

CHAPTER 11:

ECOLOGY AND NATURE CONSERVATION

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11.0 ECOLOGY AND NATURE CONSERVATION

11.1 Scope of Assessment

- 11.1.1 This chapter of the ES has been produced by The Ecology Co-op and assesses the likely significant effects of the Proposed Development in terms of the ecological impact and is supported by **ES Volume 4, Appendix G: (Ecology)** and **ES Volume 4, Appendix G1: (Ecological Impact Assessment (EclA))**.
- 11.1.2 The chapter describes: the assessment methodology; the baseline conditions currently existing at the Site and in the surrounding area; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the cumulative effects associated with the proposed development in combination with other developments within 1 km of the Site.
- 11.1.3 Type 1 cumulative effects 'intra-project effects' which are the combined effects of individual topic impacts on a particular sensitive receptor are considered in **Volume 2 Chapter 14: Effect Interactions**.

11.2 Key Legislation, Policy and Guidance Considerations

- 11.2.1 The ecological assessment has been undertaken within the context of relevant planning policies, guidance documents and legislative instruments. These are summarised below.

Legislation and Regulation

- 11.2.2 The legal protection applying to relevant bird, mammal, herpetofauna and invertebrate species and current nature conservation planning policy used to steer this assessment includes:
- The 'Birds Directive', 'Habitats Directive' and 'Natura 2000 Sites';
 - The 'Habitats Regulations' (2017) as amended¹;
 - Wildlife and Countryside Act (1981) as amended²;
 - Natural Environment and Rural Communities (NERC) Act (2006)³;
 - Protection of Badgers Act (1992)⁴;
 - UK Post-2010 Biodiversity Framework; and

¹ The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

² Wildlife and Countryside Act (WCA) (1981). HMSO London.

³ Natural Environment and Rural Communities Act (2006). HMSO London.

⁴ Protection of Badgers Act (1992). HMSO London.

- Birds of Conservation Concern (BoCC)⁵.

Planning Policy

- 11.2.3 The planning policy referenced when undertaking this assessment includes the National Planning Policy Framework (NPPF, 2019)⁶, and local planning policy.

National Planning Policy Framework

- 11.2.4 The National Planning Policy Framework (NPPF 2019)⁷ sets out the government's view on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments regarding the operation of the planning system.

- 11.2.5 Paragraph 11 states that: *'Plans and decisions should apply a presumption in favour of sustainable development.'*

- For plan-making this means that: a) plans should positively seek opportunities to meet the development needs of their area, and be sufficiently flexible to adapt to rapid change; b) strategic policies should, as a minimum, provide for objectively assessed needs for housing and other uses, as well as any needs that cannot be met within neighbouring areas, unless: i) the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for restricting the overall scale, type or distribution of development in the plan area⁸; or ii) any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.
- For decision-taking this means: a) approving development proposals that accord with an up-to-date development plan without delay; or b) where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless: i) the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed⁶; or ii) any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole'.

⁵ Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D., and Gregory, R. (2015) Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108. December 2015. 708–746

⁶ HM Government (2019). 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/779764/NPPF_Feb_2019_web.pdf.

⁷ HM Government (2019). 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/779764/NPPF_Feb_2019_web.pdf.

⁸ 'The policies referred to are those in this Framework (rather than those in development plans) relating to: habitats sites (and those sites listed in paragraph 176) and/or designated as Sites of Special Scientific Interest; land designated as Green Belt, Local Green Space, an Area of Outstanding Natural Beauty...'

11.2.6 Paragraph 172 requires that; ‘Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas and should be given great weight in National Parks and the Broads. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of: a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.’

11.2.7 Paragraph 174b, 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*”. 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; and
- establishing coherent ecological networks that are more resilient to current and future pressures.

[Reading Biodiversity Action Plan \(BAP\)](#)

11.2.8 The Reading Biodiversity Action Plan (BAP) sets out a methodology to protect, conserve and enhance Reading’s diversity of wildlife. This first Reading BAP contains actions which run from 2005 – 2015, but the BAP was reviewed in 2011.

