6.3. As set out above, given the presence of waterbodies in the wider site, a suite of GCN surveys were undertaken in 2018.

4.6.4. The results of the survey are summarised in **Table 5** below. The locations of the waterbodies are detailed at Appendix 5 (see Plan ECO3A and B).

Waterbody	Maximum count of Great Crested Newts	Date of Maximum Count
P1	N/A	N/A
P2	3	10 May 2018
P3	0	N/A
P4	1	10 May 2018
P5	14	14 May 2018
P6	68	14 May 2018
P7	0	N/A
P8	0	N/A
P9	3	14 May 2018
P10	0	N/A
P11	2	16 May 2018
P12	N/A	N/A
D1	2	14 May 2018

[8] English Nature (2001) *Great Crested Newt Mitigation Guidelines*. Version: August 2001

D2	0	N/A
D3	3	7 June 2018

Table 5: Maximum count for ponds surveyed for Great Crested Newts within the wider site.

4.6.5. A peak count of 89 GCN was recorded during the suite of aquatic surveys undertaken at the wider site. The vast majority of these GCN were recorded within the series of ponds located within the quarry area of the Site.

4.6.6. The GCN meta-population is considered to be primarily sustained by habitats within the quarry area of the wider site (outside of the Experience Quarter Site). Nonetheless, the semi-improved calcareous grassland located outside of the circular track, as well as the dense scrub in the north of the Site, is structurally suitable as terrestrial habitat for GCN. As such, it is considered likely these habitats, where they are located within a suitable radius of known GCN waterbodies, will provide a component of the wider habitat resource utilised by GCN during their terrestrial phase.

4.6.7. The grassland within the central airfield is intensively managed and short mown. This habitat is resultantly highly sub-optimal for GCN and is not considered to provide any significant opportunities for the local meta-population.

4.6.8. **Background Information.** The desk study undertaken with TVERC returned a small number of amphibian records from the local area. The closest records of GCN were returned from within the Stratton Audley Quarry site, from 2009. Additional records from this area include: Smooth Newt *Lissotriton vulgaris* and Common Frog *Rana temporaria,* also returned from within the Stratton Audley Quarry site.

4.7. Reptiles

4.7.1. Areas of calcareous grassland within the Experience Quarter Site were identified to provide suitable reptile habitat, with extensive suitable habitat also present within the wider site.

4.7.2. In order to ascertain whether the wider site (including the Experience Quarter Site) supports this faunal group, refugia surveys were undertaken from August to October 2018, in line with the methodology outlined in Section 2 above.

4.7.3. The results of the survey are summarised in Table 6 overleaf.

Date	Survey Number	Weather Conditions	Reptiles Recorded Within Wider site
24/08/2018	1	90% cloud cover, 16C	70 Common Lizard
29/08/2018	2	10% cloud cover, 17C	7 Common Lizard, 2 Grass Snake
06/09/2018	3	60% cloud cover, 19C	11 Common Lizard, 2 Grass Snake
11/09/2018	4	100% cloud cover, 18C	24 Common Lizard
17/09/2018	5	1% cloud cover, 19C	5 Common Lizard
25/09/2018	6	80% cloud cover, 17C	6 Common Lizard
02/10/2018	7	100% cloud cover, 17C	10 Common Lizard

Table 6: 2018 Reptile Survey Results (Wider site Summary)

4.7.4. As set out at Appendix 5, in order to ascertain the relative importance of common reptile populations recorded within the Site, the tinning density, which varies from between 54 tins/ha and 300 tins/ha, has been taken into account, in line with guidance and population size estimates set out by the Herpetofauna Groups of Britain and Ireland (HGBI).

4.7.5. On this basis it is considered that rough and unmanaged grassland habitats within the wider site support a low to medium population of Common Lizard *Zootoca vivipara* (around 36/ha) and a low population of Grass Snake *Natrix natirx* (<2/ha). For clarity, these rough grassland habitats are located outside of the Experience Quarter Site boundary.

4.7.6. In contrast, the calcareous grassland within the Experience Quarter Site is subject to annual cutting and does not support a rough and tussocky sward. This habitat is likely therefore to provide relatively reduced opportunities for reptiles, albeit the habitat remains suitable. This conclusion is substantiated by the results of the tinning surveys which recorded few reptiles in areas of calcareous grassland, limited to a single Common Lizard in areas of calcareous grassland in the south of the wider site, where this grassland backs onto an adjacent band of scrub.

4.7.7. Given that the calcareous grassland within the Experience Quarter Site is suitable to support reptiles, and is continuous with habitats where populations of common reptiles are known, it is considered that the calcareous grassland within the Experience Quarter Site will support a small proportion of the population present in the wider site.

4.7.8. **Background Information.** The desk study undertaken with TVERC returned a number of reptile records from the local area. These records include several of Grass Snake, returned from within the Stratton Audley Quarry site, from 1991. A further record of Grass Snake was returned from just outside the eastern boundary of the

wider site, from 2016. Several records of Common Lizard were also returned from a location approximately 100 metres to the south-west of the wider site, from 2017.

4.8. **Breeding Birds**

4.8.1. The wider site offers opportunities for nesting birds in terms of the hedgerows, treelines, scrub, woodland, and grassland areas, in addition to waterbodies and areas of recolonising vegetation and reedbed. Within the Experience Quarter Site, which supports a reduced range of the habitats present in the wider site, breeding opportunities are limited to areas of dense scrub, woodland and areas of longer grassland at the perimeters of the airfield.

4.8.2. The wider site was subject to three breeding bird survey visits in May and June 2018. The full findings of this survey work are detailed at Appendix 5.

4.8.3. Within the Experience Quarter Site, areas of woodland and scrub supported a typical bird assemblage including for Song thrush *Turdus philomelos*, Goldfinch *Carduelis carduelis*, Wood pigeon *Columba palumbus*, Blue-tit *Cyanistes caeruleus*, Blackbird *Turdus merula*, Wren *Troglodytes troglodytes*, Robin *Erithacus rubecula* and Bullfinch *Pyrrhula pyrrhula.* Areas of grassland supported small numbers of Skylark *Alauda arvensis* and Meadow pipit *Anthus pratensis*. Other birds recorded within the Site including Swift *Apodidae,* Carrion Crow *Corvus Corrone*, Buzzard *Buteo buteo*, Kestrel *Falco tinnunculus*, Black-headed gull *Chroicocephalus ridibundus*, all of which were generally recorded loafing or flying over.

4.8.4. The wider site supports additional opportunities for the above bird species, with extensive grassland, scrub and woodland habitat present, alongside areas of wetland habitat.

4.8.5. **Background Information.** The desk study undertaken with TVERC returned a number of records of notable bird species from the locality. A large proportion of these records were returned from within the wider site, including records of Grey partridge *Perdix perdix*, Little ringed plover *Charadrius dubius,* Lapwing, Common tern *Sterna hirundo,* Black-headed Gull, Stock dove *Columba oenas*, Reed bunting *Emberiza schoeniclus*, Bullfinch, Starling *Sturnus vulgaris*, Skylark, House Sparrow *Passer domesticus*, Yellowhammer and Linnet *Linaria cannabina* returned from 2009; and Common sandpiper *Actitis hypoleucos,* Green sandpiper *Tringa ochropus,* Redshank *Tringa totanus,* Snipe *Gallinago gallinago,* Turtle dove *Streptopelia turtur* and Kingfisher *Alcedo atthis,* returned from 2008, all from within the Stratton Audley Quarry site. In addition, a number of records were returned from within Bicester airfield including Song Thrush, Red Kite *Milvus milvus*, Kestrel, Lesser black-backed gull *Larus fuscus*, Herring gull, Skylark and Meadow Pipit returned from between 2003 and 2016. Records which have been withheld in detail, due to their sensitive nature, returned for the locality of the Site, include Hobby *Falco subbuteo* and Peregrine *Falco peregrinus,* from 2006.

4.9. **Wintering Birds**

4.9.1. The majority of the habitats across the wider site were considered likely to be of limited importance to wintering birds. Nonetheless, given the size of the wider site as well as the presence of wetland habitats, a suite of three wintering bird surveys were undertaken to assess its use by over wintering birds. These surveys were undertaken on a monthly basis between January and March 2019. The full findings of this survey work are detailed at Appendix 5.

4.9.2. The Experience Quarter Site, whilst comprising a relatively large component of the wider site, supports only a small sub-set of the wider habitat mosaic.

4.9.3. Reflective of this, winter bird interest within the Experience Quarter Site was particularly limited, comprising only small range of common bird species such as Wood pigeon, Magpie *Pica pica*, Carrion Crow and Jackdaw *Corvus monedula*. Waterbody P1 was identified to be of relatively limited interest to wetland birds, with only small numbers of Coot *Fulica atra* and Mallard *Anas platyrhynchos* recorded.

4.9.4. The wider site supports additional opportunities for those bird species recorded within the Experience Quarter Site, and overall is considered to support a modest assemblage of wintering birds. Wetland habitats, predominantly within the quarry area, were deemed to be of relatively greater interest overall, albeit habitats within the perimeter of the airfield were noted to be of some limited value, supporting Grey Partridge and Skylark (albeit in very small numbers).

4.10. **Invertebrates**

4.10.1. The wider site was deemed to support a range of habitats likely to be of importance to invertebrates, including areas of recolonising bare ground, spoil mounds, scrub, waterbodies and rough and calcareous grassland. A component of these habitats, not least areas of calcareous grassland, are present within the Experience Quarter Site.

4.10.2. In line with the above, the wider site has been subject to a suite of four specific invertebrate surveys by Colin Plant Associates, invertebrate survey specialists. Initial survey visits were undertaken on the 13 June, 9 July, 14 August and 11 September 2018, with further surveys undertaken on 7 May 2019 and 10 June 2019.

