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Ecological Impact Assessment

Land West of Kidmore End Road, Oxfordshire

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DRAFT (Rev 2.1)	OC	N/A	23/01/25	Updated designated sites map from TVERC added TVERC species records updated UKHab Map updated Minor amendments to habitat areas in Table 5 to match Biodiversity Impact Calculation	
ISSUE	OC	KP	04/02/25	Proposed layout plan added Section 4 – Impact Assessment – completed Section 5 – Mitigation Proposals – completed Section 6 – Biodiversity Enhancements – completed Section 7 – Conclusion – completed	
ISSUE REV 1.1	OC		25/04/25	Amended red line boundary Updated Landscape Masterplan added	Revised red line boundary excludes priority lowland calcareous grassland habitat.

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Report Summary

1. The Ecology Co-op has been commissioned by Fairfax (Reading) Limited and RGC (SODC) Limited to undertake an Ecological Impact Assessment (EcIA) for a development at Land West of Kidmore End Road, Oxfordshire. Following a Preliminary Ecological Appraisal, including UKHab mapping, of the site, further ecological surveys were undertaken including protected species surveys and desk-top studies over an extensive period of time (2019–2024) in order to provide sufficient baseline information for this assessment. This document presents the findings of these surveys and a full Ecological Impact Assessment in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines to inform a planning application for a residential development of up to 70 units.

2. The site covers an approximate area of 4.89ha and forms part of a larger landholding which operated as an active golf course up until 2020.

3. Habitats identified within the site are (UKHab classifications):

- g 200 – urban trees;
- h2a – hedgerow;
- g3c – other neutral grassland;
- u1c – artificial unvegetated land;
- g4 – modified grassland;
- g2a – lowland calcareous grassland(off-site);
- w1c – lowland beech and yew woodland;
- w1f – lowland mixed deciduous woodland; and
- h3h – mixed scrub.

4. The protected species surveys identified:

- likely absence of badgers *Meles meles*;
- likely absence of roosting bats from within trees (within the development area);
- presence of foraging/commuting bats (at least eight species);
- presence of hazel dormice *Muscardinus avellanarius*;
- presence of breeding red kites *Milvus milvus* as well as other common and widespread species of bird; and
- likely absence of reptiles.

5. In the absence of avoidance, mitigation and/or compensation, the impact assessment has identified potential pathways for significant adverse effects in relation to the following ecological resources:

- Local Wildlife Sites (LWSs)
- Ancient Woodland;



- priority woodland, grassland and hedgerow habitat;
- overall habitat value;
- badgers;
- foraging/commuting bats;
- breeding birds;
- dormice;
- hedgehogs; and
- invasive non-native species (INNS).

6. The identified impacts on the following features can be negated through adoption of appropriate avoidance and/or mitigation measures:

- LWSs
- Ancient Woodland;
- priority woodland, grassland and hedgerow habitat;
- badgers;
- hedgehogs; and
- INNS.

7. Compensation measures are required to address the residual effects on the following ecological resources:

- priority hedgerow habitat;
- overall habitat value;
- foraging/commuting bats; and
- breeding birds.

8. Biodiversity enhancement measures are recommended in order to achieve a net gain in biodiversity of at least 10% as well as to enhance the site for nesting birds, roosting bats, invertebrates and hedgehogs.



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1 INTRODUCTION

1.1 Background

The Ecology Co-op was commissioned by Fairfax (Reading) Limited and RGC (SODC) Limited to undertake an Ecological Impact Assessment of land west of Kidmore End Road, Oxfordshire. This report presents the findings of baseline ecological surveys and desk-study research, and assesses the likely impacts and significance of effects of the proposed works in relation to protected/notable species, habitats and designated sites.

The central grid reference for the site is SU 7139 7706. Figure 1 shows the boundary of the site and local context.

The site covers an approximate area of 5ha and forms part of a larger landholding which operated as an active golf course up until 2020.

There is a proposal to develop the site for residential use, for up to 70 units. An indicative layout plan is presented in Figure 2.

The site was included within a detailed ecological study of the entire golf course in 2019/20¹². This included habitat mapping of the site as well as surveys for the following species:

- bats (walked transects, static detector deployment and tree climbing inspections);
- badgers *Meles meles*;
- breeding birds;
- hazel dormice *Muscardinus avellanarius*;
- reptiles.

1.2 Purpose of this Report

The Ecology Co-op undertook updated habitat mapping of the site and repeat protected species surveys for badgers *Meles meles*, breeding birds, and activity surveys for bats over an extensive period of time (2019–2024).

The purpose of this report is to:

- present the findings of previous and updated surveys and desk-study research (baseline ecological information);
- identify and evaluate the most ecologically important features present on the site and within the

¹ The Ecology Co-op (2021). Oxfordshire Golf Club, 17 Kidmore End Road, Oxfordshire, RG4 8SQ – *Ecological Impact Assessment Revised Submission 1.1*.

² The Ecology Co-op (2019). *Preliminary Ecological Appraisal and Phase 1 Habitat Survey – Oxfordshire Golf Club (North)*, 17 Kidmore End Road, Oxfordshire RG4 8SQ.



zone of influence of the proposed development;

- describe the impacts of the proposed development and determine the significance of effects on these ecologically important features;
- set out the proposed impact avoidance, mitigation, compensation measures that will be undertaken to reduce significant adverse effects to an acceptable (non-significant) level;
- outline the habitat creation and enhancement measures that will be put into place as part of the proposed development. These are designed to ensure that the proposals contribute to both local and national biodiversity objectives.

This report is intended for submission as part of the planning application for the proposed development.

The surveys and report were carried out and produced at the request of Fairfax Land Acquisitions Ltd and were supervised by Owen Crawshaw, BSc (Hons), MCIEEM.

1.3 Policy and Legislation

Legal protection applying to relevant bird, mammal, herpetofauna and invertebrate species and current nature conservation planning policy is outlined in Appendix 1 of this report.

Where possible, this report provides information on how the development proposal will be designed to meet the requirements of both the National Planning Policy Framework (NPPF) and local planning policy. Details of the NPPF is provided in Appendix 1 and relevant local planning policy by South Oxfordshire District Council is provided in Appendix 2.

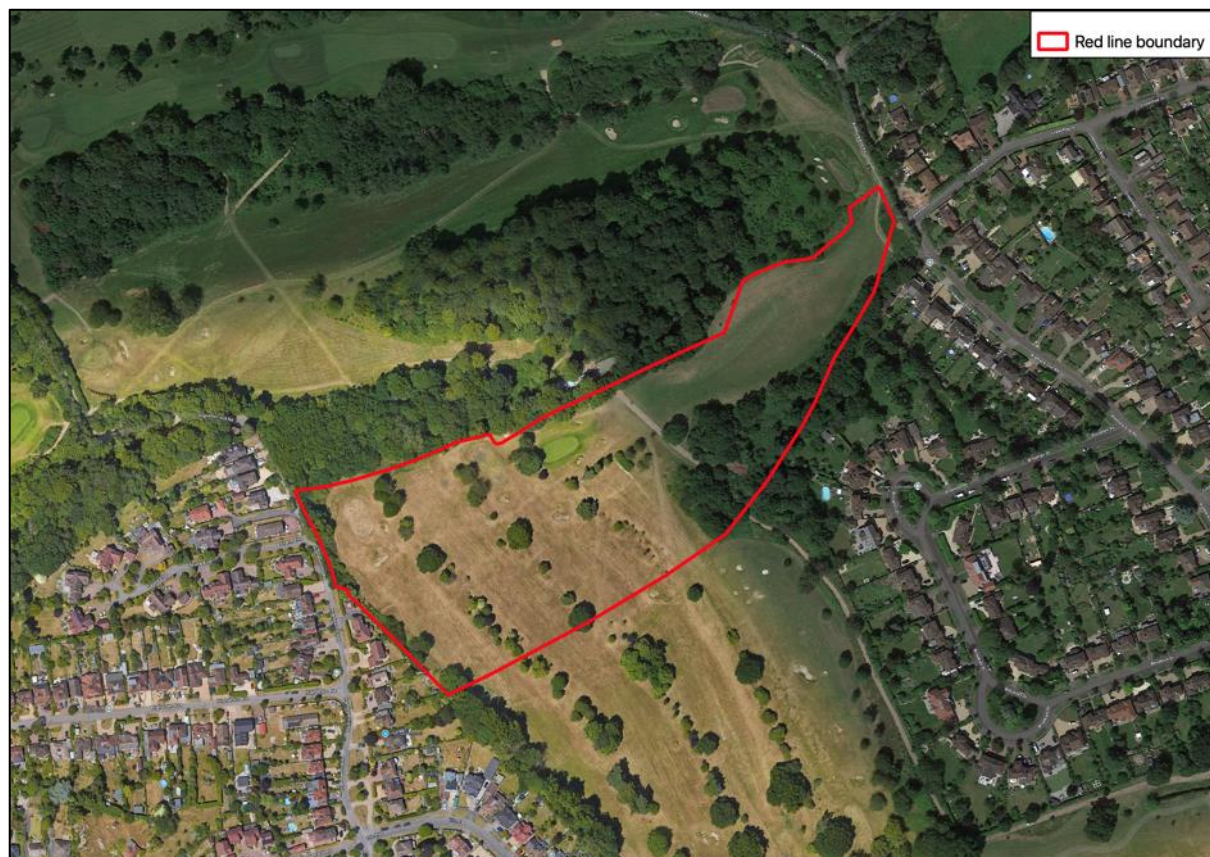
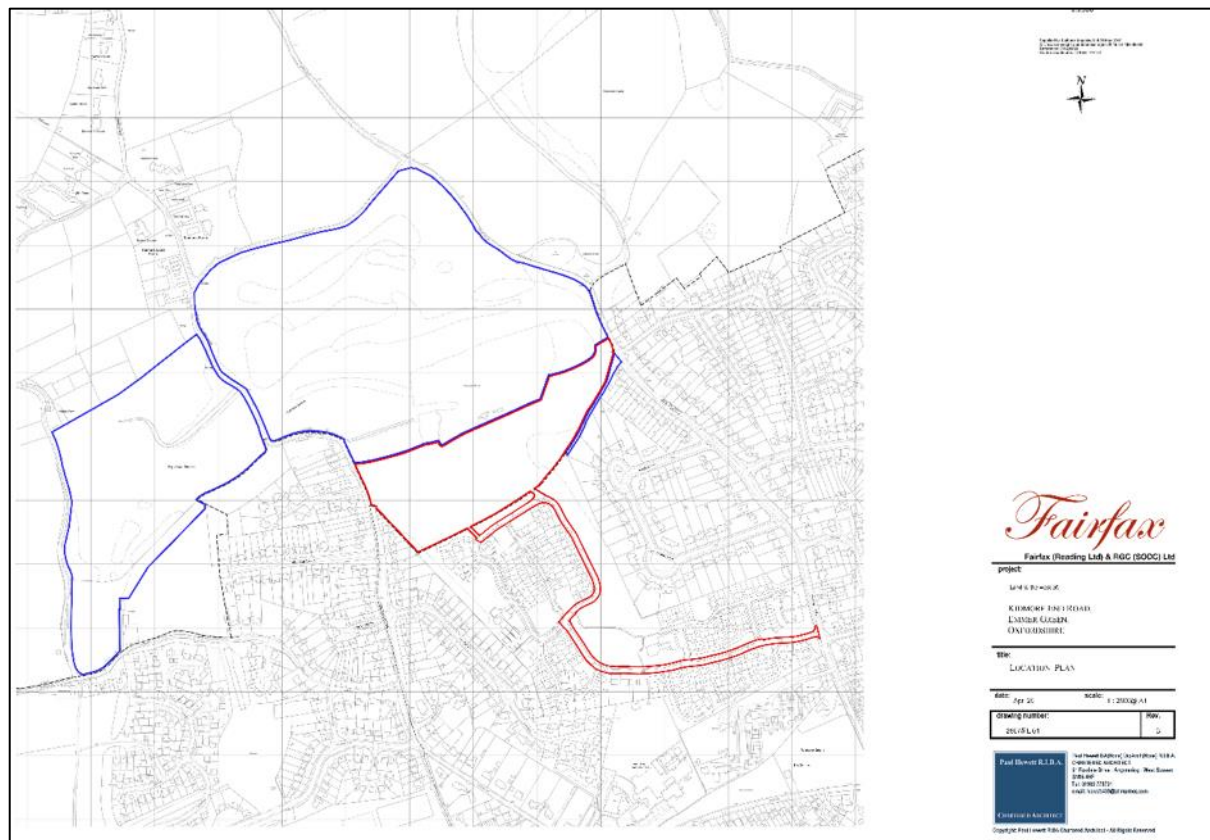


Figure 1a (top) & 1b (bottom). Top – a location plan of land west of Kidmore End Road, Oxfordshire (outlined in red) and the wider landholding (outlined in blue). Bottom – an aerial image showing the location of the site. Reproduced using QGIS software (Version 3.16 Hannover).



Figure 2. Indicative proposed scheme layout for the development at Land West of Kidmore End Road, Oxfordshire
Reproduced courtesy of Paul Hewett. Drawing No. 2507/PL.04 Rev G (Dated Apr 25).



2 SURVEY METHODOLOGY

The following sections describe the methods used in the desk study and protected species/habitat survey(s). All survey methods are in accordance with current best practice guidance for the respective species/taxonomic group and any limitations encountered during the survey are explained in section 2.12.

This document is written in accordance with the CIEEM Guidelines for Ecological Impact Assessment³ and CIEEM Guidelines for Ecological Report Writing⁴. Details of the ecological assessment methods are provided within section 2.11 below.

2.1 Desk Studies

A search for pre-existing records of protected species, priority species for conservation and invasive non-native species was requested from the Thames Valley Environmental Records Centre within a radius of 2km of the wider landholding (entire golf course).

A search of online mapping resources was undertaken to identify the location of any features of potential ecological interest including ponds within 500m (relevant to great crested newts *Triturus cristatus*), watercourses (relevant to riparian mammals and crayfish for example) and connectivity to woodland, scrub, and hedgerow networks (relevant to bats and hazel dormice *Muscardinus avellanarius* for example) in the wider landscape around the site. The connectivity of the site to these features, buildings and other semi-natural habitats are also relevant to species such as bats, great crested newts and reptiles.

The MAGIC website resource (www.magic.gov.uk) was used to identify the location of designated sites for nature conservation and European Protected Species (EPS) licences granted in relation to the survey site.

2.2 Habitat Survey

A site walkover survey was undertaken on 25th May 2022, during which the habitats contained within the site were described and evaluated in accordance with standard UK Habitat Classification (UKHab)⁵. The dominant species and indicators of important habitat types such as Ancient Woodland or unimproved grassland, were recorded.

UKHab survey presents a standardised system for classifying and mapping wildlife habitats in all parts of Great Britain, including urban areas. The aim of the survey is to provide, relatively rapidly, a record

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

⁴ CIEEM (2017) *Guidelines for Ecological Report Writing, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

⁵ The UK Habitat Classification Working Group (2018) *The UK Habitat Classification User Manual* at <http://ecountability.co.uk/ukhabworkinggroup-ukhab>



of the vegetation and wildlife habitats present over large areas of countryside. The habitat classification is based principally on vegetation, augmented by reference to topographic and substrate features, particularly where vegetation is not the dominant component of the habitat.

Data was gathered through a site walkover survey and use of on-line aerial photography to broadly categorise the habitats present using the UKHab classifications⁶. The results are presented as a map showing the distribution of habitat categories across the site. Target notes are used to describe specific features of biodiversity interest and record indicator species where appropriate. In addition to this, notable habitats, such as habitats listed under the NERC Act, 2006 are highlighted.

The UKHab methodology is a recognised tool for initial scoping of potential ecological constraints and opportunities, and for identifying potential effects of the proposed development as part of the planning application process.

As part of the Preliminary Ecological Appraisal, the site features were evaluated for their potential to support legally protected species and observations of any important plant communities, bird assemblages or other potentially valuable ecological features were recorded. Details of the preliminary survey methods for each legally protected species are given below and any specific limitations to the surveys, such as access constraints, are set out in section 2.12.

2.3 Badgers

Badgers *Meles meles* tend to live in family groups with clearly defined territories with the main sett, used throughout the year, as a focal point. The territory often also contains a number of 'annex', 'subsidiary' and outlier setts that are used intermittently. Badgers can exist in a variety of habitats, but a mixed farmland landscape containing pasture and arable land, studded with woodland, scrub and hedgerows support the highest population density.

A comprehensive walkover survey of the site was undertaken on 23rd March 2019 and 25th May 2022, covering all field parcels, woodlands and boundary features. Special attention was paid to boundary features such as hedgerows, woodland edge, earth banks, and fence-lines, where signs of badger activity are often concentrated. Surveyors searched for badger setts, latrines, foraging marks, footprints and worn pathways, and trapped hairs on fences and any other evidence of badger activity.

Any setts identified were subject to on-going monitoring during other survey visits to determine the type of sett and current occupation by badgers. Where necessary, motion sensitive cameras 'trail cams' were used to confirm occupation by badgers.

2.4 Bats

There are 18 species of bat resident in the UK, each with their own specific habitat requirements. Bats

⁶ UK Habitat Classification Working Group (2018). *UK Habitat Classification – Habitat Definitions V1.0* at <http://ecountability.co.uk/ukhabworkinggroup-ukhab>



can use a wide range of features for roosting purposes including loft spaces, cavity walls, loose tiles, mortice joints and cracks/gaps in a variety of built structures. They can also be found in trees with holes, splits, cracks, cavities, ivy and loose bark. Bats are generally active at night and utilise a wide range of habitats for foraging and commuting between roost sites, hibernation sites and foraging habitats. Linear features such as hedgerows, woodland edges, even fences can be important for navigation between roosting and foraging habitats.

2.4.1 Natural Roost Features – Trees

All trees likely to be affected directly or indirectly by the proposed development were subject to a ground-based visual inspection to identify potential roost features. The potential for roosting bats for each feature, or group of features was assessed as negligible, FAR (further assessment required) or PRF (Potential Roost Features) in accordance with best practice guidelines⁷. Further surveys are recommended as appropriate.

2.4.2 Bat Activity Surveys – Walked Transects

Bat activity surveys were undertaken between May and September 2022 and followed best practice guidelines⁶. Pre-determined transect routes were followed by surveyors (Figure 3), focussing on all linear features within the site boundary (treelines, woodland edge and hedgerows). The transect routes were walked at a slow pace during the period from sunset to two hours after sunset by a team of surveyors. All surveys were undertaken during weather conditions suitable for bat activity and at ambient temperatures above 10°C. The surveyors recorded bat activity using 'Echo Meter Touch' bat detectors featuring auto-identification of bat species and automatically triggered recording for later review. The locations of all bat 'registrations' was recorded onto a field map during the survey to correspond with all sound recordings.

2.4.3 Bat Activity Surveys – Automated Static Bat Detecting

Two SM Mini Bat static bat detectors were deployed across the site (Figure 3) on six separate occasions, between May and September 2022, and left in the field for a minimum of five days – the expected maximum lifetime of the battery. Static bat detectors comprise a passive recording device with real-time full-spectrum calls that can be viewed in detail once downloaded on analysis software, allowing accurate identification of most bat calls to species level (or genus level in the case of *Myotis* and *Plecotus* species).

⁷ Collins, J.(ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London.



Figure 3. The transect routes of surveyors with stops and the position of the three static bat detectors deployed on the site. Produced using QGIS Software (Version 3.16 Hannover).

The walked transect and static bat detector deployment survey methods complement each other with the transect surveys providing information on foraging and commuting patterns, and distribution across the site; and automated static detector surveys giving more prolonged coverage through consecutive nights, thus increasing the likelihood of detecting scarce species.

2.5 Breeding Birds

The methods used for the breeding bird survey was adapted from a methodology developed by the Bird Survey and Assessment Steering Group (RSK Biocensus)⁸. This methodology requires six visits spread evenly between late-March and early-July. Any deviation from this number should be justified. These should be carried out approximately 30 minutes before sunrise through to mid-morning (10am to 11am). At least one of these visits should be in the evening, extending past sunset. All bird surveys were only undertaken during favourable weather conditions for bird activity, with periods of persistent or heavy rain, high winds or fog avoided.