11.2.9 The Reading BAP will:

- Identify, conserve and/or enhance selected significant habitats and species within Reading Borough, or land controlled by the council, and give appropriate protection to selected sites containing these species and habitats to ensure they are retained for the future.
- Monitor the effects of our actions and review them regularly. Reading will be seen to be leading by example by using ‘best practice’.
- To inform and encourage involvement of all sections of the Reading community by raising awareness of the issues affecting biodiversity and developing partnerships for implementing the actions identified in the BAP.
- Develop a better understanding and knowledge of species and habitats within Reading and their distribution.

11.2.10 Local BAPs should consolidate current activities and provide goals for future action.

11.2.11 Reading, along with all the Unitary Authorities (UA's) in Berkshire and major environmental organisations are represented on the Berkshire Nature Conservation Forum (BNCF). The members of the BNCF have agreed to take forward action to conserve biodiversity by:

- Producing a framework for BAP production which has led to the production of 4 initial Habitat Action Plans (HAPs) (Heathland, Lowland Unimproved Grasslands, Standing Open Waters and Associated Habitats, and Rivers and Associated Floodplain Habitats). The possibility of producing a Woodland HAP covering Berkshire, Buckinghamshire and Oxfordshire is being considered.
- Sharing information on good practice to aid nature conservation.
- Sharing resources, where possible, to enable important BAP projects to take place.
- Sharing ecological information and supporting countywide recording of ecological data with the UA's (in partnership with others) jointly contributing to the funding of the Thames Valley Environmental Records Centre.
- Regularly reporting progress on their BAP actions to the BNCF.
- Protecting and enhancing Wildlife Heritage Sites that have met the criteria approved by the BNCF for such sites.

11.2.12 Each Action Plan includes the following information:

- ecological Information;
- current status at international, national, regional and local levels;
- factors causing loss or decline;
- National and Local Plan objectives and targets;
- Reading L-BAP objectives and targets; and
- local actions to be taken through this L-BAP.

11.2.13 The Species Action Plan Priority List includes the following species which are considered relevant to the Site:

- Glow Worm;
- Stag Beetle;
- Bats (all species found in Reading);
- House Sparrow;
- Marbled White;
- Bullfinch;
- Hobby;
- Kestrel;

- Linnet; and
- Song Thrush.

Technical Standards and Guidance

11.2.14 The assessment of ecological impacts and mitigation recommendations in this report follow CIEEM Guidelines for Ecological Impact Assessment (EclA)⁹, and CIEEM guidelines for report writing¹⁰. All survey methods follow standard best practice guidance where available (referenced in the text as appropriate). Guidance on artificial lighting comes from the Bat Conservation Trust¹¹.

11.3 Assessment Methodology

11.3.1 The Ecology Co-op undertook a Preliminary Ecological Appraisal (PEA) (shown in **ES Volume 4, Appendix A1: Scoping Report** and summarised in **ES Volume 4, Appendix G1: EclA**), including an extended Phase 1 Habitat Survey and protected species assessment of the Site in January 2019. Based on the findings of this assessment, the following specialist surveys were recommended: bat emergence surveys, bat activity surveys, and logger deployments, tree climbing surveys, breeding bird surveys and a reptile survey. Signs of badgers were identified during the site assessment and monitoring was subsequently undertaken to establish the use of the Site by this species.

Desk Studies

11.3.2 The following desk-based studies were undertaken:

- a search for existing records of protected species, species of conservation concern and invasive non-native species within a radius of 2 km of the site's boundaries, together with information on locally designated sites, from the Thames Valley Environmental Records Centre (TVERC);
- a search of online mapping resources (including ponds, watercourses and connectivity to woodland, scrub, and hedgerow networks) in the wider landscape around the Site; and
- the MAGIC website resource (www.magic.gov.uk).

Phase 1 Habitat Survey

11.3.3 A walkover survey was undertaken on 21st and 22nd of January 2019, during which the habitats contained within the Site were described and evaluated in accordance with

⁹ 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.