4.10.3. These surveys encompassed those habitats of potentially greater invertebrate interest across the wider site.

4.10.4. The findings of these surveys are summarised within the baseline information provided at Appendix 5, with further detail provided in the report produced by Colin Plant Associates at Appendix 4.

4.10.5. The 2018 surveys recorded a total of 556 terrestrial species, with a further 161 species recorded during the 2019 surveys (717 species in total). These surveys confirm a good range of invertebrate species utilise the wider site. This assemblage included for four S41 species, three *Nationally Rare* or *Red Data Book* (RDB) species, 53 Nationally Sparse (NS) species. Overall, just over 8% of the total species inventory was recorded to be of formal conservational concern.

4.10.6. No invertebrate species which are afforded direct legal protection under any UK or European legislation were recorded during the surveys.

4.10.7. The full assemblage of invertebrates recorded across the wider site was further assessed using Pantheon, a software tool which allows for the relative conservation value of assemblages to be assessed, and subsequently to identify those habitats of relatively greater importance to them. Through this methodology, broad habitats are then afforded a Species Quality Index (SQI).

4.10.8. This analysis identified a range of broad habitat types across the wider site are of heightened value to invertebrates, with wetland habitats and open habitats (short sward and bare ground) of particular importance. For clarity, this 'short sward' habitat categorisation includes for areas of calcareous grassland within the Site.

4.10.9. The SQI scores for these comparatively more valuable habitats within the wider site fall below the threshold of a 'good' Site supporting a regionally important invertebrate fauna. Nonetheless, noting the location of the Site, and the presence of regionally rare species, the assemblage supported in these areas are considered to be of regional significance.

4.10.10. The Experience Quarter Site includes for a subset of the habitat mosaic present within the wider site and are therefore deemed to be of importance for the invertebrate assemblage within the Site. Nonetheless, the habitats within the Experience Quarter Site were found to be of comparatively reduced value to invertebrates, relative to the wider site, with the invertebrate surveys concluding *"the eastern and northern margins do not support areas of OMH and the grassland here presents as more uniform, with less structural variation and consequently of lower interest with regard to invertebrates"*. Moreover, the larger lakes within the wider site (including P1) were also found to be of reduced importance for the wetland invertebrate assemblages present.

4.10.11. **Background Information.** The desk study undertaken with TVERC returned a large number of invertebrate records from the local area, including from within the Site. These records include the following

species returned from within the Stratton Audley Quarries site: Blackthorn Mining Bee *Andrena varians,* Southern Bronze Furrow Bee *Halictus confusus,* Orange-footed Furrow Bee *Lasioglossum xanthopus,* Sharp-collared Furrow Bee *Lasioglossum malachurum,* White-footed Furrow Bee *Lasioglossum leucopus,* Swollen-thighed Blood Bee *Sphecodes crassus,* Red-tailed Mason Bee *Osmia bicolor,* Small Tiphia *Tiphia minuta,* the beetles *Microplontis campestris, Haploglossa picipennis, Brachinus crepitans*, *Bembidon clarkii, Pterostichus anthracinus, Ophonos azureus, Lebia chlorocephala, Cryptocephalus aureolus,* the butterflies Grizzled Skipper *Pyrgus malvae,* Wall *Lasiommata megera,* Small Heath *Coenonympha pamphilus,* Small Blue *Cupido minimus,* the moths Latticed Heath *Chiasmia clathrata* and Cinnabar *Tyria jacobaeae* and the true bug *Macropsis glandacea.*

4.11. **Brown Hare**

4.11.1. The presence of Brown Hare was noted in several areas within the wider site during the habitat survey work undertaken, as well as during the completion of surveys for other faunal groups. It is considered the range of habitats present on Site would provide suitable foraging, resting and breeding habitat for this species.

4.11.2. **Background Information.** A small number of Brown hare records were returned as part of the desk study exercise, albeit all of which were in excess of 15 years old.

4.12. **Other Species**

4.12.1. No evidence of any other protected or notable species were recorded during the course of the extensive survey work undertaken.

4.12.2. Several records of European Hedgehog were returned within the search area, the closest being located approximately 450 metres to the south-west of the Experience Quarter Site at its closest point. The grassland, scrub and woodland habitats within the Experience Quarter Site would provide suitable opportunities for this species.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Site Evaluation

5.1.1. The latest guidelines for ecological evaluation produced by CIEEM propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.

5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe[9]. These are broadly used across the United Kingdom to rank sites so priorities for nature conservation can be attained. For example, current Site of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.

5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological/geographical units are also incorporated into the ranking procedure.

5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.

5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with comparatively poor species diversity, common in the south of England, may be of importance at its northern limits, say in the border country.

5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The local BAP currently lists a number of Conservation Target Areas (CTA) which, in turn, support a wide range or habitats and/or species of Principal Importance. The Site lies outside of any CTA, with the closest being the Ray CTA, within which lowland meadow is a primary interest feature. A number of species and habitat action plans are also set out within the local BAP.

5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the International level.

5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

[9] Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of Sites of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

5.2. Habitat Evaluation

Designated Sites

5.2.1. **Statutory Sites.** There are no statutory designated sites of nature conservation interest located within or immediately adjacent to the Application Site.

5.2.2. The closest statutory site designated on nature conservation grounds in the surrounding area is Ardley Cutting and Quarry SSSI, located approximately 3.4km west of the Experience Quarter Site at its closest point. The biodiversity element of the designation (the SSSI is also designated on geological grounds) primarily accounts for the presence of limestone grassland, as well as scrub, ancient woodland and wetland habitats. There is limited connectivity between this designated site and the Site, on account of the multiple roads and residential development which separate them. As such, and given the nature of the proposals (i.e. primarily employment and tourism led) it is not considered the proposals have any potential to impact on this designated site.

5.2.3. Bure Park Local Nature Reserve (LNR) is located approximately 1.5km to the south-west of the Experience Quarter Site, and is designated on account of the supported habitats, including: meadow, young broad-leaved woodland, hedgerows and scrub. A pond on the LNR also supports GCN. This LNR is not directly connected to the Experience Quarter Site or wider site and indeed is separated from each by various roads and significant residential development.

5.2.4. Given the distance between the Experience Quarter Site and Bure Park LNR it is considered that lighting and noise associated with both the construction and operations phases will not give rise to a significant adverse impact on the LNR.

5.2.5. In relation to recreational pressure, it is considered the proposals would be highly unlikely to generate significant additional recreational use of the Site, given the nature of the proposed development (employment and recreation) and the urbanised context of the LNR.

5.2.6. It is considered that, due to the nature of the development proposals (including design and siting), the distances involved and existing management initiatives associated with the LNR, the proposed development is not likely to give rise to any significant adverse impacts on the LNR or any other statutory designated site of nature conservation interest. It is noted that this same conclusion is reached in relation to the masterplan proposals for the wider site.

5.2.7. **Non-statutory Sites.** The wider site incorporates the entirety of Stratton Audley Quarry LWS, as well as the vast majority of Bicester Airfield LWS. The presence of these sites has been given due regard as part of the emerging masterplan proposals, and a suite of avoidance, mitigation and enhancement principles have been

identified which will form an intrinsic element of the emerging scheme.

5.2.8. Whilst mitigation measures for each individual phase (including the Experience Quarter Site) will primarily seek to off-set any potential adverse impacts arising within that phase, due regard is also given to site wide mitigation principles, ensuring the masterplan impacts and opportunities are considered holistically.

5.2.9. Further detail on Stratton Audley Quarry LWS and Bicester Airfield LWS is provided at Appendix 6, including a summary of the citations, the findings of ecological survey work undertaken in 2018, and the broad mitigation principles which are guiding the Site wide masterplan.

Stratton Audley Quarry LWS

5.2.10. The majority of Stratton Audley Quarry LWS is located outside the Experience Quarter Site and forms much of its western boundary. A small subset of the LWS, supporting an area of dense scrub and a fishing lake, is located within the Site boundary.

5.2.11. Emerging proposals for the Experience Quarter seek to deliver a 4x4 experience track within the area of Stratton Audley Quarry LWS. These emerging proposals would result in losses to the area of the dense scrub within the Site, however the waterbody (**P1**) would remain undisturbed, whilst large areas of semi-natural habitat will be retained or re-instated.

5.2.12. Whilst losses to scrub would result, it is noted that this habitat is considered to be of relatively low ecological value within the context of the Site, both from an intrinsic perspective, and given the relatively limited opportunities it provides to faunal species (largely limited to opportunities for scrub nesting birds). It is further noted that the dense areas of scrub are encroaching on the small pockets of grassland within the mosaic, continually depleting the extent of these relatively more valuable habitats.

5.2.13. Noting the above, it is envisaged that losses of scrub to facilitate a 4X4 track may be appropriately mitigated through the commencement of appropriate habitat creation/reinstatement and management within the wider 4x4 area (i.e. outside of surfaced track areas). Within these semi-natural areas, it is envisaged that habitat creation/restoration would seek the delivery of an area of OMH which seeks to replicate desirable examples of this habitat within the wider site. Micro-habitats forming part of this mosaic would include for bare and recolonising ground, ephemeral and short sward habitat and small pockets of more stablished vegetation such as scattered scrub. The creation/reinstatement of these habitats would ensure a net gain in the extent of OMH as part of the emerging Experience Quarter proposals, more than mitigating for scrub losses and contributing towards the safeguarding of the valuable ecology assets noted on the site citation.

5.2.14. It is further envisaged that the proposals would provide a mechanism to secure long-term sensitive management of retained and reinstated habitats within the Site post-development, ensuring long-term biodiversity enhancements can be realised.