A pre-determined transect (Figure 4) was walked on each visit, during which the observer recorded all birds encountered. As recommended in the guidelines, the transect route was walked at a constant slow pace by a competent bird surveyor, stopping to check any priority habitat/features and causing

⁸ <https://birdsurveyguidelines.org/methods/survey-method/>



minimum disturbance, recording all birds detected either by sight or calls/song. Notes regarding the behaviour of birds identified were made to determine their breeding status. Birds were said to be 'confirmed as breeding' if they were observed carrying nesting material, food or faecal pellets; or nests, eggs, or recently fledged young were discovered. Birds were recorded as 'likely breeding' if observed singing or displaying, repeatedly visiting the same locations, and showing agitated or distraction behaviour. Each bird 'registration' was recorded on a field map of the survey site using standard BTO Common Birds Census (CBC) notation⁹, which includes behaviours and flight movements – new standards. A note was also made of the start and end time, sunrise/sunset time, temperature, wind (Beaufort scale) and precipitation levels.



Figure 4. Breeding bird survey transect routes for the six surveys at Land West of Kidmore End Road. Produced using QGIS Software (Version 3.16 Hannover).

2.6 Hazel Dormouse

Hazel dormice are typically associated with broadleaved woodland habitat, hedgerows and scrub. They tend to occur at low density and good habitat connectivity is important. Common dormice need a constant supply of food throughout the active season over a large home range. A diversity of tree and shrub species will provide a range of fruit, nuts and insects. They hibernate during the winter – typically at ground level amongst leaf litter and mosses protected by coppice stools, tree stumps or piles of brash wood.

⁹ https://www.bto.org/sites/default/files/u16/downloads/forms_instructions/bto_bird_species_codes.pdf



2.6.1 Nest Tube/Box Survey

Dormouse surveys are undertaken by attaching purpose built 'nest tubes' on trees and shrubs in suitable habitat such as woodland, scrub and hedgerows. Nest tubes are used by dormice as places of shelter and they will often construct their nests within them during their periods of activity (typically between April and November). In accordance with current best practice guidelines¹⁰, 100 nest tubes were deployed approximately 20m apart in woodland and hedgerow in April 2020 and left *in situ* for the survey season (see Figure 5). Tubes were deployed across the entire landholding of the former golf course. These were checked on a monthly basis for presence of animals and evidence of dormouse presence (distinctively woven nests) from May – August 2020. Since the likelihood of use by dormice varies through the year, an index of probability score is used to determine confidence in a particular survey (see Table 1 below) comprising checks over several months. A minimum score of 21 is normally accepted to establish 'likely absence' in the event that no signs of dormice are found during the survey.

The above methodology was repeated between April and September 2024, with 73 nest tubes being set out on 19th March 2024 (Figure 6) and subsequently checked between April and September 2024 to update the previously collected survey data.

Table 1. Search effort score for each month that dormouse tubes are out on the site and subject to checks for occupation.

Month of check	Index of probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Dormouse checks commenced one month after the nest-tubes were positioned.

¹⁰ Bright, B., Morris, P., Mitchell-Jones, A.J. and Mitchell-Jones, T (1997) *The Dormouse Conservation Handbook*. English Nature.



Figure 5. 2020 dormouse nest tube locations (identified as red dots) across all suitable habitat within the application site and wider surroundings of the former golf course. Produced using QGIS Software (Version 3.16 Hannover).



Figure 6. 2024 dormouse nest tube locations (identified as red dots) across all suitable habitat within the application site and wider surroundings of the former golf course. Produced using QGIS Software (Version 3.16 Hannover).

2.7 Great Crested Newts

Great crested newts require ponds for breeding that meet a series of habitat criteria including good quality water, aquatic plants and an absence of predatory fish. The ponds must have good connectivity to semi-natural terrestrial habitats that provide their invertebrate food sources and suitable safe places to rest and hibernate outside the breeding season. Great crested newts tend to occur more frequently in areas of high pond density across the landscape in ‘metapopulations’ where habitat occupancy ebbs and flows according to changes in conditions.

2.7.1 Habitat Suitability Assessment

The land west of Kidmore End Road does not contain any ponds within its boundaries. Searches using the MAGIC website resource (www.magic.gov.uk) were made for waterbodies within 500m of the site boundary. Where ponds were visible from public rights of way or access permission was granted, they were assessed for their potential to support great crested newts using the Habitat Suitability Index (HSI)¹¹.

The HSI values were used in combination with professional judgement to select the ponds to be carried

¹¹ Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). *Evaluating the suitability of habitat for the great crested newt (Triturus cristatus)*. Herpetological Journal 10, 143-155.



forward for the further surveys described below.

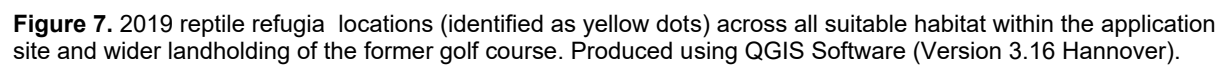
2.8 Reptiles

The common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis* grass snake *Natrix helvetica* and adder *Vipera berus* are widespread species that can be found in many semi-natural habitats, such as rough grassland, scrub, heathland and open woodland where there is good vegetation cover, an abundance of invertebrate, amphibian or small mammal prey and areas of open ground for basking.

Standard reptile presence/likely absence surveys involve setting out artificial refugia (reptile 'mats' or 'tins') in potentially suitable habitat. Reptile mats are pieces of roofing bitumen felt and reptile tins are pieces of corrugated metal sheet approximately 1m x 0.5m in size, which absorb heat from the sun more rapidly than the surrounding vegetation and provide cover and basking places attractive to reptiles. These are then checked for presence of animals under suitable weather conditions. They are placed in areas of potentially suitable habitat at an approximate density of 20 per ha, or 20m apart along linear features. There are no up-to-date best practice guidelines for reptile surveys, but a minimum of seven survey visits under suitable weather conditions is generally considered to be adequate when determining their presence/likely absence, and 15–20 visits are used to calculate a 'peak count' for population size class assessment.

A presence/likely absence survey across the entire landholding of the former golf course (incorporating the application site) was conducted in 2019. A total of 123 roofing felt mats were used in this survey (see Figure 7). The mats were left *in situ* for a minimum of one week to 'bed in' and allow reptiles to locate them before the first check. The mats were checked at least seven times over the period April – May 2019 and all observations of reptiles were recorded, together with the weather conditions, temperature and time of day.

The above methodology was repeated in 2024 using 92 refugia (see Figure 8) to update the survey previously collected data. Refugia was checked between April and September during suitable weather conditions.



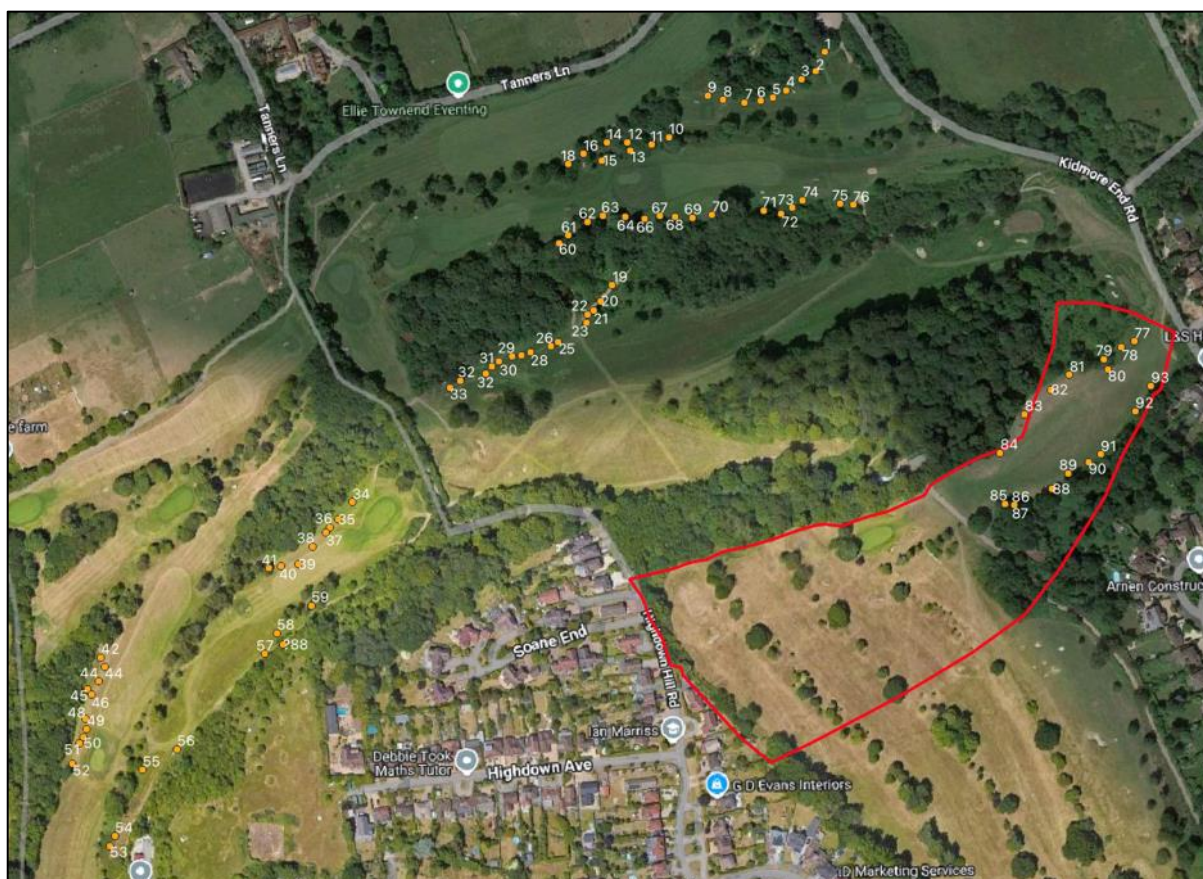


Figure 8. 2024 reptile refugia locations (identified as orange dots) across all suitable habitat within the application site and wider landholding of the former golf course. Produced using QGIS Software (Version 3.16 Hannover).

2.9 Other Notable Species

The site's habitats were broadly assessed for their potential to support species of principal importance for nature conservation (Section 41 NERC Act 2006) and other notable species. This includes mammals such as harvest mouse *Micromys minutus*, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, and many bird species. The site was broadly assessed for its potential to support important invertebrate assemblages with specific attention paid to features such as standing deadwood, wet flushes, bare earth banks and botanically rich areas.

2.10 Invasive Non-native Species

No specific surveys for invasive non-native species (INNS) were undertaken. However, the presence of any invasive non-native species encountered during other fieldwork, was recorded.

2.11 Impact Assessment Methodology and Mitigation

The assessment of ecological impacts and mitigation recommendations in this report follow CIEEM Guidelines for Ecological Impact Assessment (EcIA)³. This involves evaluating the importance of an 'ecological feature' (habitat, vegetation community, population of a single species or assemblages of species) in terms of nature conservation priority, followed by the application of the 'mitigation hierarchy'.



2.11.1 Importance of Ecological Features

A level of importance was assigned to all existing ecological features through consideration of the rarity and distribution of a habitat or species, the population size, ecological function, and trends (declining/expanding), together with any designations, legal status, or conservation policies. CIEEM recommend that the importance of an ecological feature, in terms of nature conservation priority, should be considered within a defined geographical context (for definitions used by The Ecology Co-op, see Appendix 3):

- international and European
- national
- regional
- county
- local or parish
- site/negligible.

Where protected species are present and there is the potential for a breach of the legislation as a result of the development proposals, those species are considered as 'important' features and included in the EclA. However, the level of importance assigned to the affected population of a protected species will vary depending on contextual information about the population size, distribution, abundance and trends across the range of geographical scales.

Similarly, irreplaceable habitats such as ancient broadleaved woodland are considered as important features and included in the EclA. The level of importance will vary depending on the size of the habitat parcel, its distribution and abundance at different geographical scales.

Features that are considered to be important at site level only, or are of negligible importance (such as paved ground or amenity grassland) are excluded from this EclA and it should be reasonable to assume that if a feature is not mentioned, it is not ecologically important.

2.11.1.1 Bats

The method for assessing site importance to foraging/commuting bats set out in the bat mitigation guidelines¹², assigns a score to each species that is known to be, or could be, present within the site.

Low scores are awarded for widespread species with higher scores assigned to rare species and those with restricted ranges. Each site is assessed on its geographic location and a maximum achievable score is calculated. The percentage of the site score when compared the maximum achievable score is used to assign the importance, with discrete thresholds published in the guidance.

¹² Reason, P.F. and Wray, S. (2023). *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. Chartered Institute of Ecology and Environmental Management, Ampfield.



Rarity category [points/species]	South-west England & South Wales		Southern England		South-eastern/East Anglia to The Wash		North/mid-Wales		Central England/Mid- lands	
Widespread all geographies [score 1]	<i>Ppip</i> <i>Ppyg</i> <i>Paur</i>	Score 3	<i>Ppip</i> <i>Ppyg</i> <i>Paur</i>	Score 3	<i>Ppip</i> <i>Ppyg</i> <i>Paur</i>	Score 3	<i>Ppip</i> <i>Ppyg</i> <i>Paur</i>	Score 3	<i>Ppip</i> <i>Ppyg</i> <i>Paur</i>	Score 3
Widespread in many geographies, but not as abundant in all [score 2]	<i>Mmys</i> <i>Mbra</i> <i>Mdau</i> <i>Mnat</i> <i>Nnyc</i>	Score 10	<i>Mmys</i> <i>Mbra</i> <i>Mdau</i> <i>Mnat</i> <i>Nnyc</i>	Score 10	<i>Mdau</i> <i>Mnat</i> <i>Nnyc</i>	Score 10	<i>Mmys</i> <i>Mbra</i> <i>Mdau</i> <i>Mnat</i> <i>Nnyc</i>	Score 10	<i>Mmys</i> <i>Mbra</i> <i>Mdau</i> <i>Mnat</i> <i>Nnyc</i>	Score 10
Rarer or restricted distribution [score 3]	<i>Rhip</i> <i>Eser</i> <i>Nlei</i> <i>Pnat</i>	Score 12	<i>Malc</i> <i>Eser</i> <i>Nlei</i> <i>Pnat</i>	Score 12	<i>Mmys</i> <i>Mbra</i> <i>Eser</i> <i>Nlei</i> <i>Pnat</i>	Score 15	<i>Rhip</i>	Score 3	<i>Eser</i> <i>Nlei</i> <i>Pnat</i>	Score 9
Rarest Annex II species and very rare [score 4]	<i>Rfer</i> <i>Mbec</i> <i>Bbar</i> <i>Paus</i>	Score 16	<i>Rfer</i> <i>Rhip</i> <i>Mbec</i> <i>Bbar</i> <i>Paus</i>	Score 20	<i>Bbar</i>	Score 4		Score 20		Score 4
Thresholds	Maximum possible	41	Maximum possible	45	Maximum possible	28	Maximum possible	36	Maximum possible	26
County importance threshold: 45%	County	18	County	20	County	13	County	16	County	12
Regional importance threshold: 55%	Regional	23	Regional	25	Regional	15	Regional	20	Regional	14
National importance threshold: 70%	National	29	National	32	National	20	National	25	National	18

Figure 9. Species values and percentage thresholds for assigning ecological importance of bat assemblages within a site. Taken from the Bat Mitigation Guidelines.

2.11.2 Significance of Effects

In accordance with EclA³, a significant effect is defined as “an effect that either supports or undermines biodiversity conservation objectives for important ecological features”. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy). The effects may be described as significant at a range of geographic scales as defined above.

The impacts are identified and described in relation to the following characteristics:

- *adverse or positive* – does the impact result in the loss or gain in biodiversity/quality of the environment?
- *extent, magnitude* – the spatial area over which the impact may occur, the area of habitat lost, or the number of individuals/populations affected
- *timing* – in relation to the life cycle of the ecological feature (e.g. nesting bird season)
- *duration, frequency* – is the impact temporary or permanent, frequently repeated or a one-off event?
- *reversibility* – is the impact temporary or permanent? Would the ecological feature recover after the impact?
- *cumulative impacts* – in combination with other plans/projects.

This report has only sought to describe in detail the impacts that are likely to be significant. Impacts that are either unlikely to occur, or if they did occur are unlikely to have a significant effect have been discounted or ‘scoped out’ at an earlier stage. Effects on the conservation status of ecological features



are only assessed in detail if they have a high enough value (local or above) and impacts upon them may be a material consideration in decision-making in terms of legislation and planning policy. Impacts on features below local value are categorised as of neutral significance and are not considered further. However, where it has not been possible to robustly conclude that there are no significant effects (due to insufficient survey data or scientific research for example), then the precautionary principle will be applied, and a significant effect is assumed.

2.11.3 The 'Mitigation Hierarchy'

The assessment of the significance of an effect is made initially in the absence of mitigation. This is followed by a sequential process of determining the most appropriate way to remove or minimise significant effects. The preferred option is to avoid impacts in the first place, for example by redesigning the scheme to retain an important area of habitat, or timing works sensitively. Mitigation measures such as translocation or displacement of populations is only applied as a last resort where significant effects are unavoidable.

When residual significant adverse effects remain after all practicable measures to avoid and/or minimise impacts have been applied, compensation measures are required. Compensation measures include habitat creation in alternative locations that offset unavoidable habitat loss.

Finally, enhancements are proposed that do not relate to a specific impact and effect but provide net gains in biodiversity – taking advantage of opportunities in the design and operation of the proposed development. These measures are intended to ensure that the proposed development contributes towards national and local biodiversity objectives.

2.12 Constraints/Limitations to Surveys

Surveys record any flora or fauna that is present at the time of the survey visits. It is therefore possible that some species may not have been present during the surveys but may be evident at other times of the year and may appear or disappear from the site if habitat conditions change. For this reason, the surveys are considered valid for up to eighteen months for badgers and bats, two years for reptiles and three years for great crested newts and dormice. If the habitat conditions change significantly in the intervening period, then it is recommended that the surveys be updated.

3 ECOLOGICAL BASELINE

3.1 Designated Sites

Details of designated sites within 2km of land west of Kidmore End Road are listed in Table 2 below, Figure 10 provides a map of the designated sites in relation to the application site; all of which are non-statutory sites..

Table 2. Designated sites within 2km of Land West of Kidmore End Road.