¹⁰ CIEEM (2017) *Guidelines for Ecological Report Writing*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

¹¹ 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/>.

standard Phase 1 Habitat Survey methodology¹². This included a detailed botanical survey to list the dominant species composition.

- 11.3.4 Data was gathered through a site walkover survey and use of on-line aerial photography to broadly categorise the habitats present using the JNCC Phase 1 Habitat Survey classifications. 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 local and national Biodiversity Action Plan habitats – are highlighted.
- 11.3.5 The Phase 1 Habitat Survey methodology is a recognised tool for initial scoping of potential ecological constraints and identifying potential impacts as part of the planning application process.
- 11.3.6 As part of the 'Extended' Phase 1 Habitat Survey, the Site features were evaluated for their potential to support legally protected/notable species; in addition, observations of any important plant communities, bird assemblages or other potentially valuable ecological features were also recorded.
- 11.3.7 Details of the survey methods for each legally protected species are provided below.

Methodology

Badgers

- 11.3.8 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 'annexes', '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.
- 11.3.9 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', or other non-intrusive methods (e.g. laying soft damp sand, placing dead leaves or straw or sticky hair traps at entrances) were used to confirm occupation by badgers. This survey methodology is in accordance with Harris, et al (1989)¹³.

Bats

- 11.3.10 Bats can use a wide range of features for roosting purposes including loft spaces, cavity walls and cracks/gaps in a variety of built structures. They can also be found in trees with holes, splits, 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 and fences can be important for navigation between roosting and foraging habitats.

¹² JNCC (2010) *Handbook for Phase 1 habitat survey: A technique for environmental audit*. Joint Nature Conservation Committee, Peterborough.

¹³ Harris, S, Cresswell, P. and Jefferies, D. (1989) *Surveying Badgers*. Mammal Society.

Natural Roost Features – Trees

- 11.3.11 All trees within the Site were subject to a ground-based visual inspection to identify potential roost features. Each tree was inspected from the ground using binoculars for features which could potentially support roosting habitat for bats. Features of interest include woodpecker holes, loose bark, cracks and splits in limbs, natural holes and hollows and cavities were noted.
- 11.3.12 A Potential Roost Feature (PRF) (tree climbing) survey was undertaken; trees noted to contain PRFs were climbed using a ladder or ropes and harnesses in order to allow the climber to undertake a close-up inspection of the features using a torch and an endoscope. Any trees displaying significant damage/decay and/or specimens from which a suitable anchorage of ropes could not be established were subjected to a ground level assessment only.
- 11.3.13 Each PRF was assessed in terms of their suitability for roosting bats as having either: negligible, low, moderate or high roost potential (**Table 1 in Appendix G: Ecology**). The assessment of a tree's overall suitability for roosting bats is assigned in accordance with the assessment of the most suitable PRF present on the tree.

Built Structures – Bat Scoping Assessment

- 11.3.14 A detailed ground based visual assessment was carried out, looking for features with potential to support roosting bats (e.g. gaps under tiles, soffits, cracks or gaps in brickwork, cladding) and any evidence indicating the presence of bats, such as rub marks, staining or droppings beneath potential roost features. Where possible and safely accessible, internal inspections of potentially suitable enclosed loft spaces were made to search for evidence of use by bats (live bats, dead bats, dropping, rub marks or staining of timbers).

Bat Activity Surveys – Walked Transects

- 11.3.15 Bat activity surveys followed best practice guidelines. Six activity surveys were completed in 2019. Pre-determined transect routes were followed by two surveyors focussing on all linear features within the Site boundary (treelines, woodland edge and hedgerows). The locations of the transect routes are shown in **ES Volume 4, Appendix G: Ecology**.

Bat Activity Surveys – Automated Static Bat Detecting

- 11.3.16 Two static bat detectors were deployed across the Site (on three separate occasions, in May, June and September 2019). The static detectors were left in place for a minimum of five days and the data was analysed with EcoBat software. The locations of the static detectors are shown in **ES Volume 4, Appendix G: Ecology**.
- 11.3.17 The walked transect and static bat detector 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.