5.2.15. Areas of the LWS located outside the Experience Quarter red line boundary would not be subject to direct impacts (i.e. as a result of land take or accidental damage). There is nonetheless the potential for indirect impacts to arise to these areas through the following pathways:

- Dust, pollutants;
- Light/noise pollution; and
- Impacts on supporting habitat for protected faunal species.

5.2.16. In regards dust suppression it is noted that dust arising during construction work only has a significant impact within 20 metres due to heavy soiling of vegetation; further than that it is dispersed and of negligible significance. Notwithstanding the above, the adoption of best engineering practices and protocols during construction (which adhere to current guidance and legislation) would be sufficient to ensure adverse ecological impacts can be avoided during construction. Given the absence of any hydrological connection, no other potential pollutant pathways are envisaged during either the construction or operational phase. Nonetheless, the proposals would come forward with a construction Environmental Management Plan (or similar) to ensure potential adverse impacts could be fully avoided during construction.

5.2.17. In regards light pollution, whilst a range of protected and notable species are noted on the citation, these are not deemed to be light sensitive. In any event, the emerging Experience Quarter proposals would give careful consideration to potential lighting impacts, with a sensitive lighting regime to be adopted as part of any adopted scheme (see also faunal section below).

5.2.18. Equally, the majority of cited species would not be considered sensitive to potential noise disturbance. Whilst a modest range of birds have been recorded during specific survey work (including many of those noted on the citation), there were no large or notable assemblages of waterfowl or any significant breeding populations recorded. As such, and assuming the adoption of best practice measures in relation to minimising noise during construction, no significant adverse impacts are envisaged to arise in this regard.

5.2.19. Equally, the use of the tracks during the operational phase, as well as the operation of other aspects of the built proposals, are not considered to give rise to a level of noise that is significant when considering the limited sensitivity of the LWS, as well as the existing noise levels (with much of the wider site remaining in operational use as an airfield and with busy roads along its perimeters).

5.2.20. The calcareous grassland within the Experience Quarter Site will offer opportunities to a range of protected and notable species which

are noted on the Stratton Audley Quarry LWS, indeed many of these species are also noted on the citation for Bicester Airfield LWS. The emerging masterplan gives due regard to the overlapping opportunities the wider site offers to both faunal and floral species, ensuring that Site wide opportunities for these groups can be retained and enhanced in the long-term. Further information is provided in relation to the 'Bicester Airfield LWS' below, as well as in the 'Habitats' and 'Faunal' Sections of this report.

5.2.21. In regards potential indirect impacts on faunal species, it is noted that the calcareous grassland within the Experience Quarter Site has the potential to provide a subset of the wider opportunities available to faunal species primarily sustained within the quarry, namely GCN, reptiles and the invertebrate assemblage. Specific regard has been given to each of these faunal groups in the Faunal Section of this report (see below). Appropriate mitigation principles have been identified both for the Experience Quarter proposals, as well as the wider emerging masterplan proposals, such that relevant faunal groups can be retained at a favourable conservation status in the short to long-term.

Bicester Airfield LWS

5.2.22. The Experience Quarter Site includes a component of the Bicester Airfield LWS. Bicester Airfield LWS is designated primarily on account of its 'lowland calcareous grassland', with the citation also referencing the presence of open habitat mosaic on hardstanding, alongside areas of scrub. Updated survey work undertaken across the wider site by Ecology Solutions in 2018 has reaffirmed the presence of these habitats, albeit with areas of dense scrub again considered to be detracting from the Sites value in some areas of the wider site, where it is resulting in a reduction to the extent of grassland and open mosaic habitats which are of greater intrinsic and/or functional value. Indeed, comparison studies of aerial photography between 2004 and 2018 identify significant scrub encroachment in the south of the wider site (see Appendix 7).

5.2.23. The Experience Quarter development proposals will necessitate losses to areas of calcareous grassland (i.e. the habitat of greater value within the LWS), with these losses largely limited to the northern and western edge of the airfield area.

5.2.24. Where areas of open habitat are to be lost, it is envisaged these impacts will be mitigated for through the adoption of the following principles:

- Establishment of a suitable, biodiversity led management regime for all retained habitats within the wider Bicester Airfield LWS. This management plan to be secured in the long-term and include for:
- Establishment of appropriate management for significant areas of grassland and open mosaic habitat within the central airfield area. The grassland located within the central airfield area is currently subject to unsuitable management

which has prevented the development of a biodiverse sward. Management to achieve qualitative enhancements such that this grassland can reach LWS quality.

- Retention of open mosaic habitat, including retention and/or recreation areas of bare ground as well as degraded or un-metalled hardstanding areas. Opportunities in this regard may be partly realised through the creation of ecology car park areas, as well as adjacent to new tracks. These areas will seek to deliver semi-natural surfacing which may comprise unsealed hardstanding (such as gravels), re-enforced or wear tolerant grassland, or bare ground areas within which a range of early ephemeral floral species can colonise. Operational use of these areas will complement the desired habitat creation, providing the periodic disturbance essential for sustaining OMH.
- Proposed open space within the Experience Quarter Site to replicate existing early successional habitats and areas of open grassland. Appropriate soils/substrate to be utilised from area to be impacted or lost to built form.
- Habitat creation in the form of 'Living Roofs' on proposed built form.

5.2.25. Further consideration is given to mitigation and enhancement opportunities for individual habitats and species in the following Sections of this report.

5.2.26. Given the nature of the scheme and the separation of the Experience Quarter Site (and indeed the wider site) from any other non-statutory designated sites, it is considered that no adverse impacts would arise on any other designated sites as a result of the emerging proposals.

Habitats within the Application Site

5.2.27. As identified in the Baseline Section above, the Experience Quarter Site predominantly comprises areas of open grassland and hardstanding, alongside smaller lengths of tree lines and hedgerow.

5.2.28. In assessing and evaluating the biodiversity value of these habitats, consideration has been given to the intrinsic value of the habitats in isolation, as well as their value as a component of a wider habitat mosaic. The wider site supports a mosaic of open and re-colonising habitats, much of which would be considered to comprise OMH on Previously Developed Land. Notwithstanding that the grassland within the Experience Quarter Site would not necessarily sit within the habitat categorisation of OMH, the more species-rich areas of calcareous grassland support a floristic assemblage complementary to the Site wide OMH and can be considered to be functionally linked. With this in mind, it is important to also consider the holistic impacts of the development proposals on the wider habitat mosaic, not least given its importance to faunal species/assemblages (see also Faunal Section below).

5.2.29. As stated previously, whilst the primary purpose of this report is to assess and evaluate ecological impacts resulting from the

Experience Quarter proposals, due regard is also given to potential cumulative impacts as a result of the emerging, Site wide masterplan. To this end, mitigation principles for habitat impacts which have the potential to arise as a result of the Site wide masterplan are provided at Appendix 6. Specific impacts and mitigation/enhancement opportunities for habitats within the Experience Quarter Site are considered below.

5.2.30. A plan identifying the locations of proposed habitat creation, restoration and management is provided at Plan ECO3.

5.2.31. As with the previous FAST proposals, The Experience Quarter proposals have also been subject to a Biodiversity Impact Assessment Calculator (BIAC). BIACs are tools that essentially attribute a commodity value to individual habitat types, outputting a 'value' for that habitat type based on a constrained set of inputs. These tools are by their nature simplistic, and are not a sufficient replacement for professional judgement in most instances. Contrary to the BIAC, this Ecological Assessment provides a thorough evaluation of the Site's ecological value, as well as careful consideration of the impacts, mitigation and enhancement opportunities. It should be afforded significantly more weight than the BIAC produced for the proposals.

5.2.32. The BIAC prepared for the proposals indicate a net gain would be achieved through implementation of the development proposals for the Experience Quarter, with this phase specific net gain contributing significantly to a net gain for the wider masterplan Site.

Semi-improved Calcareous Grassland

5.2.33. The emerging proposals will result in losses to areas of semi-improved calcareous grassland, primarily in the north of the Site. However habitats elsewhere will be retained and restored/enhanced. As noted previously, the semi-improved calcareous grassland within the Experience Quarter Site is considered of high ecological value in the context of the Site, and indeed is considered to be of value at the local level given it forms a primary reason for the Bicester Airfield LWS citation.

5.2.34. Where calcareous grassland is to be retained, the emerging proposals will seek to protect and safeguard these habitats from construction related impacts. In the event that temporary impacts are envisaged, appropriate mitigation, such as in the form of a sensitive turf and soil strip, would be undertaken in the first instance. This would involve the sensitive removal and storage of arisings at an appropriate time of year, with these redistributed following completion of temporary works. An aftercare management regime would be identified to allow the restoration of the grassland to LWS standard.

5.2.35. Where permanent losses are envisaged, it is considered these impacts may be appropriately mitigated through the adoption of an appropriate management regime for retained grassland habitats

across the wider Bicester Airfield LWS. As set out in the Designated Sites Section above, an appropriate management regime in this regard would include for:

- A suitable cutting and management regime for all areas of grassland to be retained within the Bicester Airfield LWS by the emerging masterplan proposals.
- Completion of initial scrub removal as required across the wider LWS, and adoption of a long-term, ecologically appropriate scrub and habitat management regime to reverse the long-term trend of scrub succession and restore areas of dense scrub to open grassland. Long-term management to seek retention of scattered scrub as a valuable component of the Site wide habitat mosaic.

5.2.36. The adoption of this management regime would allow for the biodiversity value of retained grassland habitats to be retained and enhanced in the long-term, offsetting any quantitative losses as a result of the Experience Quarter proposals.

5.2.37. As a further measure, the Experience Quarter proposals would facilitate appropriate biodiversity management of extensive areas of species-poor grassland within the central airfield area. Through removing an intensive mowing regime,and instead allowing some areas to benefit from for a hay cut regime, the emerging proposals would facilitate significant qualitative enhancements such that these grassland areas may reach LWS quality post-development.