Site name	Designation	Features listed on citation	Proximity
Reading Golf Course (east)	Local Wildlife Site	Habitats: lowland mixed deciduous woodland	130m N



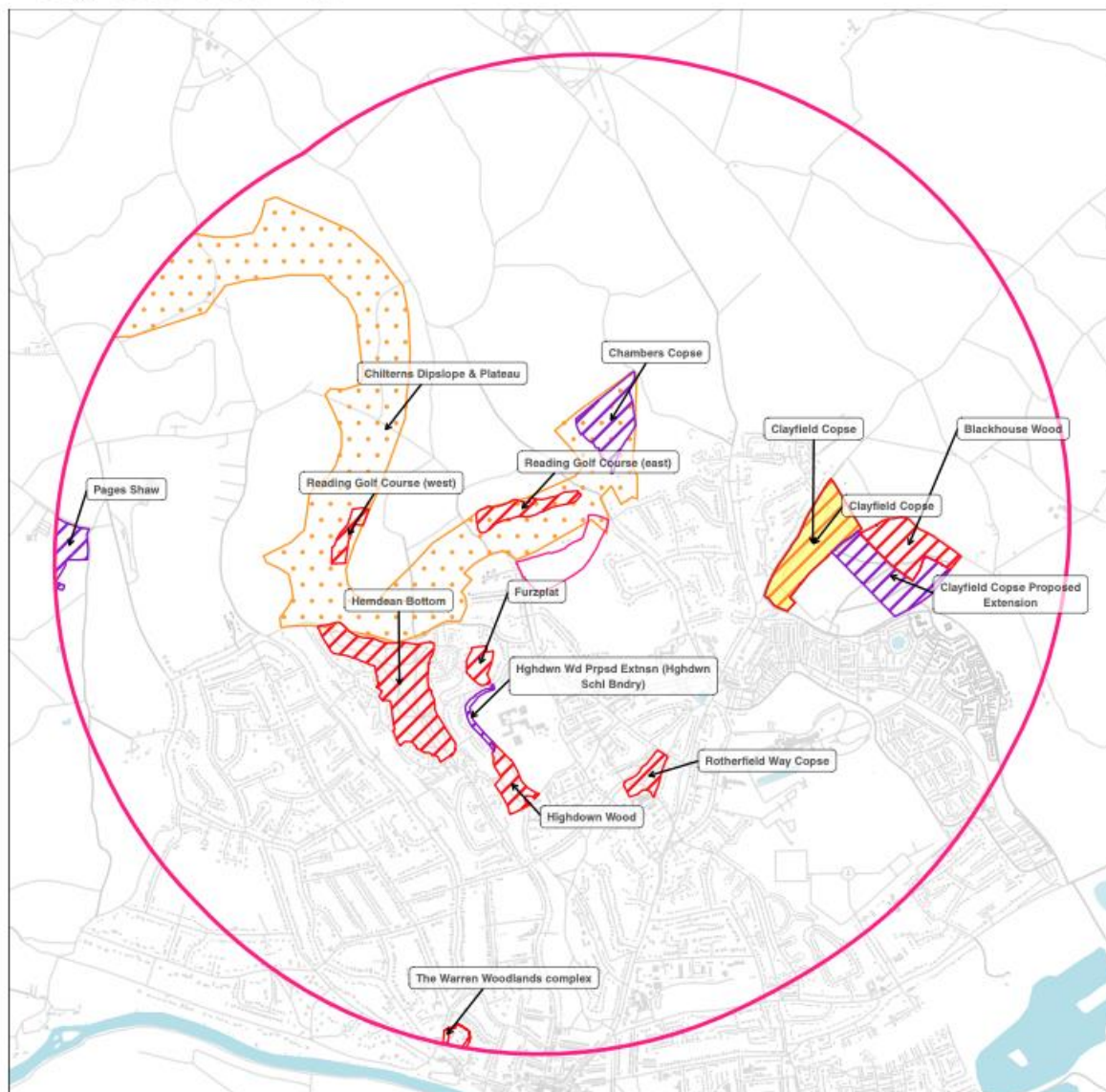
Site name	Designation	Features listed on citation	Proximity
		- lowland calcareous grassland Species: - red kite <i>Milvus milvus</i> - sainfoin <i>Onobrychis viciifolia</i>	
Chilterns Dipslope and Plateau	Conservation Target Area	Chalk valleys within the Chiltern Hills containing a variety of notable habitats (e.g. chalk grassland, woodland, hedgerows, arable field margins, traditional orchards)	On-site
Furzeplat	Local Wildlife Site	Habitats: - lowland mixed deciduous woodland Species: - bluebell <i>Hyacinthoides non-scripta</i>	325m SW
Hemdean Bottom	Local Wildlife Site	Habitats: lowland meadow (with calcareous influences)	325m SW
Chambers Copse	Proposed Local Wildlife Site	Habitats: woodland (not classified)	430m N
Reading Golf Course (west)	Local Wildlife Site	Habitats: species-rich grassland (not classified)	650m NW
Rotherfield Way Copse	Local Wildlife Site	Habitats: - lowland mixed deciduous Woodland Species: - bluebell butcher's-broom <i>Ruscus aculeatus</i>	700m S
Highdown Wood	Local Wildlife Site	Habitats: - lowland beech & yew woodland Species: - bluebell - red kite - lesser spotted woodpecker <i>Dendrocopus minor</i> - bullfinch <i>Pyrrhula pyrrhula</i>	715m S
Clayfield Copse	Local Wildlife Site/Local Nature Reserve	Habitats: woodland (not classified)	750m E
Blackhouse Wood	Local Wildlife Site	Habitats: woodland (not classified)	1.1km E
Old Cemetery, Victoria Road	Local Wildlife Site	Habitats: urban greenspace with mature trees	1.25km S
Pages Shaw	Proposed Local Wildlife Site	Habitats: - lowland mixed deciduous woodland - lowland beech & yew woodland	1.8km W
Tanker's Table Field	Local Wildlife Site	Habitats: - lowland mixed deciduous woodland - lowland meadow - lowland calcareous grassland	>2km NW



Site name	Designation	Features listed on citation	Proximity
The Warren Woodlands Complex	Local Wildlife Site	Habitats: • lowland mixed deciduous woodland • lowland beech & yew woodland • wet woodland • fen Species: • badger • bluebell • white helleborine <i>Cephalanthera damasonium</i> • Loddon lily <i>Leucojum aestivum</i>	>2km SW
Chilterns Escarpment South	Conservation Target Area	Chalk escarpment within Chiltern Hills containing chalk grassland and woodland	>2km SW



Land West of Kidmore End Road Designated Sites Map



- | | | |
|--|--------------------------|--|
| Berkshire Local Wildlife Site | Conservation Target Area | Oxfordshire Local Wildlife Site |
| Berkshire Proposed Local Wildlife Site Extension | LNR | Oxfordshire Proposed Local Wildlife Site |

Map produced by Thames Valley Environmental Records Centre in 2022
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Figure 10. Designated sites within 2km of land west of Kidmore End Road. Reproduced courtesy of Thames Valley Environmental Records Centre.

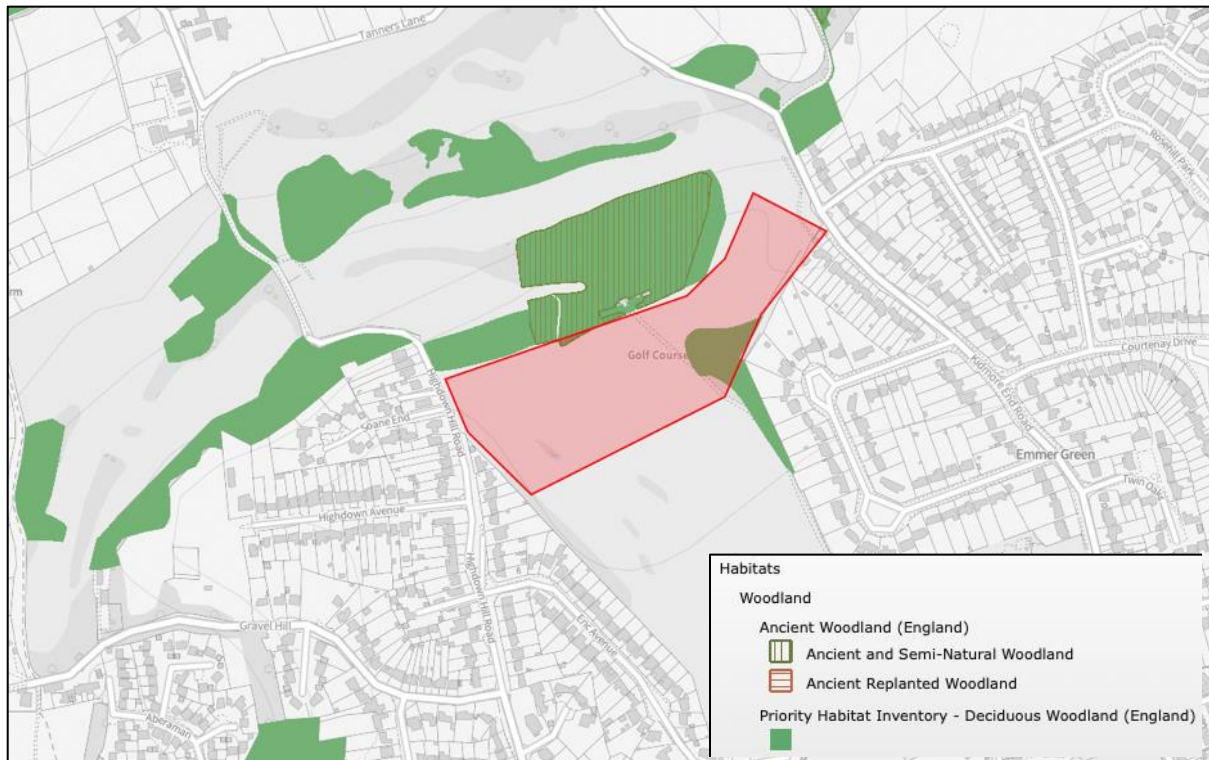


Figure 11. Priority Habitats and Ancient Woodland contained by, and adjacent to, land west of Kidmore End Road. Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

There are four granted EPS licences concerning bats within 1km of the site. The locations of these are shown in Figure 12 and details provided in Table 3.

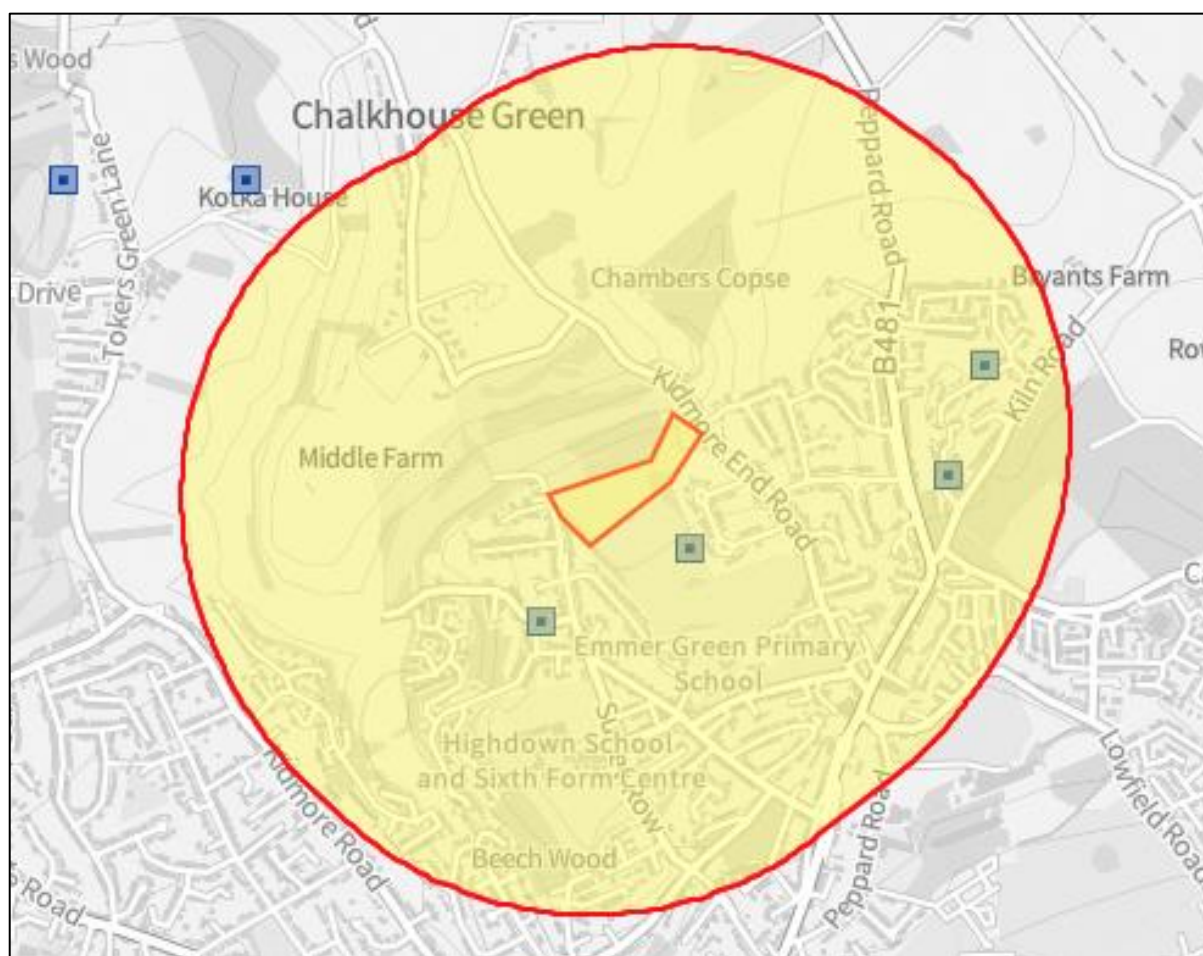


Figure 12. Granted EPS licences (shown as squares) within 1km of land west of Kidmore End Road. Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

Table 3. Summary of information for granted European Protected Species (EPS) within 1km of Land West of Kidmore End Road.

Reference Number	Proximity to Study Site	Species Covered	Period Covered	Other Information
EPSM2013-6025	180m SE	Brown long-eared bat <i>Plecotus auritus</i>	26/07/2013 – 31/12/2013	Destruction of a resting place
2018-35917-EPS-MIT	250m SW	Common pipistrelle <i>Pipistrellus pipistrellus</i>	27/06/2018 – 30/11/2018	Destruction of a resting place
EPSM2012-4078	670m E	Brown long-eared bat Daubenton's bat <i>Myotis daubentonii</i> Natterer's bat <i>M. nattereri</i>	05/10/2012 – 30/01/2014	Unknown
2017-32046-EPS-MIT	800m E	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	01/11/2017 – 30/04/2018	Destruction of a resting place



3.2 Habitats

Habitats identified within the site are listed in Table 4 below.

W1 & W2 woodland are considered to qualify as a habitat of principal importance (S41 NERC Act 2006) under 'Lowland Mixed Deciduous Woodland'; the site's semi-improved calcareous grassland and a hedgerow are also considered to qualify as habitats of principal importance, under 'Lowland Calcareous Grassland' and 'Hedgerows' respectively. The Lowland Mixed Deciduous Woodland and Lowland Calcareous Grassland are assessed as being of value at the county level (Oxfordshire)³. The hedgerow is assessed as being of value at the district level (South Oxfordshire). These habitats will require protection and retention within the development.

Although the site's linear tree belts and scattered tree planting do not qualify as habitat of principal importance, collectively the semi-mature/mature trees provide a resource of significant ecological value within the context of the local area (Reading).



Table 4. Habitats identified within land west of Kidmore End Road.

UKHab habitat	Polygon ID (Figure 13)	Secondary codes (see Appendix 7)	Species/description	Area (ha) length (km)	Priority Habitat (NERC, 2006) (Y/N)	Assessment of ecological value ³
g 200 – individual (urban) trees	T1 – T66 (Photograph 2, Photograph 3 & Photograph 5)	200	76 small to very large, calculated using Diameter at Breast Height (DBH); trees including specimens of cherry <i>Prunus</i> sp., silver birch <i>Betulus pendulus</i> young, sycamore <i>Acer pseudoplatanus</i> , scot's pine <i>Pinus sylvestris</i> , oak <i>Quercus robur</i> , gorse <i>Ulex europaeus</i> , lime <i>Tilia x europaea</i> , beech <i>Fagus sylvatica</i> , ash <i>Fraxinus excelsior</i> , field maple <i>Acer campestre</i> , hawthorn <i>Crataegus monogyna</i> , rowan <i>Sorbus aucuparia</i> , copper beech <i>Fagus sylvatica purpurea</i> , willow <i>Salix</i> sp., holly <i>Ilex aquilifolium</i> , goat willow <i>Salix caprea</i> , spruce <i>Picea</i> sp., alder <i>Alnus glutinosa</i> , whitebeam <i>Sorbus aria</i> and grey poplar <i>Populus x canescens</i> , Trees with a DBH of <7.5cm were not mapped.	0.9146ha*	N	Local
h2a – hedgerow	H1 (Photograph 6))	47,82	Ash, spindle <i>Euonymus europaeus</i> , hawthorn, blackthorn <i>Prunus spinosa</i> , elm <i>Ulmus</i> sp. and ivy <i>Hedera helix</i> . Ground flora: nettle <i>Urtica dioica</i> and grasses.	0.001km	Y	District
g3c – other neutral grassland	ONG1	11,76,540	Wild mignonette <i>Reseda lutea</i> , mugwort <i>Artemisia vulgaris</i> , dandelion <i>Taraxacum officinale</i> , knapweed <i>Centaurea</i> sp., yarrow <i>Achillea millefolium</i> , greater plantain <i>Plantago major</i> , false oat-grass <i>Arrhenatherum elatius</i> , meadow grass <i>Poa</i> sp., perennial rye <i>Lolium perenne</i> , Yorkshire fog <i>Holcus lanatus</i> , ragwort <i>Senecio jacobaea</i> , wild carrot <i>Daucus carota</i> , sow thistle <i>Sonchus oleraceus</i> , meadow buttercup <i>Ranunculus acris</i> , spear thistle <i>Cirsium vulgare</i> .	0.011ha	N	Site



Land West of Kidmore End Road, Oxfordshire – ECOLOGICAL IMPACT ASSESSMENT

UKHab habitat	Polygon ID (Figure 13)	Secondary codes (see Appendix 7)	Species/description	Area (ha) length (km)	Priority Habitat (NERC, 2006) (Y/N)	Assessment of ecological value ³
u1c – artificial unvegetated land	-	-	Artificial track.	0.038ha	N	Negligible
g4 – modified grassland	MG1 (Photograph 1))	11,64,66,540	Former golf course fairways and greens. Meadow grass, meadow foxtail <i>Alopecurus pratensis</i> , Timothy grass <i>Phleum pratense</i> , cats-ear <i>Hypochaeris radicata</i> , Yorkshire fog, white clover, creeping buttercup <i>Ranunculus repens</i> , perennial rye, dandelion.	1.003ha	N	Site
	MG2	11,17,64,66,540	Meadow grass, Yorkshire fog, creeping buttercup, fescue <i>Festuca</i> sp., perennial rye, barren brome. Few herbs present within the sward.	2.96ha		
g2c – other calcareous grassland	OCG1	76,77,540	Former rough lining fairway - lots of sedges, knapweed, foxglove <i>Digitalis purpurea</i> , stitchwort <i>Stellaria</i> sp., lady's bedstraw <i>Galium verum</i> , black medick.	0.007ha	N	Site
g2a – lowland calcareous grassland	LCG1 (Photograph 10)	10,11,140	Ground flora: quaking grass, meadow grasses <i>Poa</i> spp., knapweed, false oat-grass, ragwort, salad burnett <i>Snaguisorba minor</i> , sainfoin <i>Ononbrychis viciifolia</i> rough hawkbit <i>Leontodon hispidus</i> , yarrow, bird's foot trefoil, germander speedwell <i>Veronica chamaedrys</i> , cowslip <i>Primula veris</i> , common toadflax <i>Linaria vulgaris</i> , ribwort plantain <i>Plantago lanceolata</i> , wild carrot, meadow vetchling <i>Lathyrus pratensis</i> , hogweed <i>Heracleum sphondylium</i> , St. John's wort <i>Hypericum perforatum</i> , false-wood, brome <i>Brachypodium sylvaticum</i> , creeping thistle <i>Cirsium arvense</i> , ox-eye daisy <i>Leucanthemum vulgare</i> , herb Robert <i>Geranium robertianum</i> . Scrub: hawthorn, dogwood <i>Cornus sanguinea</i> ,	0.253ha	Y	County



UKHab habitat	Polygon ID (Figure 13)	Secondary codes (see Appendix 7)	Species/description	Area (ha) length (km)	Priority Habitat (NERC, 2006) (Y/N)	Assessment of ecological value ³
			hornbeam <i>Carpinus betulus</i> , wild privet <i>Ligustrum vulgaris</i> , dog rose <i>Rosa canina</i> . Trees: ash.			
w1c – Lowland beech & yew woodland	W1 (Photograph 11)	37,47,152	Beech dominant, cherry, oak, holly, elder <i>Sambuccus nigra</i> , ash. Ground flora: nettle, garlic mustard <i>Allaria petiolata</i> , herb Robert, dog's mercury <i>Mercurialis perennis</i> bluebells <i>Hyacinthoides non-scripta</i> , cleavers <i>Gallium aparine</i> , bramble <i>Rubus fruticosus</i> agg., green alkanet <i>Pentaglottis sempervirens</i> , wood rush <i>Luzula</i> sp., ground ivy <i>Glechoma hederacea</i> .	0.087ha	Y	County
w1f – Lowland mixed deciduous woodland	W2 (Photograph 12)	37,47	Silver birch, willow <i>Salix</i> sp., oak, holly, apple <i>Malus domestica</i> , ash, hawthorn and hazel <i>Corylus avellana</i> .	0.638ha	Y	County
h3 – Dense scrub	S1 (Photograph 8)	10,47,80	Bramble, elm, hazel, elder.	0.074ha	N	Site
	S2 (Photograph 9)	10,11,47,48,189	Dense snowberry <i>Symphoricarpos albus</i> , sycamore, cherry, lime, ash, lilac <i>Syringa vulgaris</i> , willow <i>Salix</i> sp., holly, elm.	0.043ha		
	S3	10, 11, 47	Dog rose, gorse, bramble and ash	0.007		
	S4	10, 11, 47	Dog rose, bramble, oak and hawthorn.	0.008		
*calculated using the Statutory Biodiversity Metric Tree Helper Tool ¹³						

¹³ DEFRA (2024) *Statutory Biodiversity Metric Calculator Tool*. Available from <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides>