Breeding Birds

- 11.3.18 The method used for the breeding bird survey was adapted from the Breeding Bird Survey (BBS) methodology, designed by the British Trust for Ornithology (BTO)¹⁴ as an accessible means of monitoring British bird population trends over the UK using volunteers and frequently adapted for EcIA. The original methodology requires two visits per season to be carried out over many seasons, allowing data sets to be built up. The number of visits has been increased to three for this survey to provide a more representative 'snapshot' of the bird assemblages present at the Site during one survey season.
- 11.3.19 A pre-determined transect focusing upon both fields, the woodland and boundary hedgerows fringing the Site, was walked slowly on each visit. During this the observer recorded all birds encountered. Survey visits were carried out between 6 am and 11 am and were only undertaken during favourable weather conditions for bird activity. The transect route was walked at a constant slow pace by a competent bird observer, recording all birds detected either by sight or calls/song. The transect route was split into numbered sections and birds were counted within each of these sections. Notes regarding the behaviour of birds identified were made, to determine their breeding status. The locations of the transects are shown in **ES Volume 4, Appendix G: Ecology**.
- 11.3.20 After the surveys were completed, the total number of territories were estimated by comparing the locations of birds recorded on each of the survey visits. The total number of territories is based on the maximum number of territories recorded on any one visit plus any territories recorded on another visit in a different area of the Site. This is then produced as a map.

Common Dormouse

- 11.3.21 Common dormice *Muscardius avellanarius* 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 this. They hibernate during the winter typically at ground level.
- 11.3.22 A general assessment of the Site's habitat was made with regards to their suitability to support dormice, however, no specific surveys for the species were conducted.

Great Crested Newts

- 11.3.23 Great crested newts *Triturus cristatus* 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.
- 11.3.24 A general assessment of the Site's habitat was made with regards to their suitability to support great crested newts, however, no specific surveys for the species were conducted.

Reptiles

¹⁴ <https://www.bto.org/about-birds/birdtrends/2018/methods/breeding-bird-survey>

- 11.3.25 A presence/likely absence survey for reptiles, including the common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*, was completed in 2019. During this a total of 123 artificial refugia ('mats'), comprising 0.5 x 0.5 m roofing felt, carpet or corrugated metal sheets, were laid out in potentially suitable habitats. 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 between April to May to 2019 and all observations of reptiles were recorded, together with the weather conditions, temperature and time of day. The locations of the mats are shown in **ES Volume 4, Appendix G: Ecology**.

Other Notable Species

- 11.3.26 The 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*, west European 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.

Invasive Non-Native Species

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

Impact Assessment Methodology and Mitigation

- 11.3.28 The assessment of ecological impacts and mitigation recommendations in this report follow CIEEM Guidelines for Ecological Impact Assessment (EcIA). 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'.

Importance of Ecological Features

- 11.3.29 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 **ES Volume 4, Appendix G: Ecology**):

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

- 11.3.30 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 assessment. 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.
- 11.3.31 Similarly, irreplaceable habitats such as ancient broadleaved woodland are considered as 'important features' and included in the assessment. The level of importance will vary depending on the size of the habitat parcel, its distribution and abundance at different geographical scales.
- 11.3.32 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 assessment and it should be reasonable to assume that if a feature is not mentioned, it is not ecologically important.

Significance of Impacts and Effects

- 11.3.33 In accordance with EclA guidance (CIEEM 2018), 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.
- 11.3.34 The impacts are identified and described in relation to the following characteristics:
- Adverse or positive (beneficial) – 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.
- 11.3.35 For consistency with the rest of the ES and the significance criteria outlined in **ES Volume 2, Chapter 3: EIA Methodology** the significance established using the CIEEM criteria has been equated with the categories below:
- Major Beneficial: the effect is of a magnitude likely to permanently benefit a nationally/internationally valued ecological receptor;
 - Moderate Beneficial: the effect is of a magnitude likely to permanently benefit a borough/metropolitan and/or locally valued ecological receptor;

- Minor Beneficial: the effect is of a magnitude likely to benefit a borough/metropolitan and/or locally valued ecological receptor, but there will be no permanent effect on its integrity/conservation status;
- Negligible: no significant effects to any receptor, or significant effects to receptors valued only in the immediate vicinity
- Minor Adverse: the effect is of a magnitude likely to be adverse to a borough/metropolitan and/or locally valued ecological receptor, but there will be no permanent effect on its integrity/conservation status;
- Moderate Adverse: the effect is of a magnitude likely to be adverse to a borough/metropolitan and/or locally valued ecological receptor permanently affecting its integrity; and
- Major Adverse: the effect is of a magnitude likely to be adverse to a nationally/internationally valued ecological receptor.