5.2.38. By bringing forward this management, the proposals offer an opportunity to secure quantitative enhancements for high quality calcareous grassland post-development. The opportunity for quantitative and qualitative gains in species rich grassland represent a significant ecological benefit for the proposals and would directly complement the adjacent LWS sites, providing valuable supporting habitat which, in time, could form part of an extended LWS designation.

5.2.39. Other areas of the existing, species-poor grassland within the central airfield are proposed to be managed to deliver areas of irregularly disturbed ground, ephemeral vegetation and potentially mixed, unmetalled surfacing. This will serve to deliver extensive areas of high quality OMH which will be of both heightened intrinsic value and moreover offer optimal opportunities for faunal species.

5.2.40. Further opportunities for grassland creation/restoration would be realised through scrub clearance within the area proposed for the 4x4 track.

5.2.41. The instigation of appropriate grassland and scrub management would also complement the ambitions of the nearby Ray CTA, as well as the Oxfordshire LBAPs for *Calcareous Grassland*.

Species-poor Semi-Improved Calcareous Grassland (Central Airfield)

5.2.42. The majority of species-poor semi-improved calcareous grassland is envisaged to be retained as part of the development proposals, albeit there will be losses to facilitate built form (vehicle tracks).

5.2.43. Given the scale of the losses and the low intrinsic value of this habitat, it is considered that no specific mitigation would be required. Notwithstanding this conclusion, it is noted the scheme offers opportunities for significant enhancements to be realised to retained areas of this habitat type in the long-term through the implementation of a sensitive management regime for retained habitats.

5.2.44. As detailed above, and noted within the Bicester Airfield LWS citation, the existing value of this grassland is greatly tempered by an intensive cut and leave management regime. Through implementing a reduced cutting regime, which allows for wildflowers to flower and set seed each year and moreover removes the arisings to prevent nutrient build-up, it is considered that the value of this habitat may be significantly enhanced in the short to medium term.

5.2.45. Further enhancements, such as completion of a green hay translocation from adjacent (species-rich) grassland areas would further expediate the establishment of a botanically diverse sward.

5.2.46. The implementation of an appropriate regime, as set out above, offers opportunities for the value of the grassland to be enhanced such that it may reach LWS condition in the short to medium term, ensuring establishment of new areas of species-rich grassland within the Site. Such management would complement targets set within the Oxfordshire Local Biodiversity Action Plan (LBAP) for *Calcareous Grassland* as well as for the nearby Ray CTA, which include for the management, restoration and creation of lowland meadows.

5.2.47. As noted above, some areas of the species-poor calcareous grassland are proposed to be managed as OMH habitat in the operational phase of the development. The delivery of new areas of OMH will allow for improved structural and floristic diversity within the central airfield area and will be of particular benefit to the sites invertebrate assemblage.

5.2.48. Where existing grassland is to be retained, it is proposed for future grassland management (mowing) to include for the removal of arisings from Site. This will contrast from the current ‘cut and leave’ regime and will allow for a gradual reduction in nutrient levels over time. This offers opportunities to modestly enhance the quality of the grassland, particularly if a reduced mowing regime is feasible in future years.

Hedgerows/Treelines

5.2.49. In accordance with the principles guiding the emerging masterplan, the Experience Quarter proposals will retain areas of hedgerow within the Site, with only very minor losses likely to be required to facilitate drainage and access.

5.2.50. The loss of small sections of hedge will be more than mitigated for through the bolster planting of retained sections of hedge and the provision of new structural planting to create dense linear features of improved structural and botanical value, ensuring betterment relative to the existing situation.

5.2.51. New and retained areas of hedgerow and structural planting would moreover be bought under appropriate management in the long-term.

Dense Scrub and Grassland Mosaic

5.2.52. Areas of scrub are of low intrinsic ecological value in the context of both the Experience Quarter Site and the wider site, being typically dominated by only a limited range of woody species. As stated above, scrub within the Experience Quarter Site is outcompeting more species-rich ecological habitats, such as areas of neutral and calcareous grassland. As such, in the absence of appropriate management, scrub encroachment will continue to result in a decline in the ecological value of the Experience Quarter Site (in addition to the wider site).

5.2.53. The emerging development proposals will result in the loss of significant areas of scrub within the Experience Quarter Site, both to facilitate areas of built form, as well as to facilitate habitat restoration (i.e. to reverse the trend of ecological succession within grassland/OMH areas).

5.2.54. Notwithstanding the above, the retention of pockets of scrub will be an important principle governing long-term management, ensuring the structural and botanical diversity of retained are maximised.

Woodland

5.2.55. It is envisaged the proposals would result in small-scale losses to the young/scrubby woodland within the Site. Nonetheless, significant areas of woodland will be retained as part of the proposals.

5.2.56. At this stage it is considered that minor losses to woodland, which is considered of reduced intrinsic value in the context of the wider site, may be appropriately mitigated through the provision of new native structure planting within the Experience Quarter Site. Moreover, opportunities exist to deliver enhancements to retained areas of woodland, not least through the implementation of appropriate woodland management post-development.

Waterbody

5.2.57. Whilst offering some opportunities to faunal species (see below), P1 is of limited intrinsic interest from a biodiversity perspective. In any event, it is envisaged the existing waterbody will be fully retained as part of emerging Experience Quarter (and masterplan) proposals and as such no mitigation would be required.

5.2.58. Nonetheless, opportunities exist as part of the proposals to deliver enhancements to this waterbody through measures such as sensitive clearance of boundary scrub, small scale bank regrading (for example to enhance the extent of marginal habitat) or localised plug planting of aquatic and marginal vegetation.

Hardstanding/Re-colonising Hardstanding

5.2.59. The vast majority of hardstanding areas lack any significant colonisation by floral species and are considered to be of extremely limited ecological value (notwithstanding the rare presence of Basil Thyme). Resultantly, no specific mitigation would be required for losses to these habitats.

5.2.60. In some areas hardstanding has become colonised by a modest range of early successional species (albeit the extent of this habitat is limited within the Experience Quarter Site). Given the greater degree of re-colonisation (and noting the habitat type is noted in the Bicester Airfield LWS citation), these areas are considered to be of improved ecological interest in the context of the Experience Quarter Site (and indeed the wider site), forming a component of the wider OMH.

5.2.61. As for the FAST proposals, where losses are required, it is considered these may be more than mitigated for through the delivery of new ecology car park habitats as part of the scheme, as well as new OMH creation adjacent to new tracks within the central airfield area. These areas will seek to deliver semi-natural surfacing which may comprise unsealed hardstanding (such as gravels), re-enforced or wear tolerant grass, or bare ground areas within which a range of early ephemeral floral species can colonise. OMH habitat creation in this regard will include for the creation of an extensive area of mixed grassland and OMH within the central airfield area, with this to be managed to retain a mixture of grassland, disturbed ground and ephemeral vegetation. At this stage it is envisaged that approximately 27ha of OMH habitat will be provided within the central airfield areas and areas of ecology car parking as part of the Experience Quarter proposals.

5.2.62. Additional opportunities for early ephemeral habitat may be realised through the provision of ‘living roof’ habitats, with flat roofed buildings within the Experience Quarter Site (and indeed the wider site) to favour green roofs. It is envisaged the proposals will allow for a net gain in early ephemeral/bare ground habitat.

Open Mosaic Habitat

5.2.63. As identified above, many of the individual habitats present within the wider site form integral components of a wider OHM. Together these habitats support a wide and varied floral community, alongside a diverse habitat structure and are resultantly of enhanced (local) value.

5.2.64. The masterplan proposals for the wider site have been specifically informed by the presence of OMH and indeed the retention of a diverse habitat mosaic forms a key element of the overall scheme, as described in more detail at Appendix 6. As for the FAST proposals, careful consideration has been given to the retention or reinstatement of 'open' habitats, with unavoidable losses to be mitigated for through the establishment of a dedicated biodiversity management regime for the wider Bicester Airfield LWS, as well as the enhancement/restoration of currently species-poor calcareous grassland within the central airfield. Collectively these measures will deliver a net gain in the quantum of both OMH and good quality calcareous grassland.

5.2.65. Further opportunities for OMH will be sought through the provision of living roof habitat within the Experience Quarter Site where viable and appropriate. Living roof creation will be informed by Buglife's *Creating Green Roofs for Invertebrates* guidance document and will target the creation of OMH habitats of a comparable nature to those recorded on Site. Where possible, living roof creation will utilise materials/substrate existing within the wider site.

Consideration of No-Development Situation

5.2.66. In the absence of appropriate management (i.e. retention of the status quo), ecological succession will continue within the unmanaged areas of grassland within the wider site, resulting in on-going declines in the Sites ecological value and the continuing loss of open habitats.

5.2.67. It is further noted that the current cutting regime which is undertaken within areas of calcareous grassland in the LWS, whilst broadly suitable, is not secured nor guaranteed to continue in the longer term. Indeed, this management is reliant upon the ongoing, viable, operation of the Site as an airfield and in the absence of facilitating development such management is likely to cease in the short to medium term.

5.2.68. Facilitating development is therefore considered to be essential to secure appropriate management and in turn to ensure the structural and botanical diversity of habitats are retained and enhanced in the long-term.

Summary

5.2.69. In summary, the Experience Quarter Site supports a significant component of the semi-improved calcareous grassland habitat present within the wider LWS, as well as small areas of recolonising hardstanding. These habitats are considered of higher ecological value in the context of the Experience Quarter Site, forming an important component of a wider habitat mosiac.

5.2.70. Of reduced value in the context of the Site are areas of dense scrub, woodland and waterbody P1. Areas of species-poor grassland and un-colonised hardstanding are of very little ecological value at present and no specific mitigation would be required for their loss.