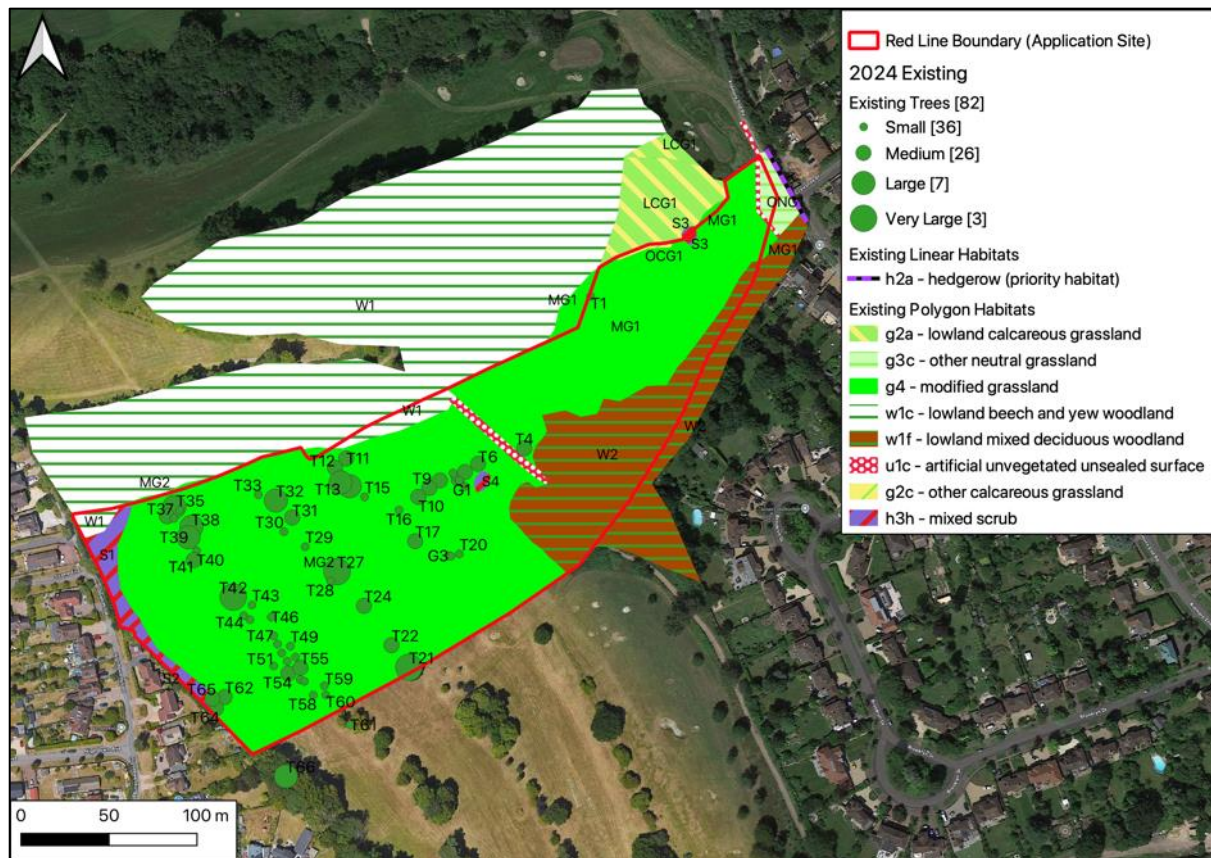


Figure 13. An existing UKHab Map of land west of Kidmore End Road with habitat parcel IDs shown. Reproduced using QGIS Software (version 3.16.3 – Hannover).



Photograph 1. MG1 – g4 – modified grassland.



Photograph 2. T34 – T60 which line the western fairways.



Photograph 3. T21 – T23 which run through the centre of the site.



Photograph 4. G3 looking northwards to T11-T20.



Photograph 5. T6–T10.



Photograph 6. H1 – h2a – hedgerow (priority habitat).



Photograph 7. MG1 – g4 – modified grassland. Left image taken in May 2022. Right image taken in August 2022.



Photograph 8. S1 – h3h – mixed scrub.



Photograph 9. S2 – h3h – mixed scrub.



Photograph 10. LCG1 – g2a – lowland calcareous grassland.



Photograph 11. W1 – w1c – lowland beech and yew woodland (Ancient Woodland).



Photograph 12. W2 – w1f– lowland mixed deciduous woodland.

3.3 *Badgers*

3.3.1 Survey Results

2019

A possible badger sett was found within an area of woodland at the eastern corner of the application site during the site survey of 21st & 22nd January 2019 (pictured in Photograph 13) (precise location withheld from this report due to sensitivity of badger records). The single entrance hole was monitored by a trail 'cam' from 29th May–11th June 2019. No badgers were recorded by the trail 'cam' during its deployment within the site. Inspection of the entrance hole in June 2019 revealed it was largely obscured by nettles and did not appear to have been used recently.

2021

The entrance hole was re-visited in September 2021, but no evidence of its recent use was found and the hole was largely overgrown. An area of recent digging was recorded in close proximity to the entrance hole.



Photograph 13. The possible badger sett entrance located to the immediate north of the application site (2019 photo).



Photograph 14. Mammal diggings within the woodland (2021 photo).



No evidence of badger activity was recorded within the woodland at the northern corner of the site during the 2022 walkover survey. Two mammal burrow entrances were identified (one of which was previously identified). One of these is largely obscured by ruderal vegetation and the other is considered likely to have been created by rabbits *Oryctolagus cuniculus* given the size and shape of the entrance and the presence of a suspected rabbit guard hair found around the entrance.



Figure 14. Photographs of the mammal burrows inspected as part of the 2022 badger walkover survey. Neither showed signs of use by badgers.

2023

A check of the woodland on 10th August 2023 did not identify any evidence of badgers in the area, with a single small hole observed: likely the result of digging by rabbits.



Figure 15. A small hole considered to have been dug by rabbits within the woodland (2023 photo).

3.3.2 Pre-existing Records

The TVERC provided 50 records of badger in the search area.

3.3.3 Interpretation

Given the above information, and the survey data collected in 2019 and 2021, there are not considered to be any active badger setts within the site or the areas immediately beyond the site boundary.

3.4 Bats

3.4.1 Natural Roost Features – Trees

All trees within the tree lines crossing the site were assessed as having ‘negligible’ bat roosting potential. Assessment of individual trees contained within woodland parcels both within and bordering the site was not made.

3.4.2 Bat Activity Surveys – Walked Transects

A minimum of six species of bat were recorded across the site during the walked activity surveys; all of which are considered to be common and widespread across southern England. The greatest levels of activity encountered, were those of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P.*



pygmaeus and serotine *Eptesicus serotinus*, all of which were recorded to be foraging at a 'continuous' level on a least one occasion during one of the survey visits. At least three serotines were observed foraging back and forth along the site's north-western woodland boundary during the survey of 20th June 2022. Lower levels of bat activity were experienced along the tree lines within the site (TL1 – 4)

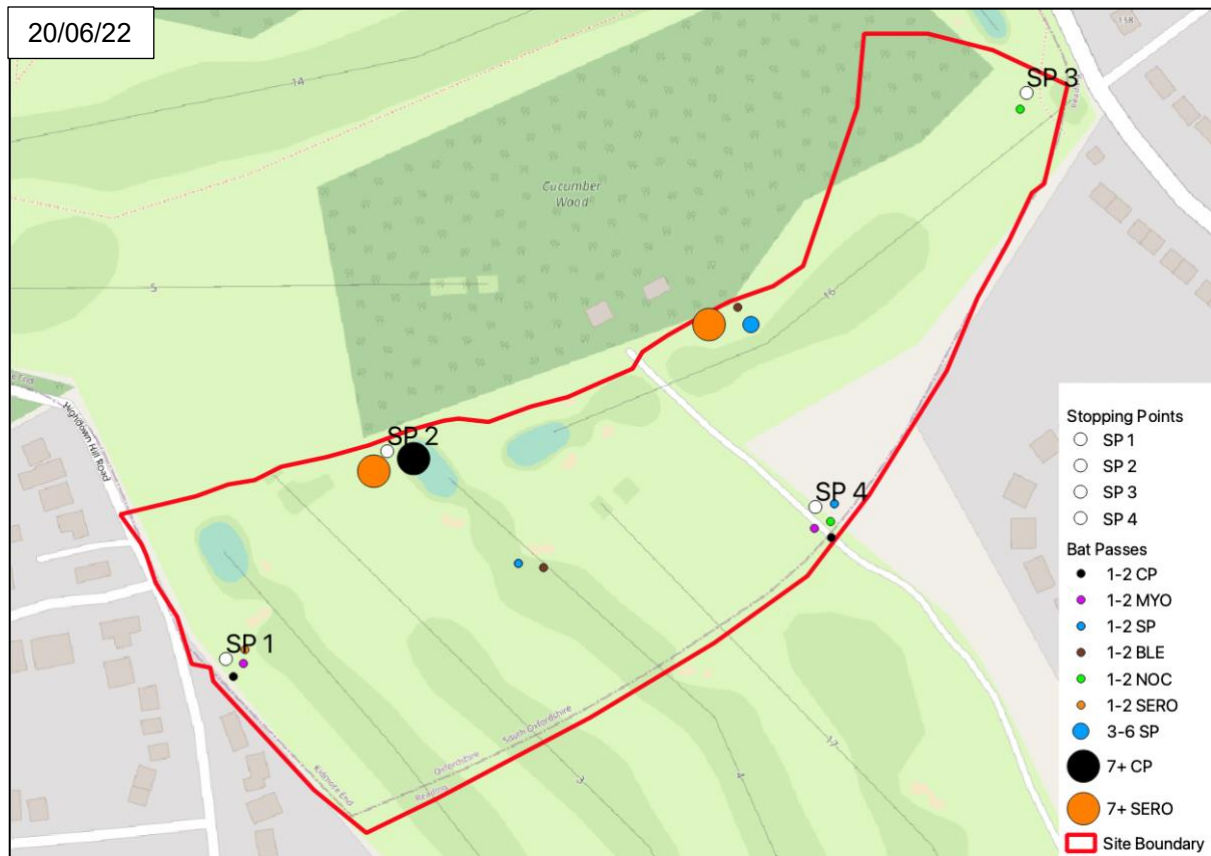
Survey conditions and timings are presented in Table 5. The results of each walked transect survey is summarised in Figure 16. This shows the distribution of all bat 'observations' on each walked transect, during which the route was covered at least three times in a session.



Table 5. Metadata: dates, times, temperature, weather conditions for the bat activity (walked transect) surveys undertaken at land west of Kidmore End Road in 2022.

Date	Timings	Temperature (°C) and weather conditions	Surveyors
30/05/22	Start/sunset: 21:09 Finish: 23:09	12°C. 100% cloud cover, calm (Beaufort Scale 0).	Owen Crawshaw BSc (Hons), MCIEEM Jack Wells
20/06/22	Start/sunset: 21:24 Finish: 23:24	18°C. 0% cloud cover, calm (Beaufort Scale 0).	Owen Crawshaw BSc (Hons), MCIEEM Jack Wells
06/07/22	Start/sunset: 21:23 Finish: 23:23	21°C. 5% cloud cover, moderate breeze (Beaufort Scale 3).	Owen Crawshaw BSc (Hons), MCIEEM Jack Wells
11/08/22	Start/sunset: 20:34 Finish: 22:34	28.5°C. 0% cloud cover, calm (Beaufort Scale 0).	Ryan Walker PhD, MCIEEM, CEcol Holly Water MSc (Hons)
11/10/22	Start/sunset: 18:20 Finish: 20:20	11.5°C.	Ryan Walker PhD, MCIEEM, CEcol





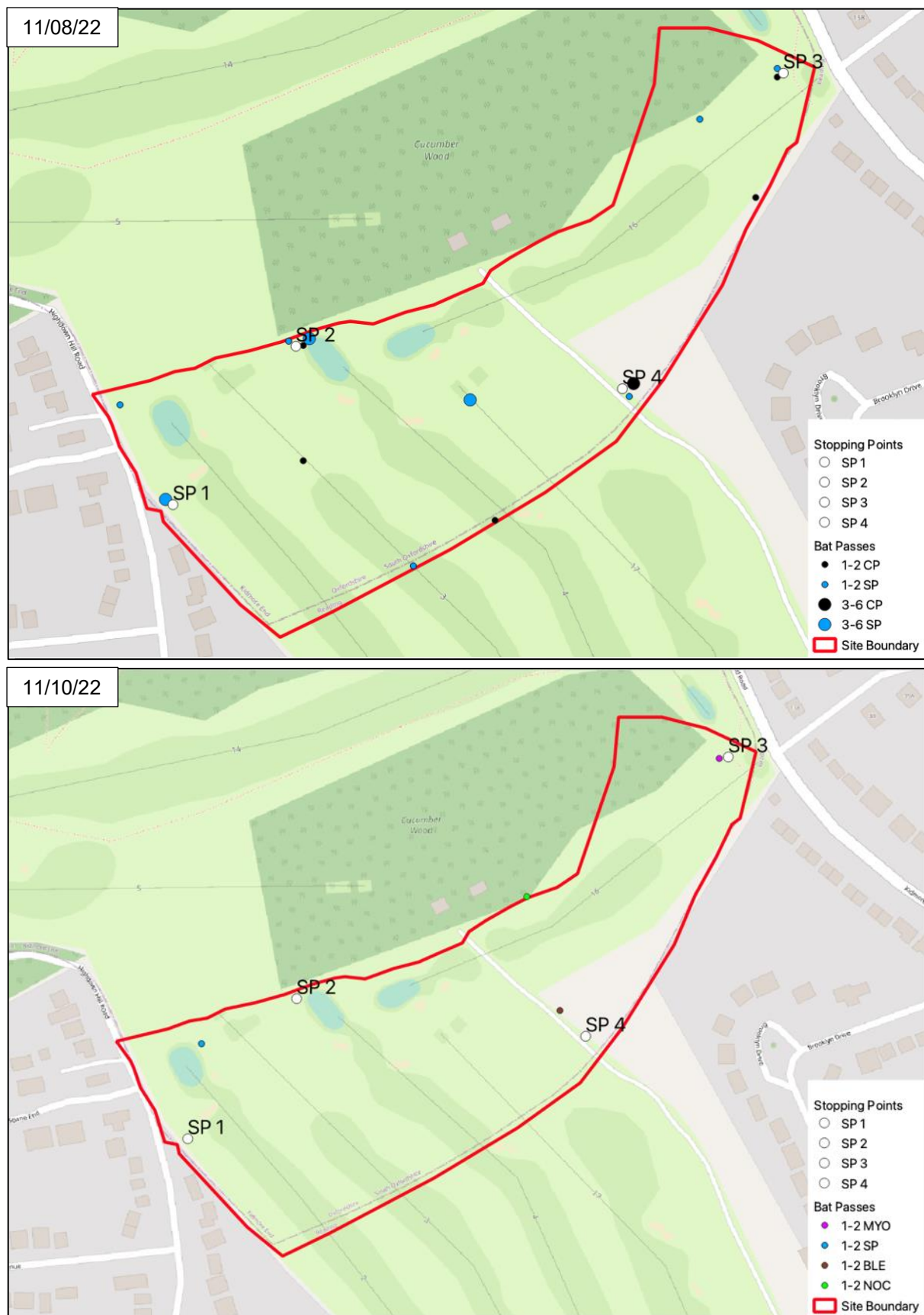


Figure 16. Approximate distribution of bats detected during each walked transect survey. Reproduced using QGIS Software.



3.4.3 Bat Activity Surveys – Automated Static Bat Detecting

The results of the automated static bat detector surveys are summarised in Table 6, Table 7 and Figure 17.

Table 6 shows that 6493 bat registrations were recorded within the site by the two static detectors during 31 nights of recording, spread across a six-month period. The detectors recorded at least eight different species (seven confirmed to species level and at least one to genus level) The soprano pipistrelle was the species recorded most, followed by noctule and common pipistrelle.

Table 7 and Figure 17 show that Static 1 recorded a greater number of passes for all bat species compared to Static 2 with the exception of *Myotis* species.



Table 6. Results of the static bat detector deployments at land west of Kidmore End Road showing the summed number of passes recorded by both static detectors per night across the survey period.

Date (night of)	Species										Total
	PIPIPI	PIPPYG	PIP NAT	NYC NOC	NYC sp.	PLEAUR	EPTSER	MYO spp.	PIP spp.	BARBAR	
29/04/2022	1	6	0	1	0	0	0	5	0	0	13
30/04/2022	28	76	1	12	0	1	2	7	1	2	130
01/05/2022	13	16	0	2	0	0	1	4	0	0	36
02/05/2022	12	45	0	16	0	1	4	3	1	0	82
03/05/2022	31	58	0	14	0	3	4	4	1	0	115
19/05/2022	59	111	0	3	0	4	3	1	0	1	182
20/05/2022	17	24	0	4	0	0	7	3	0	0	55
21/05/2022	20	34	0	4	0	0	5	5	0	0	68
22/05/2022	62	82	0	7	0	4	4	4	1	1	165
23/05/2022	5	11	0	0	0	0	0	0	0	0	16
24/05/2022	16	21	0	1	0	1	1	1	0	0	41
09/06/2022	62	101	0	79	0	3	6	2	0	2	255
10/06/2022	54	114	0	86	0	3	10	3	0	0	270
11/06/2022	25	45	0	103	0	11	8	0	0	0	192
12/06/2022	25	39	0	81	0	3	7	3	0	1	159
13/06/2022	51	111	0	73	0	5	6	4	0	0	250
06/07/2022	193	154	1	279	2	3	50	4	4	0	690
07/07/2022	49	46	0	151	0	1	8	6	0	0	261
08/07/2022	63	35	1	142	0	2	16	10	2	0	271
09/07/2022	31	35	0	183	0	3	9	5	2	0	268
10/07/2022	61	48	1	168	0	3	22	8	2	0	313
25/08/2022	69	76	0	22	0	52	1	12	14	5	251



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26/08/2022	80	202	0	31	0	116	3	12	67	8	519
27/08/2022	68	238	0	26	1	35	9	12	10	1	400
28/08/2022	55	147	0	15	0	47	2	14	22	5	307
29/08/2022	33	70	0	7	0	27	0	16	1	0	154
15/09/2022	60	128	0	3	0	7	1	10	3	23	235
16/09/2022	3	46	0	1	0	2	0	2	0	12	66
17/09/2022	3	44	2	3	0	6	0	7	0	3	68
18/09/2022	90	291	0	18	0	18	0	6	1	21	445
19/09/2022	35	136	2	10	0	19	0	4	3	7	216
Total	1374	2590	8	1545	3	380	189	177	135	92	6493



Table 7. Results of the static bat detector deployments at Land West of Kidmore End Road showing the number of bat passes recorded, for each species, by each static detector across the survey period.