11.3.36 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.

The 'Mitigation Hierarchy'

- 11.3.37 The assessment of the significance of an impact 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 impacts and 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 impacts and effects are unavoidable.
- 11.3.38 When residual significant adverse impacts and effects remain after all practicable measures to avoid and/or minimise these have been applied, compensation measures are required. Compensation measures include habitat creation in alternative locations that offset unavoidable habitat loss.
- 11.3.39 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 development. These measures are intended to ensure that the Proposed Development contribute towards national and local biodiversity objectives.

Limitations and Assumptions

- 11.3.40 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 survey 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, five years for reptiles and two years for great crested newts and dormice. If the habitat conditions change substantially in the intervening period, then it is recommended that the surveys be updated.

11.4 Baseline Assessment and Identification of Key Receptors

- 11.4.1 Details of designated sites within 2 km of Reading Golf Club are listed in **Table 11.1** below, **Figure 11.1** provides a map of the designated sites in relation to the Site.
- 11.4.2 There are 5 granted European Protected Species Mitigation Licences (EPSLs) within 1 km of the Site (**Figure 11.2**). A summary of details available for these granted EPSLs are provided in **Table 11.2**.

Table 11.1: Statutory and Non-Statutory Designated Sites within 5 km of the Site.

Site name	Designation	Features listed on citation	Proximity
Reading Golf Course (east)	Local Wildlife Site	Habitats: Lowland Mixed Deciduous Woodland Lowland Calcareous Grassland Species: Red Kite <i>Milvus milvus</i> Sainfoin <i>Onobrychis viciifolia</i>	100m N
Chilterns Dipslope and Plateau	Conservation Target Area	Chalk valleys within Chiltern hills containing a variety of notable habitats (e.g. chalk grassland, woodland, hedgerows, arable field margins, traditional orchards)	100m N
Furze Platt	Local Wildlife Site	Habitats: Lowland Mixed Deciduous Woodland Species: Bluebell <i>Hyacinthoides non-scripta</i>	320m SW
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>	350m S
Chambers Copse	Proposed Local Wildlife Site	Habitats: Woodland (not classified)	430m N

Site name	Designation	Features listed on citation	Proximity
Hemdean Bottom	Local Wildlife Site	Habitats: Lowland Meadow (with calcareous influences)	500m SW
Rotherfield Way Copse	Local Wildlife Site	Habitats: Lowland Mixed Deciduous Woodland Species: Bluebell Butcher's-Broom <i>Ruscus aculeatus</i>	600m S
Reading Golf Course (west)	Local Wildlife Site	Habitats: Species-rich grassland (not classified)	700m NW
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	1.8km S
Tanker's Table Field	Local Wildlife Site	Habitats: Lowland Mixed Deciduous Woodland Lowland Meadow Lowland Calcareous Grassland	>2km NW
The Warren Woodlands Complex	Local Wildlife Site	Habitats: Lowland Mixed Deciduous Woodland Lowland Beech & Yew Woodland Wet Woodland Fen Species: Badger Bluebell <i>Hyacinthoides non-scripta</i> White helleborine <i>Cephalanthera damasonium</i> Loddon lily <i>Leucojum aestivum</i>	>2km SW
Pages Shaw	Proposed Local Wildlife Site	Habitats: Lowland Mixed Deciduous Woodland Lowland Beech & Yew Woodland	>2km W
Chilterns Escarpment South	Conservation Target Area	Chalk escarpment within Chiltern Hills containing chalk grassland and woodland	>2km W

Figure 11.1: Designated Sites within a Radius of 2 km of Reading Golf Club. ©Thames Valley Environmental Records Centre.