5.2.71. Reflecting the above, a suite of mitigation measures are proposed where potential impacts are envisaged to higher value habitats. It is considered the adoption of these measures, which would include for the implementation of appropriate habitat management for the wider Bicester Airfield LWS, as well as central grassland areas in the long-term (to be secured by way of a suitably worded Condition) would ensure the emerging masterplan proposals will retain the ecological interest of the Experience Quarter Site and ensure the scheme may fully accord with legislation and planning policy of relevance to nature conservation.

5.2.72. Indeed, the proposals would ensure a net gain in high quality calcareous grassland for the Site, as well as areas of OMH. This would complement those habitats present in Bicester Airfield LWS and Stratton Audley Quarry LWS, directly benefiting a range of Priority Species and Habitats and ensure improved opportunities for a range of valuable fauna (see below). As demonstrated through the BIA metric submitted alongside this ecological report, the proposals would allow for a net gain in biodiversity to be achieved both within the Experience Quarter Site and indeed within the masterplan Site as a whole.

5.3. **Faunal Evaluation**

5.3.1. As noted within the designated Sites and Habitats Sections above, the primary purpose of this report is to assess and evaluate ecological impacts as a result of the Experience Quarter proposals. Nonetheless, due regard is also given to potential cumulative impacts as a result of the emerging, Site wide masterplan. To this end, mitigation principles for impacts on faunal species/groups which have the potential to arise as a result of the Site wide masterplan are provided at Appendix 6.

5.3.2. Specific impacts and mitigation/enhancement opportunities for species within the Experience Quarter Site are considered below.

Bats

5.3.3. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as Amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (“the Habitats Regulations”), as Amended. These include provisions making it an offence:

- to deliberately to kill, injure or take (capture) bats;
- to deliberately disturb bats in such a way as to:-
    - (i) be likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate or migrate; or
    - (ii) affect significantly the local distribution or abundance of the species to which they belong;
- to damage or destroy any breeding or resting place used by bats;
- to intentionally or recklessly to obstruct access to any place used by bats for shelter or protection.

5.3.4. While the legislation is deemed to apply even when bats are not in residence, NE guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence, provided these do not damage or destroy the roost.

5.3.5. The words deliberately and intentionally include actions where a court can infer the defendant knew the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

5.3.6. The offence of damaging or destroying a breeding site or resting place (which can be interpreted as making it worse for the bat) is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

5.3.7. European Protected Species licences are available from NE in certain circumstances, and permit activities that would otherwise be considered an offence.

5.3.8. Licences can usually only be granted if the development is in receipt of full planning permission and it is considered:

- (i) The activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
- (ii) There is no satisfactory alternative; and
- (ii) The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

5.3.9. **Experience Quarter Site Evaluation.** There are no buildings or trees within or immediately adjacent to the Experience Quarter Site which were identified to support potential roosting opportunities for bats.

5.3.10. Bat activity surveys undertaken across the wider site (including the Experience Quarter Site) confirmed generally low levels of bat activity, with activity unsurprisingly higher in close proximity to linear vegetation, waterbodies and wooded belts. Whilst a good range of bat species were recorded during the course of surveys, activity was

found to be dominated by *Pipistrelle* bat species, with only low levels of registrations pertaining to other species.

5.3.11. **Avoidance, Mitigation and Enhancement Opportunities.** There will be some losses to suitable foraging habitat as a result of the proposals, primarily in the form of semi-improved calcareous grassland. Importantly, the proposals will retain the vast majority of boundary vegetation, including the majority of tree-line/hedgerow along the northern and western boundaries of the Experience Quarter Site. This will ensure continued commuting opportunities for bats present in the local area. Indeed, opportunities in this regard will be enhanced through the provision of additional linear woody planting along the Sites' northern and western edges, with this to comprise a range of native species.

5.3.12. The retention of significant areas of the grassland/OMH will ensure continued foraging opportunities within the Experience Quarter Site, with these to be safeguarded in the long-term through the establishment of appropriate habitat management which will comprise all habitats within the Experience Quarter Site, as well as those within the Bicester Airfield LWS.

5.3.13. The adoption of a sensitive lighting scheme during the construction phase, to include the avoidance of after dark lighting wherever possible, would be sufficient to ensure adverse impacts on foraging and commuting bats may be avoided.

5.3.14. Where lighting is proposed during the operational phase, the emerging proposals seek a design approach which minimises adverse impacts on light sensitive species. The siting of individual lighting columns (to comprise LED lighting with no UV content) will be considered such that the requirements for areas of built form can be met with minimal spill onto semi-natural habitats. Where necessary, screening vegetation will be provided to minimise light spill into wider semi-natural areas. Additionally, accessories (such as baffles, hoods or louvres) will be utilised to further minimise light spillage and direct light below the horizontal plane to where it is required (limiting light to an angle of 70 degrees or below wherever possible). It is proposed for new lighting to comprise warm white LED with a colour temperature of 3000K or below.

5.3.15. In order to provide new roosting opportunities for bats a number of bat boxes may be installed on suitable trees or new buildings within the Application Site, with additional features integrated into the fabric of proposed buildings. A minimum of 40 roosting features will be provided as part of the Experience Quarter proposals. A range of suitable examples are provided at Appendix 8.

Badgers

5.3.16. **Legislation**. The Protection of Badgers Act 1992 consolidates the previous Badgers Acts of 1973 and 1991. 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, with particularly high populations in the south.

5.3.17. As well as protecting the animal itself, the 1992 Act also makes the intentional or reckless destruction, damage or obstruction of a Badger sett an offence. A sett is defined as “any structure or place which displays signs indicating current use by a Badger”.

5.3.18. In addition, 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.

5.3.19. Previous guidelines were issued by NE on the types of activity it considers should be licensed within certain distances of sett entrances. They stated that works that may require a licence include using heavy machinery within 30m of any entrance to an active sett, using lighter machinery within 20m, and light work such as hand digging within 10m. However, guidance issued by NE in September 2007 specifically stated that:

“It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a sett if no Badger is disturbed and the sett is not damaged or obstructed.”

5.3.20. More recent guidance produced by NE in 2009 states that Badgers are relatively tolerant of moderate levels of disturbance and that low levels of disturbance at or near to Badger setts do not necessarily disturb the Badgers occupying those setts. However, NE’s guidance continues by stating that any activity that will, or is likely to cause one of the interferences defined in Section 3 (such as damaging a sett tunnel or chamber or obstructing access to a sett entrance) will continue to be licensed.

5.3.21. This guidance no longer makes reference to any 30m/20m/10m radius as a threshold for whether a licence would be required. Nonetheless, it is stated that tunnels may extend for 20m so care needs to be taken when implementing excavating operations within the vicinity of a sett and to take appropriate precautions with vibrations and noise, etc. Fires/chemicals within 20m of a sett should specifically be avoided.

5.3.22. This interim guidance allows greater professional judgement as to whether an offence is likely to be committed by a particular development activity and therefore whether a licence is required or not. For example, if a sett clearly orientates southwards into an embankment it may be somewhat redundant to have a 30m exclusion zone to the north.

5.3.23. **Experience Quarter Site Evaluation**. There are no Badger setts recorded within the Experience Quarter Site or its immediate proximity (within 30m). A number of setts or potential setts are however noted in the wider site.

5.3.24. Suitable foraging habitat is present for Badgers within the Experience Quarter Site, albeit no evidence of significant foraging activity was recorded during the survey work undertaken.

5.3.25. **Avoidance, Mitigation and Enhancement Opportunities**. Notwithstanding the absence of any setts, given the mobile nature of Badgers, further update survey work would be undertaken at a detailed stage of planning to further inform the proposals, as well as prior to any construction works on Site (including scrub/vegetation removal).

5.3.26. Subject to the findings of updated surveys in due course, forthcoming works may require a NE licence to facilitate elements of the emerging masterplan. The emerging development proposals would easily be able to accommodate any mitigation measures which may be required as part of this licence process (including an artificial sett in the unlikely scenario this is required).

5.3.27. In regards foraging opportunities, it is noted that extensive areas of optimal foraging habitat are to be retained as part of the emerging proposals, with new landscaping (to include the provision of native fruiting species) to provide continued opportunities for this faunal group within the Experience Quarter Site.

Amphibians

5.3.28. **Legislation**: 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 and Common Toad *Bufo bufo*, to the more rigorous protection afforded to GCN, which is protected at the European level.

5.3.29. GCN are regularly encountered locally and throughout much of England, and the UK holds a large percentage of the worlds population of the species. As such, the UK has an international obligation to conserve the species, and they receive full protection under domestic and European legislation, and are a material consideration under NPPF.

5.3.30. GCN are also listed in Annex IV(a) of the European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, more commonly known as the Habitats Directive. The Habitats Directive was transposed into UK law by the Conservation of Habitats and Species Regulations 2017 (as Amended), which lists GCN under Schedule 2.

5.3.31. The legislation includes provisions making it an offence to:

- Deliberately kill, injure or take (capture) Great Crested Newts;
- Deliberately disturb Great Crested Newts in such a way as to:-

1. Be likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate or migrate; or

2. Affect significantly the local distribution or abundance of the species to which they belong;

- Deliberately take or destroys the Great Crested Newts eggs;
- Damage or destroy any breeding or resting place used by Great Crested Newts;
- Intentionally or recklessly obstruct access to any place used by Great Crested Newts for shelter or protection (even if individuals are not in residence).

5.3.32. Licences can be granted that permit otherwise unlawful activities. In every case, a licence cannot be granted unless:

i. There is no satisfactory alternative; and
ii. The action authorised would not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

5.3.33. It should be noted; a licence may only be granted following the receipt of a full valid planning permission.

5.3.34. **Experience Quarter Site Evaluation**: The wider site supports a notable population of GCN, with this population primarily supported within Stratton Audley Quarry LWS.