Species	Detector		Total
	Static 1	Static 2	
BARBAR	10	82	92
EPTSER	60	129	189
MYO spp.	137	40	177
NYC spp.	1	2	3
NYCNOC	735	810	1545
PIP spp.	93	42	135
PIPNAT	4	4	8
PIPPIP	447	927	1374
PIPPYG	773	1817	2590
PLEAUR	181	199	380
Total	2441	4052	6493

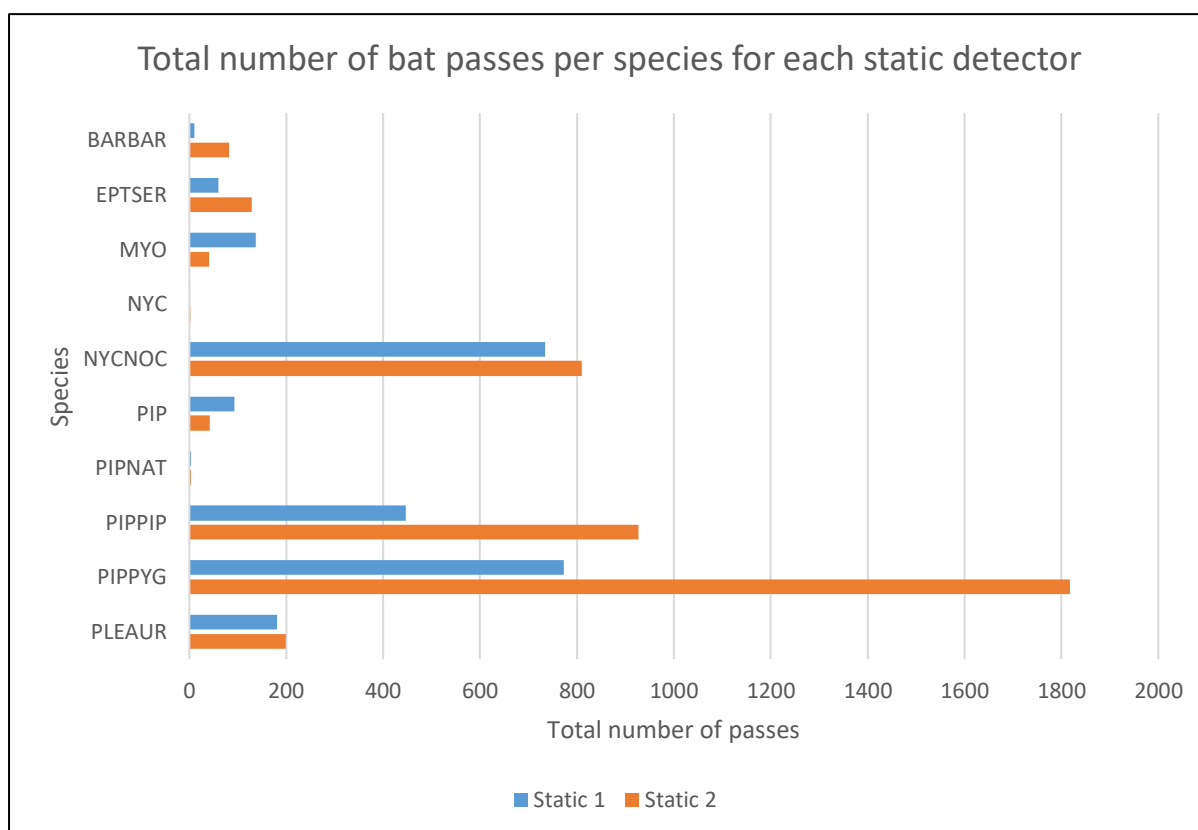


Figure 17. A bar graph showing the number of passes recorded, for each bat species, by each static detector, across the survey period.



3.4.4 Pre-existing Records

The TVERC provided 736 bat records in the search area comprising 11 identified species within the search area, these are summarised in Table 8.

Table 8. Bat records held by TVERC within a 2km radius of Land West of Kidmore End Road.

Species	Number of records
Common pipistrelle <i>Pipistrellus pipistrellus</i>	169
Soprano pipistrelle <i>P. pygmaeus</i>	191
Nathusius' pipistrelle <i>P. nathusii</i>	11
Brown long-eared <i>Plecotus auritus</i>	75
Serotine <i>Eptesicus serotinus</i>	14
Noctule <i>Nyctalus noctule</i>	71
Leisler's bat <i>N. leisleri</i>	4
Daubenton's bat <i>Myotis daubentonii</i>	97
Natterer's bat <i>M. nattereri</i>	5
Whiskered bat <i>M. mystacinus</i>	1
Western barbastelle <i>Barbastella barbastellus</i>	8
Unidentified bat species	90

The nearest record of a known roost is of an unknown number of brown long-eared bats roosting within a property located to the immediate east of the site in 2012. This record relates to EPSL Mitigation Licence: EPSM2013-6025, referred to in Table 3.

A total of 3191 bat passes by at least eight species of bat were recorded during a study of the land to the immediate south of the site over 17 nights between 3rd May and 3rd September 2019¹.

3.4.5 Interpretation

The combined results of the walked transects and static detector deployments have confirmed the presence of at least eight species of bat within the site. Furthermore, the desk study data confirms the known presence of at least three identified *Myotis* species and Leisler's bat within the locality.

The data has confirmed the presence of three species which are widespread in all geographies (common pipistrelle, soprano pipistrelle and brown long-eared bat), four species which are widespread in many geographies (whiskered bat, Natterer's bat, Daubenton's bat and noctule), three rarer species of those with restricted distribution (serotine, Leisler's bat and Nathusius' pipistrelle) and one Annex II/rarest species (barbastelle). As a result, the site scores a total of 24 out of a possible 45. This exceeds the 45% threshold which marks **county level importance**.

The distribution of bat activity recorded during the transects as well as knowledge of bat foraging/commuting behaviours strongly suggests that the site's boundary habitats (Ancient/priority woodland and dense scrub) are of the greatest value to bats, supporting invertebrate prey as well as providing darker linear movement routes through the site.



3.5 Breeding Birds

3.5.1 Survey Results

In total, 32 species of bird were recorded during the survey; of these, three species are 'red' listed under the Birds of Conservation Concern (BoCC) and seven are 'amber' listed. The following species recorded during the survey are also listed under Section 41 of the NERC Act (2006): herring gull *Larus argentatus*, starling *Sturnus vulgaris*, dunnock *Prunella modularis* and song thrush *Turdus philomelos*.

Both red kite *Milvus milvus* and hobby *Falco subbuteo* are listed on Schedule 1 of the Wildlife And Countryside Act, 1981 (as amended); the former has been confirmed as nesting immediately adjacent to the site boundary.

Table 9 presents the bird survey results combined for all three visits. The table is divided into red, amber and green lists from the BoCC categories. A territory map for notable species only (S41 NERC, Schedule 1 WCA and red list) is shown in Table 9; note, birds observed flying over the site only are not included.

A full list of results presented on a map for each survey visit is presented in Appendix 5. Table 10 presents the dates, times and survey conditions recorded for each visit.

Table 9. Breeding bird survey summary list for surveys undertaken at land west of Kidmore End Road in 2022.

RESULTS Species	Priority S41 NERC/ Schedule 1 WCA	Apr (1)	Apr (2)	May (1)	May (2)	Jun (1)	Jul (1)	Breeding status	Number of territories
Mistle thrush <i>Turdus viscivorus</i>			2					Possible	1
Starling <i>Sturnus vulgaris</i>				1		12		Possible	1
Herring gull <i>Larus larus</i>	P						1	Non-breeding	
Lesser black-backed gull <i>L. fuscus</i>							1	Non-breeding	
Song thrush <i>Turdus philomelos</i>	P	1	2	2	1	1		Likely	4
Dunnock <i>Prunella modularis</i>	P		1			1		Likely	2
Woodpigeon <i>Columba palumbus</i>		6	8	5	4	5	4	Likely	
Wren <i>Troglodytes troglodytes</i>		2	2	3	4	2		Confirmed	
Mallard <i>Anas platyrhynchos</i>			1	1			1	Possible	
Tawny owl <i>Strix aluco</i>					1			Likely	
Hobby <i>Falco subbuteo</i>	S1	*						Possible	
Red kite <i>Milvus milvus</i>	S1	3	4	2		1	2	Confirmed	2



RESULTS Species	Priority S41 NERC/ Schedule 1 WCA	Apr (1)	Apr (2)	May (1)	May (2)	Jun (1)	Jul (1)	Breeding status	Number of territories
Blackbird <i>Turdus merula</i>		4	3	6	4	7	2	Likely	
Blackcap <i>Sylvia atricapilla</i>		4	1	1	2			Likely	
Blue tit <i>Cyanistes caeruleus</i>		1	3	2	1	7		Likely	
Carrion crow <i>Corvus corone</i>				1		3	3	Possible	
Chaffinch <i>Fringilla coelebs</i>						1		Possible	
Chiffchaff <i>Phylloscopus collybita</i>		2	2	2	1			Likely	
Whitethroat <i>Curruca communis</i>						1		Possible	
Goldfinch <i>Carduelis carduelis</i>						1		Possible	
Great spotted woodpecker <i>Dendrocopos major</i>		1	1	1				Confirmed	
Great tit <i>Parus major</i>		1	3	6	4	3		Likely	
Grey heron <i>Ardea cinerea</i>		*						Non-breeding	
Jackdaw <i>Coloeus monedula</i>		6	4	11	8			Likely	
Jay <i>Garrulus glandarius</i>		1				1		Possible	
Magpie <i>Pica pica</i>		2	1	1	1	2	2	Possible	
Nuthatch <i>Sitta europaea</i>		3	2	1				Confirmed	
Robin <i>Erithacus rubecula</i>		2	4	3	2	1	1	Likely	
Feral pigeon <i>Columbia livia domestica</i>			2					Non-breeding	
Mandarin duck <i>Aix galericulata</i>				6				Possible	
Ring-necked pheasant <i>Phasianus colchicus</i>					1			Possible	
^P Priority species under S41 NERC Act, 2006 ^{S1} Listed on Schedule 1 of the Wildlife and Countryside Act, 1981 * Incidental sighting not during BBS									



Figure 18. A territory map showing territory numbers and indicative areas for notable species of bird. Note the data from all six bird surveys has been overlaid. Produced using QGIS software.

Table 10. Breeding bird transect metadata: dates, times, temperature, weather conditions.

Date	Timings	Temperature (°C), weather conditions	Surveyor
14/04/22	Start: 06:29 Finish: 06:11 Sunrise: 07:16	7°C, misty, overcast (cloud cover 100%), calm (Beaufort Scale 0)	Owen Crawshaw BSc (Hons), MCIEEM
29/04/22	Start: 05:55 Finish: 07:03 Sunrise: 05:40	7°C, overcast (cloud cover 100%), calm (Beaufort Scale 0)	Owen Crawshaw BSc (Hons), MCIEEM
09/05/22	Start: 05:44 Finish: 06:45 Sunrise: 05:22	7°C, overcast (cloud cover 100%), calm (Beaufort Scale 0)	Owen Crawshaw BSc (Hons), MCIEEM
30/05/22	Start: 04:30 Finish: 05:05 Sunrise: 04:54	8°C, overcast (cloud cover 100%), calm (Beaufort Scale 0)	Owen Crawshaw BSc (Hons), MCIEEM



Date	Timings	Temperature (°C), weather conditions	Surveyor
28/06/22	Start: 04:50 Finish: 06:20 Sunrise: 05:20	8°C, other weather data not recorded	Ryan Walker PhD, MCIEEM, CEcol
11/07/22	Start: 20:57 Finish: 21:58 Sunset: 21:18	24°C, clear (cloud cover 0%), light air (Beaufort Scale 1)	Owen Crawshaw BSc (Hons), MCIEEM

3.5.2 Pre-existing Records

The TVERC provided numerous bird records for the search area concerning a total of 53 species. A number of these species are relatively common and widespread, but the list includes 18 species of principal importance for conservation (Section 41, NERC Act 2007), and 16 species listed on Schedule 1 of the Wildlife and Countryside Act. In addition, 21 species are red listed on the Birds of Conservation Concern.

3.5.3 Interpretation

The breeding bird surveys have confirmed that the application site's breeding bird assemblage consists largely of common and widespread species, typical for suburban environments. A total of two red list species (starling and mistle thrush) may 'possibly' breed within the site, with individuals recorded within suitable nesting habitat during the breeding bird surveys. House sparrows (also a red list species) may possibly breed within the site; the species was not recorded during the surveys but is known to occur within the local area.

Of particular note is the confirmed presence of breeding red kites. Historically the red kite was persecuted to the brink of extinction in the UK and was later the subject of a reintroduction program based in the Chiltern Hills (Oxfordshire, Buckinghamshire, Hertfordshire and Bedfordshire) during the 1990's. The species has experienced significant breeding success in recent years and is now very common within the locality of Oxfordshire and beyond. The species remains relatively localised in its distribution, but the population is considered to be continuing to expand its range¹⁴.

The incidental observation of several hobbys on-site during the bat activity survey of July confirms the species uses the site to forage for Odonata (dragonfly and damselfly) prey. The species breeds in old nests of other species (typically corvids) and so can be found in lone mature trees and on the edges of scattered woodland. Given the presence of woodland edge habitat at the site boundaries, the possibility of breeding by the species cannot be categorically discounted.

Based on these findings, the breeding bird assemblage supported by land west of Kidmore End Road is considered to be important for the conservation of birds at the local level.

¹⁴ <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/red-kite/conservation/>



3.6 Dormice

3.6.1 Nest-tube Survey

2020

Timings and weather conditions during the nest tube checks are presented in Table 11.

Table 11. Details of 2020 dormouse surveys undertaken at land west of Kidmore End Road and its immediate surroundings.

Date	Timings	Temperature (°C), weather conditions throughout survey	Surveyor
22/05/20	10:20 – 13:25	Temperature: 19 Dry, overcast (cloud cover 90%), moderate breeze (BF 3)	Matt Blee
26/06/20	10:30 – 13:40	Temperature: 27 Dry, clear (cloud cover 10%), light air (BF1)	Matt Blee
24/07/20	13:30 – 16:45	Temperature: 23 Occasional rain, overcast (cloud cover 80%), calm (BF0)	Charlie Gardiner
28/08/20	13:00 – 16:00	Temperature: 18 Heavy rain, overcast (cloud cover 100%), light air (BF1)	Charlie Gardiner

No dormice or evidence of dormice were recorded. Detailed results of each check are presented in Appendix 5.

2024

Table 12. Details of 2024 dormouse surveys undertaken at Land West of Kidmore End Road and its immediate surroundings.

Date	Timings	Temperature (°C), weather conditions throughout survey	Surveyor
18/04/24	13:30 – 15:30	Temperature: 19 Overcast (cloud cover 100%)	Rebecca Carter-Whitehead & Holly Waters
20/05/24	09:27 – 11:30	Temperature: 14 Dry, light air (BF1), clear (0% cloud cover)	Rebecca Carter-Whitehead & Holly Waters
17/06/24	08:55 – 11:00	Temperature: 18 Light breeze (BF2), mostly clear (cloud cover 20%)	Rebecca Carter-Whitehead & Holly Waters
15/07/24	09:16 – 11:30	Temperature: 18 Overcast (cloud cover 100%), humid, calm (BF0)	Rebecca Carter-Whitehead & Holly Waters
19/08/24	09:23 – 11:30	Temperature: 17 Sunny, thin cloud (100% coverage)	Rebecca Carter-Whitehead & Holly Waters



Date	Timings	Temperature (°C), weather conditions throughout survey	Surveyor
16/09/24	09:44 – 11:50	Temperature:17 Sunny (cloud cover 30%), light breeze (BF2)	Rebecca Carter- Whitehead & Holly Waters

Woven nests comprising of green leaves were found in three nest tubes (B13, B15 & B23), these were considered to be dormouse nests, however, no animals were encountered. The locations of the aforementioned tubes are shown in Figure 19.



Figure 19. Nest tubes where dormouse nests were recorded during the 2024 surveys (shown in yellow) at land west of Kidmore End Road. Created using QGIS Software (version 3.16.3 Hannover).



Photograph 15. A likely dormouse nest found within tube B15 during the 2024 study.

3.6.2 Pre-existing Records

The TVERC holds three records of dormice from within 2km of the application site, the most recent of which is from 2018.

3.6.3 Interpretation

The result of the 2024 dormouse nest tube survey has confirmed the presence of dormouse within the wider surroundings of the land west of Kidmore End Road. The site is considered to be of value to dormice at the local level.

3.7 Great Crested Newts

3.7.1 Habitat Suitability, eDNA Testing and Field Survey Results

There are no ponds within the application site or immediately adjacent to the site boundary. Furthermore, there are no ponds within 500m of the site boundary.

3.7.2 Pre-existing Records

The TVERC holds no records of the great crested newt from within 2km of the application site. The records centre provided eleven records of other amphibian species in the search area. This included two records for smooth newt *Lissotriton vulgaris*, six records for common frog *Rana temporaria* and



three records for common toad *Bufo bufo*. Amphibians, including the great crested newt, are considered to be absent from the site.

3.7.3 Interpretation

Given the lack of suitable breeding ponds within the site and its local surroundings, great crested newts are considered absent, and the site is considered to be of value to other species of amphibian at the site level only.

3.8 Reptiles

3.8.1 Survey Results

2020

No reptiles were recorded within the application site or within the wider landholding of the former golf course. The dates and conditions are presented in Table 13.

Table 13. 2020 Survey results for the reptile survey undertaken at Land West of Kidmore End Road and its wider surroundings.

Date	Start/end time	Air temp. °C	Refugia temp. °C	Weather conditions	Results
17/04/2019	12:25-14:23	18	24	Warm, dry, broken cloud (50% cloud coverage), calm (BS 0)	No reptiles recorded
24/04/2019	08:39-09:55	14	16	Warm, dry, cloudy (70% cloud coverage), calm (BS 0)	No reptiles recorded
29/04/2019	10:24-11:45	14	14	Warm, dry, sunny with broken cloud (20% cloud coverage), Light Air (BS 1)	No reptiles recorded
10/05/2019	13:04-14:20	9	25	Warm, dry, overcast breaking during survey (80% cloud coverage 35% coverage by end), calm (BS 0)	No reptiles recorded
17/05/19	10:48-13:00	10	15	Warm, dry, overcast (100% cloud coverage), light breeze (BS 2)	No reptiles recorded
21/05/19	10:00-11:35	16	25	Warm, dry, clear (5% cloud coverage), calm (BS 0)	No reptiles recorded



Date	Start/end time	Air temp. °C	Refugia temp. °C	Weather conditions	Results
28/05/19	15:30-17:15	16	21	Warm, dry (light rain before survey/wet underfoot), overcast (90 % cloud coverage) light breeze (BS 2)	No reptiles recorded

2024

No reptiles were recorded during the 2024 study. Dates and survey conditions are presented in Table 14.

Table 14. 2024 Survey results for the reptile survey undertaken at Land West of Kidmore End Road and its wider surroundings.

Date	Start/end time	Air temp. °C	Refugia temp. °C	Weather conditions	Results
08/04/24	Not recorded	19	Not recorded	Not recorded	No reptiles recorded
12/04/24	Not recorded	18	Not recorded	Not recorded	No reptiles recorded
18/04/24	13:23 – 14:30	19	Not recorded	Overcast (cloud cover 100%)	No reptiles recorded
10/05/24	10:26 – 11:35	19	Not recorded	Sunny (cloud cover 20%), light air (BF1)	No reptiles recorded
20/05/24	09:27 – 11:30	18	Not recorded	Sunny, light air (BF1)	No reptiles recorded
17/06/24	08:54 – 10:00	18	Not recorded	Light cloud (cloud cover 20%), light breeze (BF2)	No reptiles recorded
15/07/24	09:49 – 10:00	17	Not recorded	Overcast (cloud cover 100%), humid, calm (BF0)	No reptiles recorded
19/08/24	09:19 – 10:30	17	Not recorded	Cloudy (cloud cover 70%), light breeze (BF2)	No reptiles recorded
16/09/24	09:44 – 11:50	17	Not recorded	Bright sun and mostly clear (cloud cover 30%), gentle breeze BF2.	No reptiles recorded

3.8.2 Pre-existing Records

The TVERC returned three slow worm records from within the search area.



3.8.3 Interpretation

Based on the survey results from 2020 and 2024, the site is considered to be of negligible importance with regard to reptiles. Reptiles are not considered further within this report.

3.9 Other Notable Species

3.9.1 Survey Results/Incidental Observations/Habitat Potential

A dead hedgehog *Erinaceus europaeus* was observed within the wider landholding of the golf course (approximately 400m south-east of the site) on 10th June 2019.

3.9.2 Pre-existing Records

A hedgehog has been recorded from a location to the immediate north of the application site (within the wider landholding of the former golf course).

3.9.3 Interpretation

Hedgerows and woodland provide suitable foraging habitat for hedgehogs and the woodland also creates suitable hibernation opportunities for the species. The site is considered to be of value to hedgehogs at the local level.

Habitats within the site are unsuitable for other protected/notable species of wildlife.

3.10 Invasive Non-native Species

3.10.1 Survey Results/Incidental Observations/Habitat Potential

Dense snowberry is present within scrub habitat (S2) at the south-western site boundary.

3.10.2 Pre-existing Records

The TVERC provided 13 records of non-native/invasive plants from within the search area.

3.10.3 Interpretation

The presence of snowberry within the site is considered to be significant at the site level only.



4 IMPACT ASSESSMENT

In this section, the predicted impacts and effects of the proposed scheme are described for each important ecological feature in turn. This is based on the best available information, both on the baseline ecological condition and on the method of construction, timescale and other development/planning constraints known at the time. The significance of the impact on nature conservation is recorded in accordance with CIEEM guidance and the degree of uncertainty relating to the occurrence and severity of an impact is discussed.

4.1 Designated Sites

4.1.1 Impact Characterisation

Construction Phase

In the absence of avoidance and mitigation measures the construction phase of the development has the potential to negatively impact upon Reading Golf Course (East) LWS, Furzeplatt LWS and Horndean Bottom LWS directly, as a result of dust creation during the construction phase of the development and its subsequent transport and deposition onto the LWSs given its proximity to the site. This accumulation of dust could damage the flora of the LWSs and ultimately result in the degradation of priority habitats.