5.3.35. Given the suitability of some of the terrestrial habitats (i.e. the calcareous grassland) within the Experience Quarter Site, alongside its proximity to known breeding ponds (the closest pond, P9, being adjacent to the Site boundary at it closest point), it is considered that the local GCN population will utilise these habitats to some extent during their terrestrial phase.

5.3.36. In line with the above, it is considered that a derogation (NE) licence would be required to facilitate the Experience Quarter proposals.

5.3.37. **Avoidance, Mitigation and Enhancement Opportunities.** Whilst the details of any mitigation strategy would need to be agreed as part of a derogation licence in due course, consideration is given to the principles of a mitigation strategy below.

5.3.38. At this stage it is envisaged that a GCN translocation will be required to facilitate the Experience Quarter proposals. This exercise would include for the installation of exclusion fencing along the relevant boundaries of the Experience Quarter Site prior to any translocation of newts commencing. The purpose of this exclusion fencing would be to prevent further GCN entering the Experience Quarter Site during either the translocation exercise or the subsequent construction phase. It is likely further temporary fencing would be installed within areas of the Site in order to further compartmentalise

the Site and assist in the capture of target species (i.e. GCN but also common amphibians).

5.3.39. Translocated amphibians would be relocated to a safe location either within the Experience Quarter Site or more likely within an area of the wider site which lies within the applicants control. The identified 'receptor location(s)' would be chosen on the basis they support sufficient aquatic and terrestrial habitat to safeguard any translocated animals. Where necessary, small-scale enhancements of these areas may be undertaken prior to the relocation of GCN, ensuring the holding capacity of these areas are maximised.

5.3.40. It is noted the extent and location of the chosen receptor location(s) would be informed to some extent to the wider masterplan proposals and indeed it is likely that a 'Great Crested Newt Masterplan Document' would need to be prepared at the time of the initial licence submission. Such masterplan documents are required by NE for any multi-phase sites such that cumulative impacts on GCN may be understood and appropriately mitigated.

5.3.41. Translocated GCN would be safeguarded in the receptor site(s) until the completion of relevant construction works within the wider site, at which time any remaining exclusion fencing will be removed and GCN will be free to disperse into the wider site/area.

5.3.42. Post-development, the landscaping proposals will include for extensive areas of high quality terrestrial habitat for GCN, ensuring continued opportunities for this faunal group in the long term. Careful consideration will also be given to ensure new roads and infrastructure (including drainage) are designed to avoid potential adverse impacts on GCN. New vehicle tracks and car parks will not be kerbed and are anticipated to utilise permeable paving and/or filter drains, neither of which will risk entrapment to amphibians. Where access roads (etc) are to be kerbed, the proposals will include for the use of wildlife kerbs, dropped kerbs and/or amphibian ladders (within gully pots) where appropriate, to ensure potential impacts on amphibians are avoided.

5.3.43. It is noted that the wider masterplan proposals, particularly the 'restoration' of Stratton Audley Quarry give specific regard to GCN, as is detailed at Appendix 6. The retention of the mosaic of wetland habitats within Stratton Audley Quarry LWS, as well as adjacent terrestrial habitats, forms a founding principle guiding the wider masterplan proposals for the wider site.

Reptiles

5.3.44. **Legislation**. All six British reptile species receive a degree of legislative protection that varies depending on their conservation importance.

5.3.45. Rare, endangered or declining species receive 'full protection' under the Wildlife and Countryside Act 1981, as well as protection under The Conservation of Habitats and Species Regulations 2010, which

transposed into UK law the European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, more commonly known as the Habitats Directive. Species that are fully protected include Smooth Snake *Coronella austriaca* and Sand Lizard *Lacerta agilis*. These receive protection from:

- killing, injuring, taking;
- possession or control (of live or dead animals, their parts or derivatives);
- damage to, destruction of, obstruction of access to any structure or place used for shelter or protection;
- disturbance of any animal occupying such a structure or place; and
- selling, offering for sale, possession or transport for purposes of sale (live or dead animal, part or derivative).

5.3.46. Due to their abundance in Britain, Common Lizard, Slow-worm *Anguis fragilis*, Grass Snake and Adder *Vipera berus* are only 'partially protected' under the Wildlife and Countryside Act 1981 (as Amended) and as such only receive protection from:

- deliberate killing and injuring;
- being sold or other forms of trading.

5.3.47. **Experience Quarter Site Evaluation**: The calcareous grassland and, to a lesser extent, the OMH within the wider site support Common Lizard at a low to medium population density (around 36/ha) and Grass Snake at a low population density (<2/ha). Albeit only very low numbers of reptiles were recorded within areas of calcareous grassland. The area of dense scrub and grassland mosaic is considered likely to be of reduced importance to reptiles (given the limited extent of grassland remaining), nonetheless a degree of this mosaic remains suitable for reptiles at present.

5.3.48. **Mitigation/Enhancements.** A significant component of the suitable grassland habitats within the Experience Quarter Site is to be retained or otherwise reinstated as part of proposals, and this will ensure continued foraging, breeding and resting opportunities for common reptiles.

5.3.49. Where losses to suitable reptile habitat are required to facilitate the proposals, it will be necessary to adopt an appropriate avoidance and mitigation strategy to avoid impacts on common reptiles.

5.3.50. Any adopted strategy would need to give due regard to the presence of GCN, and be compatible with the mitigation strategy adopted for this species.

5.3.51. Consideration has been given to the completion of a conventional translocation exercise, and this would be a suitable approach where impacts are envisaged on larger blocks of grassland (such as around the proposed Automotive Demonstration & Experience Centre, and potentially the 4x4 track). Any such exercise would likely involve the installation of reptile exclusion fencing and the

deployment of a large number of reptile tins (envisaged at a minimum density of 100 tins per hectare). Tins would be subsequently checked twice daily in suitable weather conditions for a minimum 30 day period, only ceasing once no reptiles were recorded for a period of 5 consecutive days. Reptiles would be relocated to a suitable holding area within the wider site which would be safeguarded from future development.

5.3.52. Given the relatively small extent of habitat to be impacted elsewhere, and given that the Experience Quarter Site boundary is continuous, with suitable reptile habitat in the wider site, it is considered likely to be more appropriate to commence a sensitive habitat manipulation, encouraging reptiles to disperse into the wider site of their own accord.

5.3.53. A suitable habitat manipulation strategy in this regard would include for the completion of a two-stage cut of grassland, initially to no less than 10cm and subsequently to ground level (following a rest period). Any cuts would only be undertaken in warm (>10c), dry conditions in the reptile active season (typically late March to October). Cutting would be directional and methodical, removing narrow strips each day (no more than 20m wide per day) and persuading reptiles to disperse towards retained habitats in the wider site.

5.3.54. Following the cutting exercise, a topsoil strip would be undertaken as a final measure, with this to be overseen by an ecologist. Any reptiles found during this exercise would be translocated to suitable retained habitats in the wider site.

5.3.55. Following the completion of the above cutting works, reptile exclusion fencing would be installed around the extent of the proposed work area(s), to prevent any potential recolonisation of these areas until construction is complete.

5.3.56. The establishment of a suitable grassland management regime across much of the Experience Quarter Site, as well as for the wider Bicester Airfield LWS (to include for a scrub management regime where relevant) will mitigate losses of suitable habitat to built form, and ensure suitable reptile habitat is retained within the Experience Quarter Site (and across much of the wider site) in the long-term. Indeed, through bringing forward meadow management for substantial areas of the central airfield grassland, net gains in suitable reptile habitat will be realised within the Site.

5.3.57. As noted at Appendix 6, the majority of suitable reptile habitat will be retained within the wider site and bought under an appropriate management regime in the long-term.

Breeding Birds

5.3.58. **Legislation**. Section 1 of the Wildlife & Countryside Act is concerned with the protection of wild birds. With certain exceptions, all wild birds and their eggs are protected from intentional killing,

injuring and taking; and their nests, whilst being built or in use, cannot be taken, damaged or destroyed.

5.3.59. Schedule 1 of the Wildlife & Countryside Act 1981 is a list of the nationally rarer and uncommon breeding birds for which all offences carry special (i.e. greater) penalties. These species also enjoy additional protection whilst breeding, as it is also an offence to disturb adults or their dependant young when at the nest.

5.3.60. **Experience Quarter Site Evaluation.** The habitats present within the Experience Quarter Site provide limited opportunities for breeding bird assemblages, albeit opportunities exist for scrub/woodland birds as well as small numbers of ground nesting species such as Skylark and Meadow Pipit. It is considered the Site is of no particular significance for its supported bird assemblage.

5.3.61. **Mitigation and Enhancements.** As all species of birds receive general protection whilst nesting, to avoid a possible offence it is recommended that any clearance of suitable nesting habitat (including grassland) is undertaken outside the breeding season (March to August inclusive) or alternatively that checks for nesting birds be made by an ecologist immediately prior to any vegetation removal.

5.3.62. Losses to suitable ground nesting bird habitat (semi-improved calcareous grassland) would be offset by the provision of new areas of meadow grassland within the central airfield area, as well as through securing long term management of the grassland habitat in the wider Bicester Airfield LWS. This would ensure a net gain in suitable habitat post-development. Noting the existing use of the Site, it is not deemed that recreational driving within new tracks will result in any significant increases to disturbance for nesting birds within the Site.

5.3.63. The retention of the vast majority of woodland areas, as well as the retention and strengthening of hedgerows within the Experience Quarter Site will also help offset losses to scrub. New planting will comprise native thicket and berry bearing species which provide foraging habitat, as well as high quality nesting opportunities for scrub nesting species such as Bullfinch, Whitethroat *Sylvia communis*, Linnet and Dunnock *Prunella modularis* which are recorded in the wider site. Additional opportunities will be realised through new tree and structural planting elsewhere within the Site.

5.3.64. To realise an enhancement for a range of species, the emerging proposals will include for the provision of a range of nesting features within the Experience Quarter Site, with this to include integrated features within buildings, as well as the provision of boxes upon retained trees. The design of bird boxes will be tailored to those species recorded within the wider site (targeting species such as Tawny Owl *Strix aluco*, House Sparrow and Swift), as well as species likely to be present in the local area.

5.3.65. It is noted the wider emerging masterplan seeks to retain the full complement of habitats recorded on Site, ranging from recolonising ground and open water to scrub, hedgerows and semi-mature woodland. The retention of these habitats and their enhancement through establishment of a sensitive biodiversity led management regime will ensure continued opportunities for breeding birds post-development. A minimum of 30 nesting features will be installed on new buildings and/or retained trees within the Experience Quarter Site. A range of suitable examples are provided at Appendix 8.

Wintering Birds

5.3.66. **Site Usage.** The wider site supports a modest assemblage of wintering birds, with much of this interest arising due to the presence of waterbodies within Stratton Audley Quarry LWS.

5.3.67. Reflecting the fact that much of the Experience Quarter Site comprises short mown grassland and hardstanding, and notwithstanding the presence of P1, the Experience Quarter Site is not considered likely to be of any significant importance to wintering birds. Indeed, this is reflected in the findings of the survey work undertaken in 2019.

5.3.68. **Mitigation and Enhancements.** Given the limited interest of the Experience Quarter Site, it is not considered that any specific mitigation would be required as part of the emerging proposals. The retention of a range of the waterbody, open habitats, scattered scrub and linear planting, as well as the establishment of an appropriate management regime, will be sufficient to retain opportunities for wintering birds within the Site.

Invertebrates

5.3.69. **Experience Quarter Site Evaluation**: The wider site supports a notable population of invertebrates, with a total of 717 species recorded. No species afforded direct legal protection under any UK or European legislation were recorded during the surveys.

5.3.70. Analysis using Pantheon has shown that a range of broad habitat types across the wider site are of heightened value to invertebrates, with wetland habitats and open habitats (short sward and bare ground) of particular importance.

5.3.71. The SQI scores for these comparatively more valuable habitats fall below the approximate threshold of a ‘good’ site supporting a regionally important invertebrate fauna. Nonetheless, noting the location of the Site and the presence of regionally rare species, the assemblage supported in these areas are considered to be of regional significance.

5.3.72. The Experience Quarter Site includes for a subset of the habitat mosaic present within the wider site and are therefore deemed to be of importance for the invertebrate assemblage within the Site. Nonetheless, the habitats within the Experience Quarter Site were found to be of comparatively reduced value to invertebrates, relative

to the wider site, with the invertebrate surveys concluding *"the eastern and northern margins do not support areas of OMH and the grassland here presents as more uniform, with less structural variation and consequently of lower interest with regard to invertebrates"*. Moreover, the larger lakes within the wider site (including P1) were also found to be of reduced importance for the wetland invertebrate assemblages present.

5.3.73. The Experience Quarter proposals would result in the loss of some areas of calcareous grassland, as well as small areas of recolonising hardstanding. Other habitat losses, such as areas of dense scrub and young woodland are considered of limited importance to invertebrate communities.

5.3.74. **Avoidance, Mitigation and Enhancement Opportunities**. As set out in the Habitats Section above, losses to areas of open sward will be off-sett by new habitat creation or restoration within the wider site, creating a net gain in valuable OMH habitats.

5.3.75. Such measures will include the clearance of extensive areas of dense scrub in the vicinity of the proposed 4x4 track and the establishment of an area of OMH which will be subject to a sensitive management regime in the long-term. Within the 4 x 4 area, smaller areas of scrub will nonetheless be maintained and managed as an important component of this mosaic, particularly early flowering species such as Blackthorn and Goat Willow which provide a valuable early foraging resource for nectar feeding insects.

5.3.76. The creation of additional OMH within the central airfield, as well as the enhancement of extensive areas of calcareous grassland which is currently species poor and suppressed by intensive mowing, will provide further high quality opportunities for invertebrate assemblages reliant on short sward habitats, and will be a significant benefit to the Sites notable invertebrate assemblage.

5.3.77. Where possible, existing areas of recolonising vegetation will be retained as part of the Experience Quarter proposals. Where losses will result, it is proposed for these to be off-set through the creation of ecology car park areas, similar to that proposed within the FAST site. It is envisaged these areas would be constructed with appropriate materials upon which early successional habitat and ephemeral vegetation can establish. Surfaces in this regard should be unmetalled, with materials such as compacted soils, gravels and reinforced or wear tolerant grass (comprising bespoke seed mixes) to be considered as appropriate. The creation of these areas will favour the re-use of material/substrate to be impacted by proposed built form elsewhere within the Site. As set out in the Habitat Section above, it is envisaged that areas of OMH and ecology car park creation will allow for quantitative and qualitative gains in early ephemeral/bare ground habitat post development.

5.3.78. In order to ensure pockets of less disturbed habitat (within which a more varied range of flora may develop), as well as to maximise structural diversity, occasional raised soil bunds will be created

within areas of OMH, such as between car parking bays. The raised nature of the banks will minimise the likelihood of them being subject to vehicle disturbance and will also provide ideal opportunities for burrowing invertebrates. Elsewhere, untreated deadwood (logs/trunks) will be placed between car parking spaces to provide opportunities for saproxylic species.

5.3.79. Further opportunities for OMH will be sought through the provision of living roof habitat within the Experience Quarter Site where viable and appropriate. Living roof creation will be informed by Buglife's *Creating Green Roofs for Invertebrates* guidance document and will target the creation of OMH habitats of a comparable nature to those recorded on Site.

5.3.80. It is considered that implementation of the above measures, alongside establishment of a long term management regime for these habitats, will be sufficient to retain the diverse range of habitats which sustain invertebrates within the FAST Site, ensuring continued opportunities for the notable invertebrate population present within the Site.

5.3.81. As set out at Appendix 6, masterplan proposals for the wider site are further guided by the presence of notable invertebrate populations and the functional value of OMH across the wider site.

Brown hare

5.3.82. **Legislation:** Brown hare receives limited statutory protection under the Wild Mammals (Protection) Act 1996 and the Hunting Act 2004. It is listed as a priority species in the UK BAP, and is a species of principal importance to the conservation of biodiversity in England under Section 41 of the Natural Environment & Rural Communities (NERC) Act 2006.

5.3.83. **Site Usage.** Brown hare are known to use the Application Site which supports a good range of habitats that are suitable for this species.

5.3.84. **Mitigation and Enhancements.** The Experience Quarter proposals will result in the direct loss of suitable habitat for this species, albeit extensive areas of suitable habitat will remain across the wider site, and indeed the adoption of a biodiversity led management regime for habitats across the Application Site, as well as habitats within the wider Bicester Airfield LWS, will more than outweigh these construction phase impacts. Losses are therefore not considered to be of significance for local populations.

5.3.85. In order to avoid potential harm to individual Brown hare during construction, any habitat clearance will be undertaken in a systematic manner, with vegetation removed on a staggered basis (in line with that required for reptiles as set out above).

European Hedgehog

5.3.86. **Legislation:** Section 6 of the Wildlife & Countryside Act 1981 (as amended) makes it an offence to capture or kill Hedgehogs through

certain means. Hedgehogs are also identified as a species of Principle Importance in England through the NE and Rural Communities (NERC) Act 2006.

5.3.87. **Site Usage.** No evidence of Hedgehog was recorded during the completion of a suite of ecological surveys on Site in 2019. Suitable habitat is nonetheless present, and Hedgehog are known to be present in the local area.

5.3.88. **Mitigation and Enhancements.** On a precautionary basis, noting the potential for Hedgehogs to be present, suitable Hedgehog habitat will be removed in a sensitive, systematic manner as part of the proposals. A suitable regime in this regard is set out below:

- Two stage clearance. Initial clearance of vegetation to a height of no less than 20cm, with a second cut to ground level following check of ground vegetation;
- Habitat works ideally to be undertaken in the early spring or the late summer and autumn in order to avoid the peak breeding and hibernation periods;
- Any observed hedgehogs ideally to be left to disperse of own accord. If this is not possible, individuals should be relocated to suitable retained habitat well away from areas of proposed construction (such as areas of shrub, long grass or woodland).

5.3.89. Post development, Hedgehogs, a UK BAP Priority Species, will benefit from the retention, restoration and enhancement of a wide range of semi-natural habitats both within FAST and as part of the wider emerging masterplan for the Site. Appropriate management of these habitats in the long term will ensure continued opportunities for Hedgehog post development. Given the nature of built form, the proposals are not considered to have the potential to restrict dispersing Hedgehog. In the event that any boundary fencing is required, opportunities for small mammal passages will be provided in the form of regular 13cm by 13cm gaps at the base of these boundary features.

6. PLANNING POLICY CONTEXT

6.1. The planning policy framework that relates to nature conservation in Bicester, Oxfordshire is issued at two main administrative levels: nationally through the National Planning Policy Framework (NPPF); and at the local level through policies in the Cherwell Local Plan 2011-2031, in addition to saved policies in the Cherwell Local Plan 1996 and policies in the Non-Statutory Cherwell Local Plan 2011. Any proposed development will be judged in relation to the policies contained within these documents.

6.2. National Policy

National Planning Policy Framework (February 2019)

6.3. Guidance on national policy for biodiversity and geological conservation is provided by the NPPF, published in March 2012, revised on 24 July 2018 and updated on 19 February 2019. It is noted that the NPPF continues to refer to further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system provided by Circular 06/05 (DEFRA/ODPM, 2005) accompanying the now defunct Planning Policy Statement 9 (PPS9).