Operational Phase

The operational phase of the development will likely see increased footfall (public access, dog walking etc.) in the areas immediately surrounding Reading Golf Course (East). Any straying from footpaths into the woodland of the LWS may see a variety of indirect negative impacts including damage to tree roots/ground flora through trampling, nutrient enrichment from dog fouling and accumulation of litter.

4.1.2 Significance of Effects

In the absence of avoidance and mitigation, the identified impacts represent a **likely permanent adverse** effect on the LWSs that are considered significant at the **local** level.

4.2 Ancient Woodland/Priority Habitats

4.2.1 Impact Characterisation

The proposed development will see the retention of almost all priority/Ancient woodland and grassland habitats. A very small scale of priority hedgerow removal (H1) will occur (1-2m) to provide pedestrian/cycle access at the north-eastern corner of the site.

Operational Phase

Without the establishment of appropriate buffer zones, the proposed development has the potential to directly impact upon priority habitats and/or Ancient Woodland during the construction phase – this could take the form of ground/root damage through compaction from vehicle tracking, storage of materials, spillages of chemical and or littering during the construction phase. Furthermore, dust production as described in section 4.1.1 could alter the ground flora of Ancient/priority woodland and priority grassland habitat.



Operational Phase

The operational phase of the development will likely see increased footfall (public access, dog walking etc.) into areas of priority habitat/Ancient Woodland. Any straying from footpaths into the woodlands or lowland calcareous grassland may see a variety of negative impacts including damage to tree roots/ground flora through trampling, nutrient enrichment from dog fouling and accumulation of litter.

4.2.2 Significance of Effects

In the absence of avoidance and mitigation, the identified impacts represent **likely permanent adverse** effects on priority habitat/Ancient Woodland that are considered significant at the **local** level.

4.3 Other Habitats

4.3.1 Impact Characterisation

Operational Phase

Development within the site will result in the partial loss of the site's modified grassland (approximately 2.39ha) and removal of approximately 61 scattered trees. A very small scale (0.014ha) loss of mixed scrub will also occur. These habitats will be replaced by buildings, hardstanding, gardens and areas of public open space.

A Biodiversity Impact Calculation (BIC), using the Statutory Biodiversity Metric¹³ has been produced for the site¹⁵ and its proposed development to quantify the net change in biodiversity value and should be read in conjunction with this EclA

4.3.2 Significance of Effects

In the absence of compensation, the partial loss of habitats described above are considered to represent a **certain permanent adverse** effect at the **site** level only.

4.4 Badgers

4.4.1 Impact Characterisation

Construction Phase

Given the results of the survey effort, development within the site will have no direct foreseeable impacts on badger setts.

Without the adoption of precautionary measures there is potential for badgers to become trapped/injured/killed by uncovered excavations during construction.

Operational Phase

The scheme will result in the temporary loss of grassland habitats that are potentially used by badgers for foraging. However, suitable foraging habitat for badgers exists all around the construction zone and

¹⁵ The Ecology Co-op (2024). *Land West of Kidmore End Road – Biodiversity Impact Calculation*.



this loss represents a small proportion of the total resource available. Following completion of construction, new foraging opportunities will become available through soft landscaping (e.g. public open spaces and domestic gardens).

4.4.2 Significance of Effects

Uncovered excavations pose a risk of **possible permanent adverse** effects on individual badgers as a result on entrapment/killing/injury which is likely to be significant at the **site** level.

Badgers are generally quite adaptable to some degree of human disturbance, with foraging, commuting routes and occupation or establishment of new setts, constantly adjusting in response to new food sources and disturbance, so this impact is considered to be **neutral**.

4.5 Bats

4.5.1 Impact Characterisation

Given that all trees to be removed have been assessed as negligible in terms of their suitability for roosting bats. The development is considered to present a **neutral** impact on roosting bats.

Operational Phase

The habitats of greatest value to foraging bats, Ancient/Priority woodland and dense scrub associated with the site boundaries, will be retained within the proposed development. The site's modified grassland and associated scattered trees, which are of significantly lower value to foraging/commuting bats, will be lost in part.

4.5.2 Significance of Effects

On its own, and in the absence of compensation, the loss of significant areas of grassland and a relatively large number of scattered trees is considered to present a likely adverse effect considered significant at the site level only. This assessment also considers the cumulative impacts on bat activity through loss of grassland and trees with regard to a large planning development to the immediate south of the site (comprising 223 residential units, Reading Borough Council planning reference: 211843). In combination, and in absence of compensation, the developments present a **likely permanent adverse** effect considered significant at the **local** level.

Without appropriate avoidance and/or mitigation, artificial light spillage during both the construction and operational phase of the development has the potential to impact on foraging and commuting bats. This assessment considers the following:

- presence of at least eight species of bat, including barbastelle (Annex II/rarer species);
- presence of a similar habitat resource (woodland, grassland and scattered trees to the north), should displacement of bats occur;
- potential for cumulative effects with development to the south, which incorporates a sensitive



lighting scheme for bats¹⁶.

Considering the above factors, light spill from the development is assessed as presenting a **possible permanent adverse** effect on bat activity considered significant up to the **local** level.

4.6 Breeding Birds

4.6.1 Impact Characterisation

Construction Phase

Any vegetation removal during the breeding bird season has the potential to result in the destruction of active bird nests and the killing/injury of eggs/young.

Without sensitive timing to works, the proposed development has the potential to result in the disturbance of at least one pair of nesting red kites during the construction phase as a result of increased noise, human activity and construction traffic.

Operational Phase

Increased human activity during the operational phase of the development has the potential to permanently deter a pair of red kites from returning to the existing nest site.

The bird assemblage supported by the application site comprises common and widespread species only. This bird assemblage is likely to be partially displaced during construction, but many of these species are also found in suburban habitats similar to that resulting from the proposed scheme and are likely to return to some degree (e.g. robin, dunnoek, song thrush) once construction is completed and the soft landscaping matures.

4.6.2 Significance of Effects

Destruction of active bird nests would result in a **certain permanent adverse** effect, significant at the **local** level and would be in contravention of UK wildlife legislation.

The identified red kite nest site within Cucumber Wood (to the north of the site) is located approximately 100m from the main construction zone, thus reducing the likelihood of disturbance occurring. Suitable alternative nesting habitat for red kites exists within woodland contained within the wider landholding of the golf course and around the application site. The species is common and widespread within Oxfordshire and Berkshire, habituation over time has led to many birds becoming relatively tolerant of human activity within the suburban environment. Increased human activity presents a **possible temporary adverse** effect on red kites, considered to be significant at the site level only.

The addition of buildings, garden and landscape planting will potentially provide enhanced nesting opportunities for certain common garden birds; however, overall, the loss of 61 individual trees

¹⁶ The Ecology Co-op (2022). Ref: 211843 | Oxfordshire Golf Club – Latest Lighting Scheme – Ecological Technical Note.



represents a **likely permanent adverse** effect, significant at the **site** level for such species.

4.7 Dormice

4.7.1 Impact Characterisation

Construction Phase

Without reasonable avoidance measures, the very small-scale removal of a section of dense scrub at the western site boundary, and hedgerow at the eastern edge of the site has the potential to result in the disturbance and/or killing/injury of dormice during the construction phase.

The removal of vegetation is designed to provide pedestrian and cycle access only, creating access points 1-2m wide and minimising the amount of vegetation removal required. No dormice or dormice nests have been found in the impact zone during the survey and the scale of vegetation removal is not considered to constitute significant damage/loss of dormouse habitat.

Construction Phase

The operational phase of the development presents potential impacts on dormouse through artificial light spillage onto boundary habitats as well as through the increase in predation pressure (i.e. domestic cats).

4.7.2 Significance of Effects

Disturbance and/or killing/injury of dormice during the construction phase presents a **certain permanent adverse** effect on dormice, significant up to the **local** level.

Disturbance through artificial lighting during the operational phase presents a **possible permanent adverse** effect on dormice, significant at the **site** level.

Increased predation pressure during the operational phase presents a **possible permanent adverse** effect on dormice, significant at the **local** level.

4.8 Other Notable Species

4.8.1 Impact Characterisation

Construction Phase

Without the adoption of precautionary measures, there is potential for hedgehogs to become trapped/injured/killed by uncovered excavations.

Operational Phase

Loss of modified grassland will result in the temporary loss of foraging habitat for hedgehogs. This habitat will be replaced by residential development and the associated mosaic of private gardens and green space created would, in time, become suitable for hedgehogs and largely replace the habitat lost. In the absence of mitigation, there remains a risk of direct harm to hedgehogs during construction activities. In the long term, the proposed development could result in fragmentation of hedgehog foraging and resting areas as fencing between properties could restrict the movement of hedgehogs.



4.8.2 Significance of Effects

Without appropriate mitigation the development would see a **likely permanent adverse** effect on hedgehogs, considered to be significant at the site level.

4.9 Invasive Non-native Species

4.9.1 Impact Characterisation

Without intervention, non-native snowberry will remain (and potentially spread) within the scrub habitat at the west of the site. Furthermore, creation of vegetated garden habitats could see further introduction on non-native species.

4.9.2 Significance of Effects

Increases in the total cover and total species of non-native plants within the site presents a **likely permanent negative** effect at the **site** level.

5 MITIGATION PROPOSALS

5.1 Designated Sites

5.1.1 Impact Avoidance

The proposed scheme does not result in any direct loss of designated site habitats, no specific avoidance measures are necessary.

5.1.2 Mitigation Measures

Construction Phase

In order to avoid impacts from dust on LWSs, watering down should be applied regularly to construction activities as a dust suppression measures. Furthermore, works resulting in the production of dust should not be undertaken during periods of significant wind (Beaufort Scale 4 or above) in order to avoid the transportation of dust to the LWSs.

Operational Phase

The land directly to the north of the site, beyond Cucumber Wood, is set to become a significant area of public open space managed as a country park. A Habitat and Visitor Management Plan for the country park will be required and will include Reading Golf Course (east) LWS site in order to manage recreational pressure on the designated site. The plan will include control measures such as fencing, dead hedging as 'soft barriers', signage and appropriate access restrictions to reduce damage to the most important habitats. Extensive habitat creation is proposed within the country park surrounding Reading Golf Course (east) LWS as part of the development's Biodiversity Net Gain requirements. An appropriate Habitat Management and Monitoring Plan (HMMP) will be developed to maximise biodiversity gains in these areas, whilst buffering the LWS from recreational pressure. An appropriate monitoring regime can be put in place to ensure that the management measures for the site are successful and if necessary, can be adjusted to achieve the desired outcomes.



5.1.3 Residual Effects

With the adoption of suitable mitigation measures it is considered that the proposed development could result in a **possible permanent positive** effect on designated sites at the **local** level.

5.1.4 Compensation Measures

No specific compensation measures are considered necessary.

5.2 Ancient Woodland/Priority Habitats

5.2.1 Impact Avoidance

Construction Phase

The development will see establishment of a buffer of at least 15m from Cucumber Wood Ancient Woodland. No built development or residential gardens will be incorporated within this buffer zone.

Buffer zones at least 5m in width will be established between all built development (and gardens) and priority woodland (W1 & W2) and grassland (LCG1) habitat.

The retained sections of priority hedgerow habitat will be protected in accordance with BS5837:2012 including the establishment of root protection zones.

The removal of a 1-2m wide section of hedge for new pedestrian/cycle access cannot be avoided under the current design.

A Construction Environmental Management Plan (CEMP) will be required to set out the extent of proposed buffer zones as well as how they will be demarked and maintained during the construction phase.

5.2.2 Mitigation Measures

Operational Phase

An appropriate landscape planting scheme will be required, incorporating native tree/shrub planting within buffer zones to strengthen retained areas, add biodiversity value, as well as managing recreational pressure of increased human activity. Targeted and structured planting will be used to encourage residents away from sensitive areas such as Ancient Woodland and priority habitats towards areas of lower biodiversity value.

The removal of a 1-2m wide section of hedge for new pedestrian/cycle access cannot be mitigated for under the current design.

5.2.3 Residual Effects

With the adoption of avoidance and mitigation measures there remains a residual effect on priority habitat from the loss of a small section of hedgerow. This is considered a significant adverse **effect** at the **site** level and will require compensation. It should be noted that whilst section 2.11.1 states site level impacts do not require further consideration – in this instance the site level impact relates to a quantitative assessment (Biodiversity Impact Calculation) which includes trading rules and therefore



does warrant compensation.

5.2.4 Compensation Measures

Planting of a new native hedgerow (comprised of at least five native woody species) will be required to compensate for, and enhance, the site's hedgerow habitat resource. Creation and management of the habitat will need to be detailed within an appropriate HMMP.

5.3 Other Habitats

5.3.1 Impact Avoidance

Partial loss of modified grassland, individual urban trees, and mixed scrub cannot be avoided under the current scheme.

5.3.2 Mitigation Measures

Partial loss of modified grassland, individual urban trees, and mixed scrub cannot be mitigated for under the current scheme.

5.3.3 Residual Effects

Given the above, there remains a **negative** residual effect on the site's non-priority habitat resource at the **site** level. The Biodiversity Impact Calculation¹⁵ for the site has identified the need for on-site and off-site compensation for these habitats.

5.3.4 Compensation Measures

On-site and off-site compensation (with additional enhancement) will be provided through establishment of species-rich grassland, scrub and new native tree planting. Creation and management of these habitats will need to be detailed within an appropriate HMMP.

5.4 Badgers

5.4.1 Impact Avoidance

Construction Phase

All excavations should be covered at night to prevent badgers falling into any pits, failing that an escape mechanism should be provided to allow badgers (and other wildlife) to climb out of an excavation.

Updated badger surveys should be conducted every six months in order to confirm the continued absence of active setts or to inform a badger mitigation strategy (see following section).

5.4.2 Mitigation Measures

Construction Phase

Should badgers move on to the site and take up residence within a sett in the construction zone or its immediate zone of influence (within 30m), a badger mitigation strategy will be required which will include consideration of the need for a development licence to close the sett from Natural England.



5.4.3 Residual Effects

With the adoption of the above avoidance/mitigation measures, the potential for residual impacts on badgers within the site is considered to be negligible.

5.4.4 Compensation Measures

Given that no residual effects have been identified, no specific compensation measures are required with regard to badgers.

5.5 Bats

5.5.1 Impact Avoidance

Operational Phase

Loss of significant areas of low-value foraging/commuting habitat cannot be avoided under the current scheme.

5.5.2 Mitigation Measures

Construction Phase

The vast majority of the construction phase activities will occur during daylight hours, however, lighting may be required for safety and/or security purposes. Any construction lighting must be appropriately designed to avoid any light spillage onto the western boundary, at the northern boundary with Cucumber Wood (W1) and the woodland (W2) at the south-eastern edge of the site. Details of all construction lighting will be set out within a CEMP.

Operational Phase

An ecologically sensitive lighting scheme must be designed. This will require lighting in accordance with Bats and Artificial Lighting in the UK Guidance Note GN 08/23, including establishment of dark corridors through the site. These dark corridors will be established at the western boundary, at the northern boundary with Cucumber Wood (W1) and the woodland (W2) at the south-eastern edge of the site. Light levels within these dark corridors will not exceed 0.1lux.

Where lighting is absolutely essential, this should utilise low-level LED luminaires with no upward light spill and a warm white light source (2700Kelvin or lower). Further detail can be found in Appendix 6.

Loss of significant areas of low-value foraging/commuting habitat cannot be mitigated for under the current scheme.

5.5.3 Residual Effects

Loss of significant areas of low-value foraging/commuting habitat cannot be avoided or mitigated for, and so a residual effect at the **site** level remains. Compensation will be required.

5.5.4 Compensation Measures

Significant native landscape planting, incorporating a variety of scattered trees and shrubs, a new woodland parcel and grassland will be incorporated into the design of the development. Furthermore,



extensive planting and habitat management will occur within a new country park to the north of the site beyond Cucumber Wood. The combined on-site and off-site measures are considered suitable in order to compensate for bat foraging/commuting as well as enhancing the local surroundings beyond their baseline level.

5.6 Breeding Birds

5.6.1 Impact Avoidance

Construction Phase

Any vegetation removal will only be undertaken outside of the breeding bird season (avoiding March–August inclusive), unless absence of nests can be established following a nesting bird check conducted by a suitably qualified ecologist.

It is an offence to cause disturbance to an active nest of any bird species listed on Schedule 1 of the Wildlife and Countryside Act (1981) as amended. The identified red kite nest should be subjected to monitoring prior to the commencement of works. If construction works are to be undertaken within a 50m radius of the nest site during the breeding bird season (March–August inclusive) these will only be permitted if a suitably qualified ecologist can confirm that the nest is currently inactive.

Operational Phase

Loss of nesting opportunities for birds through removal of 61 trees cannot be avoided under the current scheme.

5.6.2 Mitigation Measures

Construction & Operational Phases

There is no provision for a licence from Natural England to permit development works that cause disturbance and would otherwise be unlawful. It is not considered possible to mitigate for displacement of nesting red kites as the species is not known to adopt artificial nest sites.

Operational Phase

Loss of nesting opportunities for birds through removal of 61 trees cannot be avoided under the current scheme.

5.6.3 Residual Effects

There remains a risk that the developed site may deter red kites from returning to the nest site. They will likely be displaced into the immediate surroundings which contain suitable alternative nest sites. It is not considered possible to mitigate for this displacement as the species is not known to adopt artificial nest sites.

The residual impact resulting from the displacement of a single pair of red kites into adjacent habitat is not considered to be significant beyond the site level given the context of the species abundance within the local area.

The loss of 61 individual trees cannot be avoided or mitigated for a represents a residual effect on



nesting birds, through the loss of nesting opportunities, at the **site** level. Compensation will be required.

5.6.4 Compensation Measures

A total of 100 bird boxes of varying design, will be installed on retained trees within the site as well as in off-site areas of the country park to the north.

Compensation for the displacement of a pair of red kites is not required.

5.7 Dormice

5.7.1 Impact Avoidance

Construction Phase

Reasonable avoidance measures for dormice will need to be adopted in relation to removal of dense vegetation. These will need to be set out within a CEMP.

An EPS mitigation licence is not considered necessary for the proposed works to proceed.

Impacts resulting from increased predation pressure from domestic cats cannot be avoided.

5.7.2 Mitigation Measures

Operational Phase

Dense thorny planting along the southern edge of Cucumber Wood may serve to deter movement of domestic cats into the wood and beyond but is unlikely to serve to exclude them completely.

5.7.3 Residual Effects

With the adoption of avoidance and mitigation measures, there remains a residual adverse effect on dormice posed by domestic cats at the **local** level

5.7.4 Compensation Measures

Compensation for potential impacts on dormice presented by domestic cats cannot be achieved.

5.8 Other Notable Species

5.8.1 Impact Avoidance

Construction Phase

All excavations must be covered at night to prevent hedgehogs falling into any pits, failing that an escape mechanism should be provided to allow hedgehogs (and other wildlife) to climb out of an excavation.

5.8.2 Mitigation Measures

Construction & Operational Phase

All new garden fencing should contain accessible gaps (10cm x 15cm) at their base to allow movement of hedgehogs between garden plots. An ecological permeability plan (showing hedgehog movement



routes) must be developed.

5.8.3 Residual Effects

With the adoption of the above avoidance/mitigation measures, in conjunction with creation of new garden habitats, the proposed development presents a **positive** residual effect on hedgehogs at the **site** level.

5.8.4 Compensation Measures

Given that no adverse residual effects have been identified, no specific compensation measures are required with regard to hedgehogs.

5.9 Invasive Non-native Species

5.9.1 Impact Avoidance

Construction Phase

Snowberry should be removed from scrub (S2) at the western site boundary.

5.9.2 Mitigation Measures

Operational Phase

Replacement planting of native shrubs should be incorporated into S2. All new landscape planting should comprise native species preferably of local provenance. Where non-native planting is proposed within vegetated gardens, this should target flowering species of benefit to native pollinators.

5.9.3 Residual Effects

Replacement of non-native snowberry with native shrubs presents a **positive** residual effect at the **site level**.

5.9.4 Compensation Measures

Given that no adverse residual effects have been identified, no specific compensation measures are required with regard to INNS.