6.4. The key element of the NPPF is there should be "a presumption in favour of sustainable development" (paragraphs 10 to 11). It is important to note that this presumption "*does not apply where the plan or project is likely to have a significant effect on a habitats Site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats Site*" (paragraph 177). 'Habitats Site' has the same meaning as the term 'European Site' as used in the Habitats Regulations 2017.

6.5. Hence the direction of Government policy is clear; that is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European Site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.

6.6. A number of policies in the NPPF are comparable to those in PPS9, including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 170).

6.7. The NPPF also considers the strategic approach local authorities should adopt with regard to the protection, maintenance and enhancement of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.

6.8. Paragraphs 174 to 176 of the NPPF comprise a number of principles that local authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European Sites to potential SPAs, possible SACs, listed or proposed Ramsar Sites and

sites identified (or required) as compensatory measures for adverse effects on European Sites; and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats – unless there are 'wholly exceptional reasons' (for instance, infrastructure projects where the public benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

6.9. National policy therefore implicitly recognises the importance of biodiversity and that, with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.10. **Local Policy**

Cherwell Local Plan 2011-2031

6.10.1. The principal document for planning control purposes in Cherwell District is the Cherwell Local Plan 2011-2031, Part 1 of which was adopted in July 2015 and re-adopted in December 2016. The Plan provides the strategic planning policy framework for the District and outlines the basis for decisions on land use planning affecting the Cherwell District.

6.10.2. It is noted that much of the Site (the airfield) is located within an area covered by Policy Bicester 8 (Former RAF Bicester) which seeks to secure a long lasting, economically viable future for the Former RAF Bicester technical site and flying field. Additionally, much of the quarry area within the Site is identified as 'existing greenspace' under Policy BSC 10, noting the desire to encourage recreational use within this area.

6.10.3. There are four policies relevant to ecology and nature conservation in the Local Plan.

6.10.4. Policy ESD9 relates specifically to the protection of Oxford Water Meadows SAC. Given the distance between this designated site and the Site, this policy is not considered to be relevant in this case.

6.10.5. Policy ESD10 is the primarily policy in the Local Plan which relates to ecology and nature conservation and is concerned with the protection and enhancement of biodiversity and the natural environment. The policy makes reference to the protection afforded to sites of international, national, regional or local importance and notes that proposals will be expected to incorporate features to encourage biodiversity, as well as maintain and enhance existing ecological networks and provide new green infrastructure.

6.10.6. Policy ESD11 refers to the approach to be adopted in CTAs. The Site does not lie within or adjacent to a CTA, and as such this policy is not considered to be relevant in this case.

6.10.7. Policy ESD17 relates to green infrastructure and highlights the importance of maintaining and improving the green infrastructure

network, with reference made to its contribution to biodiversity and nature conservation.

6.10.8. Part 2 of the Local Plan is being prepared and will contain detailed planning policies to assist with the implementation of strategic policies and the development management process. The policies contained within this document will replace saved policies of the Local Plan 1996, once adopted (see below).

6.10.9. Part 1 of the Local Plan will also be undergoing a partial review as the Council considers how to contribute to Oxford's unmet housing need.

Developer Contributions Supplementary Planning Document (February 2018)

6.10.10. The Developer Contributions SPD was adopted by Cherwell District Council in February 2018 and, amongst other matters, sets out the mechanism by which financial contributions will be sought from developers.

6.10.11. Of relevance to biodiversity and nature conservation, the SPD notes that in some instances (where developments result in net harm to biodiversity as measured by DEFRA Offsetting Metrics), financial contributions may be sought to deliver off-site compensation within appropriate Conservation Target Areas.

Cherwell Local Plan 1996

6.10.12. The Cherwell Local Plan 1996 was adopted in November 1996 and contains a number of saved policies which remain part of the statutory development plan in determining planning applications.

6.10.13. There are three saved policies within the Local Plan 1996 that relate to nature conservation. Policy C1 relates to the protection of statutory and non-statutory designated sites, whilst policy C2 relates to protected species. Policy C4 refers to the creation of new habitats.

Non-Statutory Cherwell Local Plan 2011

6.10.14. There are also a number of policies relevant to ecology and nature conservation in the Non-Statutory Cherwell Local Plan 2011. The original intention was that this plan would replace the policies in the Cherwell Local Plan 1996; however, work was discontinued prior to adoption of this Plan.

6.10.15. Whilst policies in the Non-Statutory Local Plan 2011 are not part of the SDP, the document has been approved as interim planning policy for development control purposes. As such some weight may also be given to the policies contained in this document.

6.10.16. There are nine policies within the Non-Statutory Local Plan 2011 that relate to nature conservation.

6.10.17. Policy EN1 states that in determining planning applications the Council will take into account the likely impact of the proposal on the natural environment. Policy EN2 relates to environmental replacement through provision of compensatory habitat. Policy EN6 refers to the impact of light pollution, while policy EN13 relates to development adjacent to watercourses. Policy EN22 states that development proposals will be expected to incorporate features of nature conservation interest, and retain and enhance features of value where possible. Policy EN23 relates to ecological surveys, whilst policies EN24 and EN25 relate to the protection of designated sites and species respectively. Policy EN27 states that development proposals should also incorporate the creation of new habitats.

6.11. **Discussion**

6.11.1. Recommendations have been put forward in this report that would allow the emerging Experience Quarter proposals to fully safeguard the existing ecological interest of the Site. Wherever possible measures to enhance ecological and biodiversity value have been set out. Based on surveys undertaken and assessment, the presence and potential presence of protected species has been given due regard and measures to enhance the Experience Quarter Site for such species have been put forward.

6.11.2. In conclusion, implementation of the guiding principles and measures set out in this report would enable the emerging development proposals for the Site to fully accord with planning policy for ecology and nature conservation at all administrative levels, whilst delivering the clearly identified requirements for (heritage based) conservation led development within the Site, in line with Policy Bicester 8.

6.11.3. As identified throughout this report, due regard has further been given to the emerging masterplan for the wider site. To this end, the mitigation measures proposed for the Experience Quarter Site are consistent and indeed complimentary to those mitigation principles identified to safeguard and enhance the biodiversity interest across the wider site.

7. SUMMARY AND CONCLUSIONS

7.1. Ecology Solutions was commissioned by Bicester Heritage to undertake Ecological Assessment work of land within the Experience Quarter Site boundary (a component of the wider Bicester Heritage site).

7.2. The proposed development will comprise an Experience Centre focused on 'Motion' and all forms of wings and wheel technologies. The proposed development will comprise an Automotive Experience Quarter comprising commercial, business and services uses (Class E), light industrial (Class B2) and local community and learning uses (Class F) at Bicester Motion, Bicester, OX26 5HA. These emerging proposals are envisaged to comprise the second phase of a wider, four phase masterplan for the wider site.

7.3. Notwithstanding that the Experience Quarter proposals are to come forward as a standalone application, the importance of understanding ecological impacts as a result of Site wide development (i.e. the cumulative impacts and opportunities across all anticipated development phases) is acknowledged. To this end, Ecology Solutions have continued to advise on the formation of a site wide masterplan, the implementation of which would ensure re-development of the wider site would avoid adverse ecological impacts and indeed would ensure opportunities for biodiversity enhancement are realised.

7.4. No statutory designated sites were recorded within or immediately adjacent to the Experience Quarter Site. The Experience Quarter Site includes for parts of two non-statutory sites, Bicester Airfield LWS, and Stratton Audley Quarry LWS. The majority of both sites lies outside of the Experience Quarter red line boundary, but within the wider site. Habitat survey work in 2018 has reaffirmed that both designated sites continue to support the features for which they were designated, albeit the value in some areas has been significantly diminished by on-going scrub succession. Due regard has been given to both LWS', with appropriate mitigation measures proposed to safeguard the sites' biodiversity interest in the long term.

7.5. Much of the Experience Quarter Site comprises areas of hardstanding, short mown grassland, scrubby woodland, dense scrub and a waterbody. These habitats are considered of limited intrinsic value in the context of the Site. Habitats of relatively higher value include those areas of semi-improved calcareous grassland and recolonising hardstanding.

7.6. A number of protected species surveys and assessments have been undertaken across the wider site (including the Experience Quarter Site). These surveys have identified the wider site to support a range of species, not least a notable invertebrate assemblage (of regional value), a medium population of GCN, and small to medium population of common reptiles. Of additional interest is the presence of a modest assemblage of wintering and breeding birds, Badgers and low levels of foraging and commuting bats.

7.7. The Experience Quarter Site, as a component of the wider site, provides a subset of the wider resource for the above faunal assemblages, albeit it supports only a relatively limited range of the habitat mosaic present within the wider site (with much of the biodiversity interest confined to areas of Stratton Audley Quarry which are located to the south of the Experience Quarter Site). Opportunities nonetheless exist for common reptiles, GCN and a range of invertebrates within the Experience Quarter Site, with limited opportunities for foraging and commuting bats, and breeding and wintering birds.

7.8. The ecological survey work undertaken at the Site has informed emerging masterplan proposals for the wider site, as well as the Experience Quarter Site. Appropriate principles and measures have been identified to avoid impacts where possible, and otherwise to guide appropriate mitigation and enhancement opportunities which may be implemented at a detailed stage of planning. As such, it is considered that the emerging Experience Quarter proposals may offer long term enhancements for biodiversity over the existing situation.

7.9. In conclusion, implementation of the guiding principles and measures set out in this report would enable the emerging development proposals for the Site to fully accord with planning policy for ecology and nature conservation at all administrative levels, whilst delivering the clearly identified requirements for (heritage based) conservation led development within the Site, in line with Policy Bicester 8.