6 BIODIVERSITY ENHANCEMENTS

6.1 Habitats

Extensive areas of species-rich grassland creation are proposed within the off-site area of the new country park to the north of Cucumber Wood. Additionally, significant native tree and scattered scrub planting is proposed both on-site and within the new country park. Details of habitat creation, enhancement and management will be set out within an appropriate HMMP. These measures will deliver a measurable net gain of at least 10%¹⁵.



6.2 Species

6.2.1 Breeding Birds

The proposed development presents a significant opportunity to enhance the site for swifts *Apus apus*, for which the site currently holds no suitable nesting opportunities. It is strongly recommended that a minimum of one integrated swift box/brick is installed within each new residential dwelling. New buildings also present an opportunity to enhance the site for house sparrow. It is recommended that a minimum of one house sparrow box/brick is installed within each new garage in the developed site.

Locations, specifications and recommended installation of these new integrated bird boxes will need to be set out in a Biodiversity Enhancement Strategy (BES).

6.2.2 Bats

The proposed development presents a significant opportunity to enhance the site for roosting bats, for which the developable area (excluding the woodland boundaries) does not contain any roosting opportunities. It is strongly recommended that a minimum of one integrated bat box/tube is installed within each new residential dwelling.

Further consideration should also be given to the installation of tree-mounted bat boxes on trees within adjacent woodland and along the site's wooded boundaries.

Locations, specifications and recommended installation of these new integrated bird boxes will need to be set out in a BES.

6.2.3 Invertebrates

The removal of individual trees through the development presents the opportunity for the creation of new log piles and deadwood habitat for invertebrates such as stag beetle *Lucanus cervus* and other saproxylic insects. Log piles created from felled trees should be incorporated into areas of public open space.

The locations, quantity and design of these features should be set out in a BES.

6.2.4 Hedgehogs

Hedgehog houses should be installed in both new private gardens and retained areas of green space as an enhancement for sheltering and hibernating hedgehogs.

The locations, quantity and design of these features should be set out in a BES.

7 CONCLUSIONS

A summary of the EclA findings is presented in Table 15 below.

Table 15. EclA summary table for the proposed development at Land at Kidmore End Road, Oxfordshire



Ecological feature	Importance	Impact characterisation	Level of significance	Avoidance	Mitigation	Residual effects	Compensation required? (Y/N)
Local Wildlife Sites	County	Dust from construction	Local	Dust suppression and good work practices	N/A	None	N
		Damage from increased recreational pressure		N/A	Enhancement of new country park under HMMP and production of VMP	None	N
Ancient Woodland	County	Dust from construction	Local	Dust suppression and good work practices	N/A	None	N
		Damage from encroachment	Local	N/A	Buffer zones and CEMP	None	N
Priority habitats	County	Dust from construction	Local	Dust suppression and good work practices	N/A	None	N
		Damage from encroachment	Local	N/A	Buffer zones and CEMP	None	N
		Damage from increased recreational pressure	Local	N/A	Enhancement of new country park under HMMP and production of VMP	None	N
		Habitat loss (hedgerow)	Site	N/A	N/A	Site	Y
Other habitats	Site	Habitat loss (grassland, trees and scrub)	Site	N/A	N/A	Site	On-site and off-site habitat creation/enhancement
Badgers	Site	Entrapment	Local	Good work practices	N/A	None	N
Bats	County	Foraging/commuting habitat loss	Local	N/A	N/A	Local	On-site and off-site habitat creation/enhancement
		Deterrence from light spillage	Local	N/A	Sensitive lighting and establishment of dark corridors	None	N
Breeding birds	Local	Destruction of nest and killing/injury of young	Local	Sensitive timing of works	N/A	None	N



Ecological feature	Importance	Impact characterisation	Level of significance	Avoidance	Mitigation	Residual effects	Compensation required? (Y/N)
		Deterrence of nesting by red kites	Site	N/A	N/A	Site	N
		Loss of nesting habitat	Site	N/A	N/A	Site	Y
Dormice	Local	Disturbance/killing/injury	Local	Good working practices & CEMP	N/A	None	N
		Predation by cats	Local	N/A	Dense planting	Local	N
Hedgehogs	Local	Entrapment	Local	Good working practices	N/A	None	N
		Habitat fragmentation	Site	N/A	Provision of hedgehog highways	None	N
INNS	Site	Continued spread of snowberry	Site	Removal	Replacement with native shrubs	Site (positive)	N



APPENDIX 1 – LEGISLATION AND POLICY

Introduction

The following text is intended for general guidance only and does not constitute comprehensive professional legal advice. It provides a summary of the current legal protection afforded to wildlife in general and certain species. It includes current national planning policy relevant to nature conservation.

The ‘Birds Directive’, ‘Habitats Directive’ and ‘Natura 2000 Sites’

The Council Directive 79/409/EEC on the Conservation of Wild Birds (“the Birds Directive”) sets a framework for the protection of wild birds. Under the Directive, several provisions are made including the designation and protection of ‘Special Protection Areas’ (SPAs) – areas which support important bird populations, and the legal protection of rare or vulnerable species.

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”) directs member states of the EU to take measures to maintain the favourable conservation status of important habitats and species. This requires the designation of a series of sites which contain important populations of species listed on Annex II of the Directive. Together with ‘Special Areas of Conservation’ (SACs), SPAs form a network across Europe of protected areas known as the ‘Natura 2000’.

Annex IV lists species in need of more strict protection, these are known as “European Protected Species (EPS)”. All bat species, common dormice *Muscardinus avellana*, otter *Lutra lutra* and great crested newts *Triturus cristatus* are examples of EPS that are regularly encountered during development projects.

The ‘Habitats Regulations’

The Conservation of Habitats and Species Regulations 2017, as amended (the Habitats Regulations”) is the principle means of transposing the Habitats Directive and the Birds Directive, and updates the Conservation (Natural Habitats, &c.) Regulations 1994 (“the 1994 regulations”) in England and Wales.

‘Natura 2000’ sites, now known as National Site Network sites under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, receive the highest level of protection under the Regulations which requires that any activity within the zone of influence of these sites would be subject to a Habitats Regulations Assessment (HRA) by the competent authority (e.g. planning authority), leading to an Appropriate Assessment (AA) in cases where ‘likely significant effects’ to the conservation objectives are identified.

For European Protected Species, Regulation 41 makes it a criminal offence to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb wild animals of such species;
- deliberately take or destroy their eggs (where relevant);
- damage or destroy a *breeding or resting place* of such an animal;
- possess, control, sell or exchange any live or dead animal or plant, of such species;
- deliberately pick, collect, cut, uproot or destroy a wild plant of such species.



The Habitats Directive and Habitats Regulations provide for the derogation from these prohibitions for specific reasons provided certain conditions are met. An EPS licensing regime allows operations that would otherwise be unlawful acts to be carried out lawfully. Natural England is the licensing Authority and, in order to grant a license, ensures that three statutory conditions (sometimes referred to as the ‘three derogation tests’) are met:

- a licence can be granted for the purposes of “preserving public health or safety or for other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment” (Regulation 53 (2) (e);
- a licence can be granted if “there are no satisfactory alternatives” to the proposed action;
- a licence shall not be granted unless 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.

Wildlife and Countryside Act (1981) as amended

The Wildlife and Countryside Act (1981)¹⁷ remains one of the most important pieces of wildlife legislation in the UK. There are various schedules to the Act protecting birds (Schedule 1), other animals including insects (Schedule 5), plants (Schedule 8), and control of invasive non-native species (Schedule 9).

Under the Wildlife and Countryside Act (WCA) 1981, all wild birds (with the exception of those listed on Schedule 2), their eggs and nests are protected by law and it is an offence to:

- take, damage or destroy the nest of any wild bird while it is in use or being built
- take or destroy the egg of any wild bird
- disturb any bird listed on Schedule 1, while it is nest building, or at a nest with eggs or young, or disturb the dependant young of any such bird.

Schedule 5 lists all non-avian animals receiving protection to a varied degree. At its strongest, the Act makes it an offence to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturb animals while occupying such places. Examples of species with *full protection* include all EPS, common reptile species, water vole *Arvicola amphibius*, white-clawed crayfish *Austropotamobius pallipes* and Roman snail *Helix pomatia*. Other species are protected from sale, barter or exchange only, such as white letter hairstreak *Satyrrium w-album*.

The Act makes it an offence to intentionally pick, uproot or destroy any plant or seed, and sell or possess any plant listed on Schedule 8. It is also an offence to intentionally uproot any wild plant not listed on Schedule 8 unless authorised [by the land owner]. Species on Schedules 5 and 8 are reviewed every 5 years when species can be added or removed.

Measures for the prevention of spreading non-native species which may be detrimental to native wildlife is included in the Act, which prohibits the release of animals or planting of plants into the wild of species listed on Schedule 9 (for example Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandifera*, New Zealand Pygmyweed *Crassula helmsii*).

¹⁷ Wildlife and Countryside Act (WCA) (1981). HMSO London.



The Wildlife and Countryside Act 1981 (as amended) also prohibits certain inhumane methods of traps and devices for the capture or killing of wild animals and certain additional methods such as fixed trap, poisoning with gas or smoke, or spot-lighting with vehicles for killing species listed on Schedule 6 of the Act (this includes all bat species, badger, otter, polecat, dormice, hedgehog and red squirrel).

Natural Environment and Rural Communities (NERC) Act (2006)

The NERC Act (2006)¹⁸ places a statutory duty under Section 40 on all public bodies, including planning authorities, to take, or promote the taking by others, steps to further the conservation of *habitats and species of principal importance for the conservation of biodiversity* in England (commonly referred to as the 'Biodiversity Duty'). This duty extends to all public bodies the biodiversity duty of Section 74 of the Countryside and Rights of Way (CROW) Act 2000, which placed a duty only on Government and Ministers. Section 41 lists the habitats and species of principle importance. This includes a wide range of species from mosses, vascular plants, invertebrates through to mammals and birds. It originates from the priority species listed under the UK Biodiversity Action Plan (UK BAP) with some omissions and additions.

Environment Act (2021)

The Environment Act sets a target of halting the decline in species through the inclusion of a legally binding 2030 species abundance target. Aiming to restore natural habitats and enhance biodiversity, the Act requires new developments to improve or create habitats for nature (through mechanisms such as mandatory Biodiversity Net Gain), and tackle deforestation. Going forwards, UK businesses will need to look closely at their supply chains as amongst other measures they will be prohibited from using commodities associated with wide-scale deforestation. Woodland protection measures are also strengthened through the Act.

The Act enables the reform of the Habitats Regulations and further improves protection for nature through the establishment of Local Nature Recovery Strategies that support national Nature Recovery Networks. In addition, the Act provides for the production of Protected Site Strategies and Species Conservation Strategies, aimed at supporting the design and delivery of strategic approaches to deliver better outcomes for nature.

Protection of Badgers Act (1992)

The Badger *Meles meles* is afforded specific legal protection in Britain under the Protection of Badgers Act (1992)¹⁹, and Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) (see above).

Under this legislation, it is a criminal offence to:

- intentionally kill, injure, take, possess, or cruelly ill-treat, a Badger, or to attempt to do so;
- interfere with a sett, by damaging or destroying it;
- to obstruct access to, or any entrance of, a badger sett; or
- to disturb a badger when it is occupying a sett.

A licence may be obtained from Natural England to permit certain prohibited actions for a number of defined reasons including interference of a sett for the purpose of development, provided that a certain

¹⁸ Natural Environment and Rural Communities Act (2006). HMSO London.

¹⁹ Protection of Badgers Act (1992). HMSO London.



number of conditions are met. Note that licenses are not normally granted for works affecting badgers between the end of November and the start of July.

National Planning Policy Framework

The National Planning Policy Framework (NPPF 2024)²⁰ sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regard to the operation of the planning system.

Paragraph 179b, which states that council policies should “*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*” The Office of the Deputy Prime Minister (ODPM) Circular 06/2005, 2005)²¹. In accordance with the NPPF, it is important that developments should contribute to and enhance the natural and local environment by:

- minimising impacts on existing biodiversity and habitats;
- providing net gains in biodiversity and habitats, wherever possible;
- establishing coherent ecological networks that are more resilient to current and future pressures.

UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UK BAP), published in 1994, was the UK's response to the commitments of the Rio Convention on Biological Diversity (1992). The UK BAP was replaced by the UK Post-2010 Biodiversity Framework. This framework covers the period 2011 to 2020 and forms the UK government's response to the new strategic plan of the United Nations Convention on Biodiversity (CBD) published in 2010. This promotes a focus on individual countries delivering target for protection for biodiversity through their own strategies.

The most recent biodiversity strategy for England, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' was published by Defra (2011)²², and a progress update was provided in July 2013 (Defra 2013)²³.

'Biodiversity 2020' builds on the Natural Environment White Paper for England – 'The Natural Choice', published on 7 June 2011, and sets out the strategic direction for biodiversity policy for the next decade.

Biodiversity 2020 deliberately avoids setting specific targets and actions for local areas because

²⁰ HM Government (2023). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

²¹ HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf.

²² Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Available at: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services>.

²³ Defra (2013) Progress Update. Available at: <https://www.gov.uk/government/publications/biodiversity-2020-simple-guide-and-progress-update-july-2013>.



Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their area or situation.

Birds of Conservation Concern (BoCC)

In 1996, the UK's leading non-governmental bird conservation organisations reviewed the conservation status of all bird species in the UK against a series of criteria relating to their population size, trends and relative importance to global conservation. The lists, known as the 'Red', 'Amber' and 'Green' lists (in order of decreasing concern) are used to inform key conservation policy and decisions. The lists are reviewed every five years and are a useful reference for determining the current importance of a particular site for birds. The most recent review was undertaken in 2021²⁴, which provides an up to date assessment of the conservation status of birds in the UK.

²⁴ Stanbury, A., Eaton, M., Aebischer, N., Balmer, N., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). *Birds of Conservation Concern 5: the status of bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man*. British Birds 114, pp 723-747.



APPENDIX 2 – SOUTH OXFORDSHIRE DISTRICT COUNCIL LOCAL PLAN 2035

Policy ENV1: Landscape and Countryside

1. The highest level of protection will be given to the landscape and scenic beauty of the Chilterns and North Wessex Downs Areas of Outstanding Natural Beauty (AONBs):

- Development in an AONB or affecting the setting of an AONB will only be permitted where it conserves, and where possible, enhances the character and natural beauty of the AONB;
- Development in an AONB will only be permitted where it is appropriate to the economic and environmental wellbeing of the area or promotes understanding or enjoyment of the AONB;
- Major development in an AONB will only be permitted in exceptional circumstances and where it can be demonstrated to be in the public interest; and
- Development proposals that could affect the special qualities of an AONB (including the setting of an AONB) either individually or in combination with other developments, should be accompanied by a proportionate Landscape and Visual Impact Assessment. AONB Management Plans will be a material consideration in decision making.

2. South Oxfordshire's landscape, countryside and rural areas will be protected against harmful development. Development will only be permitted where it protects and, where possible enhances, features that contribute to the nature and quality of South Oxfordshire's landscapes, in particular:

- i) trees (including individual trees, groups of trees and woodlands), hedgerows and field boundaries;
- ii) irreplaceable habitats such as ancient woodland and aged or veteran trees found outside ancient woodland;
- iii) the landscapes, waterscapes, cultural heritage and user enjoyment of the River Thames, its tributaries and flood plains;
- iv) other watercourse and water bodies;
- v) the landscape setting of settlements or the special character and landscape setting of Oxford;
- vi) topographical features;
- vii) areas or features of cultural and historic value;
- viii) important views and visually sensitive skylines; and aesthetic and perceptual factors such as tranquility, wildness, intactness, rarity and enclosure.

Policy ENV2: Biodiversity – Designated Sites, Priority Habitats and Species

1. The highest level of protection will be given to sites of international nature conservation importance (Special Areas of Conservation). Development that is likely to result in a significant effect, either alone or in combination, on such sites will need to satisfy the requirements of the Conservation of Habitats and Species Regulations 2017 (as amended).

2. Sites of Special Scientific Interest (SSSI) are of national importance. Development that is likely to have an adverse effect on a SSSI (either on its own or in combination with other developments) will only be permitted in exceptional circumstances, where it can be demonstrated that the benefits of the development in the location proposed clearly outweigh any harm to the special interest features and the SSSI's contribution to the local ecological network. In such circumstances, measures should be



provided (and secured through planning conditions or legal agreements) that would mitigate or, as a last resort, compensate for the adverse effects resulting from development.

3. Development likely to result, either directly or indirectly to the loss, deterioration or harm to:

- Local Wildlife Sites
- Local Nature Reserves
- Priority Habitats and Species
- Legally Protected Species
- Local Geological Sites
- Ecological Networks (Conservation Target Areas)
- Important or ancient hedges or hedgerows
- Ancient woodland and veteran trees

will only be permitted if:

- i) the need for, and benefits of the development in the proposed location outweigh the adverse effect on the interests;
- ii) it can be demonstrated that it could not reasonably be located on an alternative site that would result in less or no harm to the interests; and
- iii) measures will be provided (and secured through planning conditions or legal agreements), that would avoid, mitigate or as a last resort, compensate for the adverse effects resulting from development.

4. Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) will be refused planning permission, unless there are wholly exceptional reasons justifying the granting of planning permission.

5. Where development has the potential to affect a proposed wildlife site the developer must undertake surveys and assessments to determine whether the site meets the criteria for Local Wildlife Site status.

Policy ENV3: Biodiversity

1. Development that will conserve, restore and enhance biodiversity in the district will be supported. All development should provide a net gain in biodiversity where possible. As a minimum, there should be no net loss of biodiversity. All proposals should be supported by evidence to demonstrate a biodiversity net gain using a recognised biodiversity accounting metric.

2. Development proposals which would result in a net loss of biodiversity will only be considered if it can be demonstrated that alternatives which avoid impacts on biodiversity have been fully explored in accordance with the mitigation hierarchy*. In the absence of alternative sites or layouts, development proposals must include adequate mitigation measures to achieve a net gain of biodiversity. Where harm cannot be prevented or adequately mitigated, appropriate compensation measures will be sought, as a last resort, through planning conditions or planning obligations (depending on the circumstances of each application) to offset the loss by contributing to appropriate biodiversity projects to achieve an overall net gain for biodiversity.

3. Planning permission will only be granted if impacts on biodiversity can be avoided, mitigated or, as



a last resort, compensated fully.



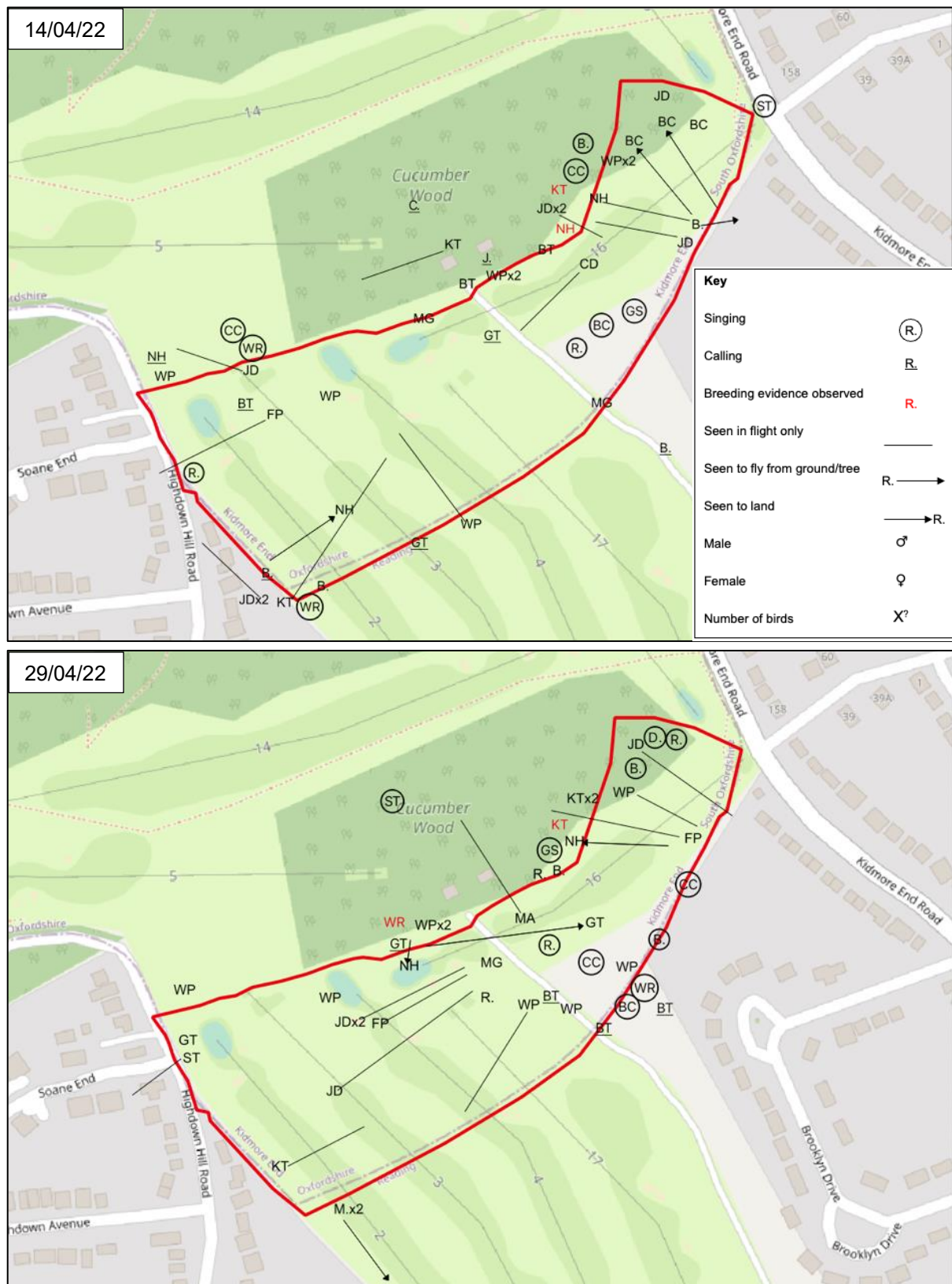
APPENDIX 3 - IMPORTANCE OF ECOLOGICAL FEATURES

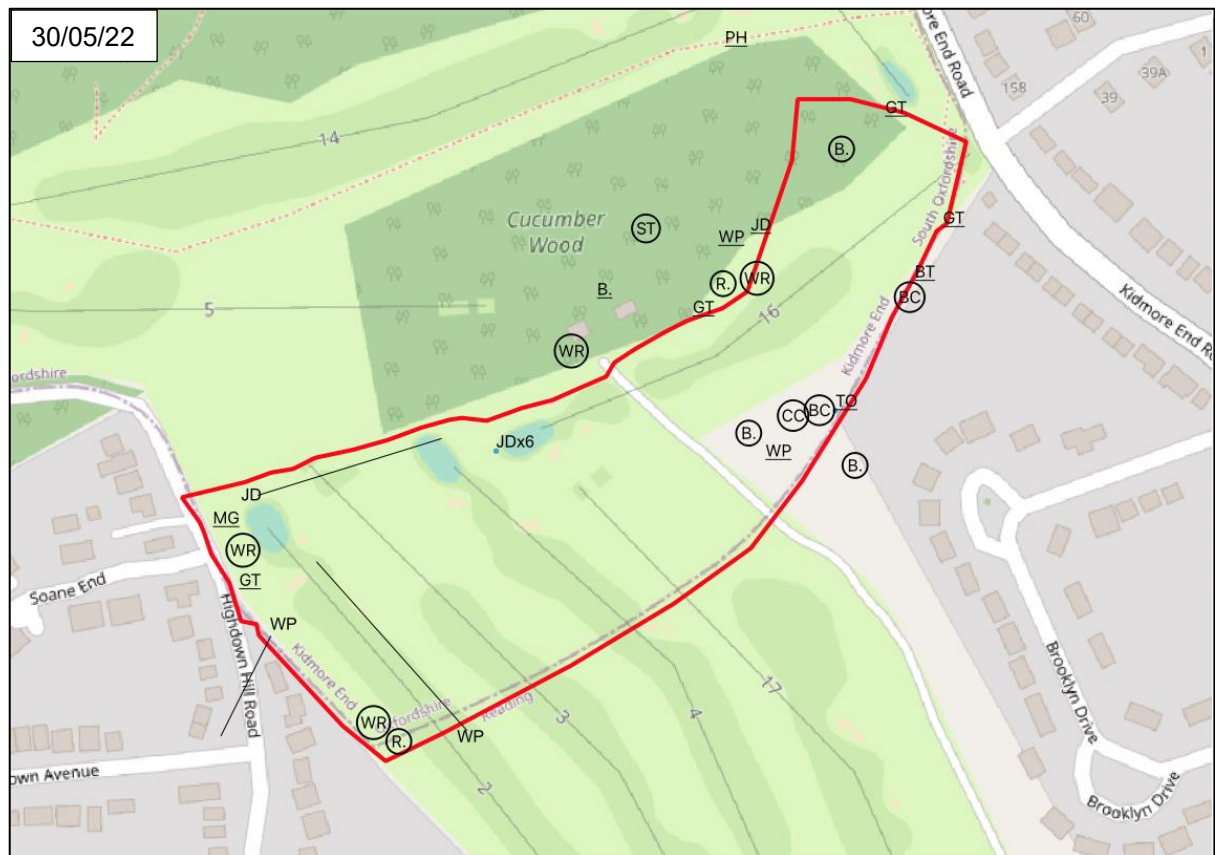
Table 16. Determining importance of an ecological feature.

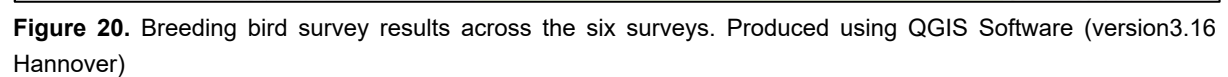
Level of importance	Criteria
International	Internationally designated site; Special Protected Area (SPA), Special Areas of Conservation (SAC), Ramsar, Biosphere Reserves; Regularly occurring population of internationally important species listed in Annex 1, 2 or 4 of the Habitats Directive and Annex 1 of the Birds Directive; A viable area of a habitat listed in Annex 1 of the Habitats Directive or area important for maintaining viability listed as in Annex 1 of the Habitats Directive; Areas outside designated sites that are important for supporting and maintaining the viability of the above designated habitats and/or species.
National	Nationally designated sites; Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserves (LNR). A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the national conservation status (e.g. greater than 1% of the national total). A viable or regularly occurring population of a species that is nationally scarce, threatened or declining on a national scale. A habitat type that is nationally scarce, threatened or declining on a national scale.
Regional	A habitat type that is scarce, threatened or declining on a regional scale. A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the regional conservation status (e.g. greater than 1% of the national total).
County	Locally designated sites; Local Wildlife Sites (LWSs), Sites of Nature Conservation (SNCIs) and Site of Importance for Nature conservation (SINCs). A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the conservation status of the species at county level (e.g. greater than 10% of the county total). A viable or regularly occurring population of a species that is rare in the county, but may be common and widespread elsewhere, For example, a population at the edge of a species' range. A habitat type that is scarce in a county but may be more frequent elsewhere.
Local/parish	Habitats and species which are scarce in the local area but are sufficiently common and widespread elsewhere that they do not meet the above criteria.
Site/negligible	Habitats with little to no ecological value (e.g. amenity grassland and hardstanding)



APPENDIX 4 – BREEDING BIRD RAW DATA









APPENDIX 5 – DORMOUSE SURVEY RESULTS

Abbreviations: DM=dormouse; WM=wood mouse; YN=yellow-necked mouse; ad=adult; juv=juvenile, N=nest only; NM=nest material, not woven, unspecified; F=food cache (wood mouse); bee=tree bumblebee *Bombus hypnorum* nest. Bird=bird nest (BTO codes apply to species); E=empty; nf=tube not found.

	May	June	July	August
Completion date	22/05/20	26/06/20	24/07/20	28/08/20
1	E	E	E	E
2	E	E	E	E
3	E	E	E	E
4	E	E	E	E
5	E	E	E	E
6	E	E	E	E
7	E	E	E	E
8	E	E	E	E
9	E	E	E	E
10	E	E	E	E
11	E	E	E	E
12	E	E	E	E
13	E	E	E	E
14	E	E	E	E
15	E	E	E	E
16	E	E	E	E
17	E	E	E	E
18	E	E	E	E
19	E	E	E	E
20	E	E	E	E
21	E	E	E	E
22	E	E	E	E
23	E	E	E	E
24	E	E	NF	NF
25	E	E	E	E
26	E	E	E	E
27	E	E	F	E
28	NF	NF	NF	NF
29	E	E	E	E
30	E	E	E	E
31	E	E	E	NF
32	E	E	E	E
33	E	E	E	E
34	E	E	E	E



	May	June	July	August
Completion date	22/05/20	26/06/20	24/07/20	28/08/20
35	E	E	E	E
36	E	E	E	E
37	E	E	E	E
38	E	E	E	E
39	E	E	E	E
40	E	E	E	E
41	E	E	E	E
42	E	E	E	E
43	E	E	E	E
44	E	E	E	E
45	E	E	E	E
46	E	E	E	E
47	E	E	F	F
48	E	E	F	F
49	E	E	E	E
50	E	E	F	E
51	E	E	E	E
52	E	E	E	E
53	E	E	E	E
54	E	E	E	E
55	E	E	E	E
56	E	E	E	E
57	E	E	E	E
58	E	E	E	E
59	E	E	E	E
60	E	E	E	E
61	E	E	E	E
62	E	E	E	E
63	E	E	E	E
64	E	E	E	E
65	E	E	E	E
66	E	E	E	E
67	E	E	E	E
68	E	E	E	E
69	E	E	E	E
70	E	E	E	E
71	E	E	E	E
72	E	E	E	E
73	E	E	E	E
74	E	E	E	E
75	E	E	E	E



	May	June	July	August
Completion date	22/05/20	26/06/20	24/07/20	28/08/20
76	E	E	E	E
77	E	E	E	E
78	E	E	E	E
79	E	E	E	E
80	E	E	E	E
81	E	E	E	E
82	E	E	E	E
83	E	E	E	E
84	E	E	E	E
85	E	E	E	E
86	E	E	E	E
87	E	E	E	E
88	E	E	E	E
89	E	E	E	E
90	E	E	E	E
91	E	E	E	E
92	E	E	E	E
93	E	E	E	E
94	E	E	E	E
95	E	E	E	E
96	E	E	E	E
97	E	E	E	E
98	E	E	E	E
99	E	E	E	E
100	E	E	E	E



APPENDIX 6 - ARTIFICIAL LIGHTING AND WILDLIFE

Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts to other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness.

Guidelines issued by the Bat Conservation Trust²⁵ should be referred to when designing the lighting scheme. Note that lighting designs in very sensitive areas should be created with consultation from an ecologist and using up-to-date bat activity data where possible. The guidance contains techniques that can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. This includes the following measures:

Avoid lighting key habitats and features altogether

There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation; however, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species.

Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved. The following are techniques which have been successfully used on projects and are often used in combination for best results:

- dark buffers, illuminance limits and zonation;
- sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill;
- consideration of the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consideration should be given to the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cat's eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times;
- screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding;

²⁵ Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



- glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features;
- creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development;
- dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

Demonstrate compliance with illuminance limits and buffers

- *Design and pre-planning phase*; it may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.
- *Baseline and post-completion light monitoring surveys*; baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.
- *Post-construction/operational phase compliance-checking*; as a condition of planning, post-completion lighting surveys by a suitably qualified person should be undertaken and a report produced for the local planning authority to confirm compliance. Any form of non-compliance must be clearly reported, and remedial measures outlined. Ongoing monitoring may be necessary, especially for systems with automated lighting/dimming or physical screening solutions.

Lighting Fixture Specifications

The Bat Conservation Trust recommends the following specifications for lighting on developments to prevent disturbance:

- Lighting spectra: peak wavelength >550nm
- Colour temperature: <2700K (warm)
- Reduction in light intensity
- Minimal UV emitted
- Upward light ratio of 0% and good optical control

Further reading:

Buglife (2011) A review of the impact of artificial light on invertebrates.

Royal Commission on Environmental Pollution (2009) Artificial light in the environment. HMSO, London.
Available at: <https://www.gov.uk/government/publications/artificial-light-in-the-environment>

Rich, C., Longcore, T., Eds. (2005) Ecological Consequences of Artificial Night Lighting. Island Press.
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CPRE (2014) Shedding Light: A survey of local authority approaches to lighting in England. Available at: <http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light>

Planning Practice Guidance guidance (2014) When is light pollution relevant to planning? Available at: <https://www.gov.uk/guidance/light-pollution>

Institution of Lighting Professionals (2021) Guidance Notes for the Reduction of Obtrusive Light GN01:2011. Available at: <https://www.theilp.org.uk/resources/free-resources/>

Voigt, C.C., Azam, C., Dekker, J., Ferguson, J., Fritze, M., Gazaryan, S., Hölker, F., Jones, G., Leader, N., Lewanzik, D. and Limpens, H., 2018. *Guidelines for consideration of bats in lighting projects*. Unep/Eurobats. Available at:

https://cdn.bats.org.uk/uploads/pdf/Resources/EUROBATSGuidelines8_lightpollution.pdf?v=1542109376



APPENDIX 7 – SECONDARY HABITAT CODES (refer to Table 4)

10	Scattered scrub
11	Scattered trees
12	Scattered bracken
13	Scattered dwarf shrubs
14	Scattered rushes
15	Rushes dominant
16	Tall herb
17	Ruderal/ ephemeral
18	Calcareous - acidic mosaic
19	Ponds (Priority Habitat)
20	Wood-pasture and parkland
21	Traditional orchards
22	Juniper on heaths or calcareous grasslands (H5130)
23	Caves not open to the public (H8310)
24	Depressions on peat substrates (H7150)
25	Coastal and floodplain grazing marsh
26	Machair (H21A0)
27	Heathland on maritime cliffs and slopes
28	Dunes with creeping willow (H2170)
29	Inland saltmarshes (H1340)
30	Estuaries (H1130)
31	Large shallow inlets and bays (H1160)
32	Reefs (H1170)
33	Ancient woodland site
34	Arable reversion grassland
35	Biodiversity offset
36	Plantation
37	Semi-natural woodland
38	Secondary woodland
39	Freshwater - man-made
40	Freshwater - heavily modified
41	Freshwater - natural
42	Castle/ historic building
43	Recreated habitat
44	Landfill
45	Canalside
46	Railside
47	Native
48	Non-native
49	Veteran Trees
51	Coppice



52	Coppice with standards
53	Felled
54	Ground prepared for planting
55	High forest
56	Young trees - planted
57	Young trees - self-set
58	Grazed
59	Cattle grazed
60	Sheep grazed
61	Horse grazed
62	Other grazed
63	Burnt
64	Mown
65	Hay
66	Frequently mown
67	Dry stone wall
68	Mortared wall
69	Fence
70	Hedgebank
71	Earthbank
72	Stone-faced bank
73	Bare ground
74	Ploughed
75	Active Management
76	Recent Management
77	Neglected
78	Abandoned
79	Ancient management
80	Unmanaged
81	Flailed hedgerow
82	Laid hedgerow
83	Grip
84	Grip blocking
85	Cutover peat
86	Accessible natural greenspace
87	Airport
88	Barn
89	Car Park
90	Commercial building
91	Development site
92	Educational building
93	Fish farm
94	Green lane



95	Grouse moor
96	Industrial building
97	Industrial/ Retail building
98	Institutional building
99	Nature reserve
100	Oil/gas drilling or extraction
101	Open cast mining
102	Mine
103	Permanent agricultural grassland
104	Port/ marina
105	Quarry - hard rock
106	Quarry - sand and gravel
107	Railway
108	Reservoir
109	Residential
110	Retail
111	Road
112	Ruined building
113	Sea wall
114	Solar panel array
115	Track
116	Wind farm
117	Dry
118	Mesic
119	Seasonally wet
120	Wet
121	Waterlogged
122	Inundation vegetation
123	Neutral grassland with calcicoles
124	Cave open to the public
125	Soil erosion
126	Snow patch
127	Peat
128	Spring
129	Flush
130	Ecotone
131	Tidal river
132	Nutrient-poor substrate
133	Nutrient-enriched substrate
134	Base-rich substrate
135	Acidic substrate
136	Compacted substrate
137	Ridge and furrow



138	Saline influence
139	Active shingle rivers
140	Anthills
141	Backwaters
142	Base-rich water
143	Coarse woody debris in-channel
144	Chalk rivers
145	Complex woody structure
146	Exposed riverine sediments
147	Fallen dead wood abundant
148	Flower forage abundant
149	Gravel beds
150	High humidity levels
151	Landslips
152	Large hollows or cavities
153	Mudbanks
154	Open grown trees
155	Riffles
156	Rock outcrop
157	Shallow pools
158	Shelter from wave action
159	Standing dead wood abundant
160	Sward type mosaic
161	Tall or tussocky sward
162	Temporary water bodies
163	Unobstructed river system
164	Wet moss lawns
165	Waterfall
166	Woodland open space
167	Topogenous
168	Soligenous
169	Rich fen
170	Poor fen
171	Fertile fen
172	Infertile fen
173	Swamp
174	Tall fen
175	Small sedge fen
176	Bryophyte dominated
177	Open water fen
178	Transition fen
179	Basin fen
180	Flood plain fen



181	Basin raised bog lagg fen
182	Flood plain raised bog lagg fen
183	Spring fen
184	Surface flow spring fen
185	Percolation spring fen
186	Surface flush or rill or soakaway
187	Valley fen
188	Ladder fen
189	Scattered grass
190	Hedgerow with trees
191	Ditch
192	No tillage
195	Seed forage abundant
196	Caravan park
197	Turlough (H3180)
198	Mediterranean temporary ponds (H3170)
199	Sea caves (H8330)
200	Parks and gardens
210	Urban park
211	Pocket park
212	Neighbourhood park
213	Community park
214	District park
215	Regional park
220	Country park
230	Garden
231	Vegetated garden
232	Un-vegetated garden
300	Natural and semi-natural open space
310	Grasslands
320	Heathland
330	Scrub
340	Woodland
341	Woodland; broadleaved
342	Woodland; mixed
343	Woodland; coniferous
350	Abandoned ruderal and derelict areas
351	Vacant/derelict land
352	Disused quarry
360	Fresh water body
361	Natural lake or pond
362	Artificial lake or pond
363	Natural lake



364	Natural pond
365	Artificial lake
366	Artificial pond
370	Wetlands
380	Coastal
381	Beaches and sand dunes
382	Foreshore/rocks
383	Tidal water
384	Open saline water
400	Green corridors
410	Watercourse
411	Natural watercourse
412	Artificial watercourse
420	Green access route
421	Walking/cycling route
422	Riparian routes
430	Transport route open space
431	Road island/verge
432	Railway corridor
500	Outdoor sports facilities
510	Sports pitches
511	Natural sports pitches
512	Artificial sports pitches
520	Recreation ground
530	Ball courts
531	Natural ball court
532	Artificial ball court
540	Golf course
550	Race course
560	Bowling green
570	Equestrian centre
580	Other recreational
600	Provision for play and fitness
610	Children's Play Space
611	Children's Play Space; natural
612	Children's Play Space; non-permeable
620	Outdoor gym
621	Natural outdoor gym
622	Non-permeable outdoor gym
630	Adventure playground
631	Natural adventure playground
632	Non-permeable adventure playground
640	Youth area



700	Open space around premises
710	Educational premises open space
711	Natural educational sports pitches
712	Artificial educational sports pitches
713	Other educational open space
720	Municipal premises open space
730	Commercial premises open space
740	Housing estate open space
800	Cemeteries and churchyards
810	Cemetery
820	Churchyard
900	Small-scale food growing
910	Allotments
920	Orchard
930	City farm
940	Community garden
1000	Productive spaces
1010	Agricultural land
1011	Pasture or meadow
1012	Arable land
1013	Agroforestry
1020	Nursery/horticulture
1030	Sand pit quarry or open cast mine
1040	Reservoirs
1050	Fish farms
1100	Urban greening
1110	Green roof
1111	Extensive green roof
1112	Intensive green roof
1113	Brown roof
1120	Green wall
1121	Ground based green wall
1122	Façade-bound green wall
1130	Balcony green
1140	Ground level planters
1150	Flower bed
1160	Introduced shrub
1170	Tree
1171	Mature tree
1172	Young tree
1173	Tree avenue/alley
1180	Hedgerow
1190	Sustainable urban drainage feature



1191	Bioswale
1192	Rain garden
1200	Other functional open space
1210	Other natural functional greenspace
1220	Civic spaces
1221	Permeable civic spaces
1222	Non-permeable civic spaces
1230	Other hard surfaced areas
1231	Permeable paving
1232	Non-permeable paving