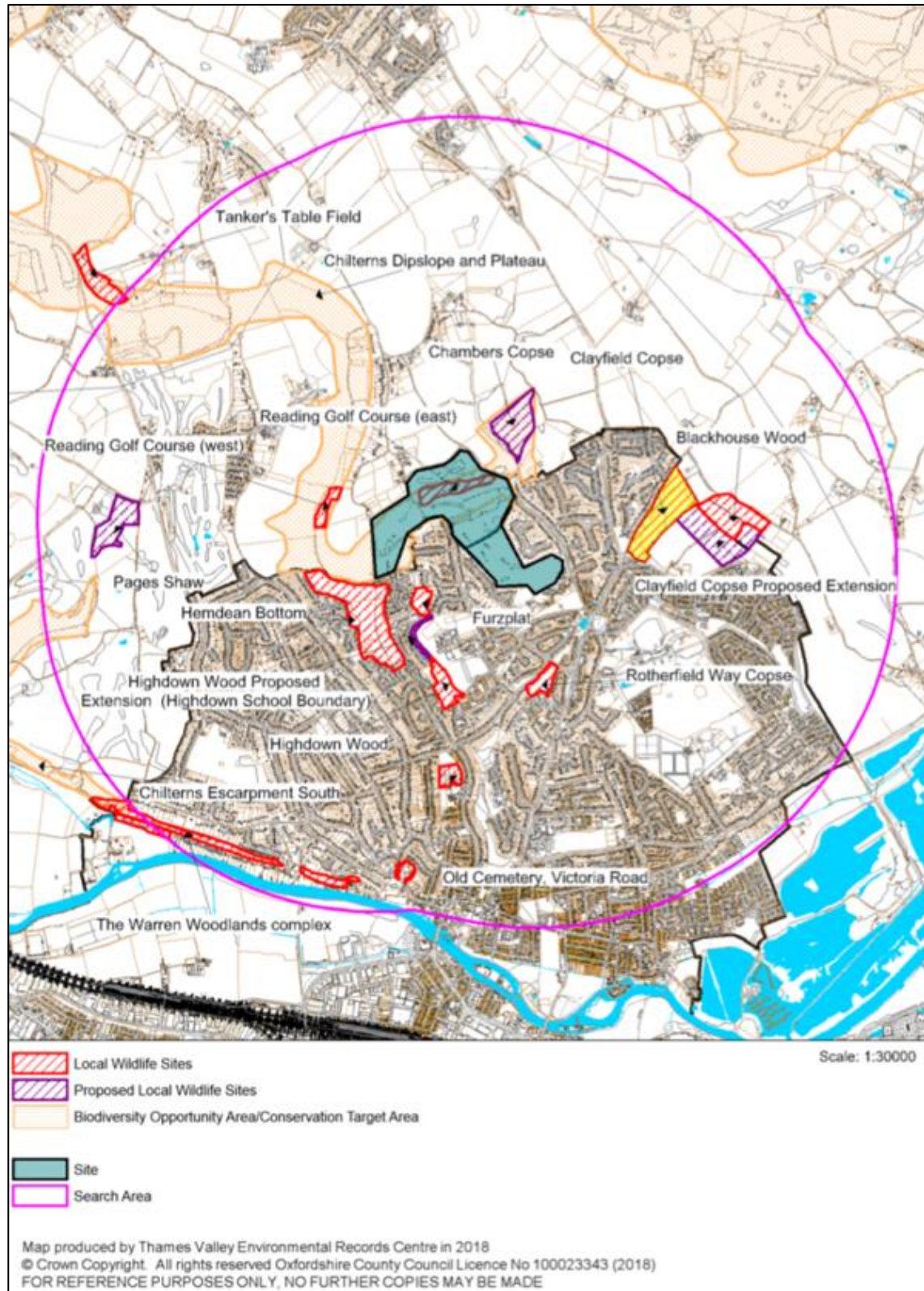
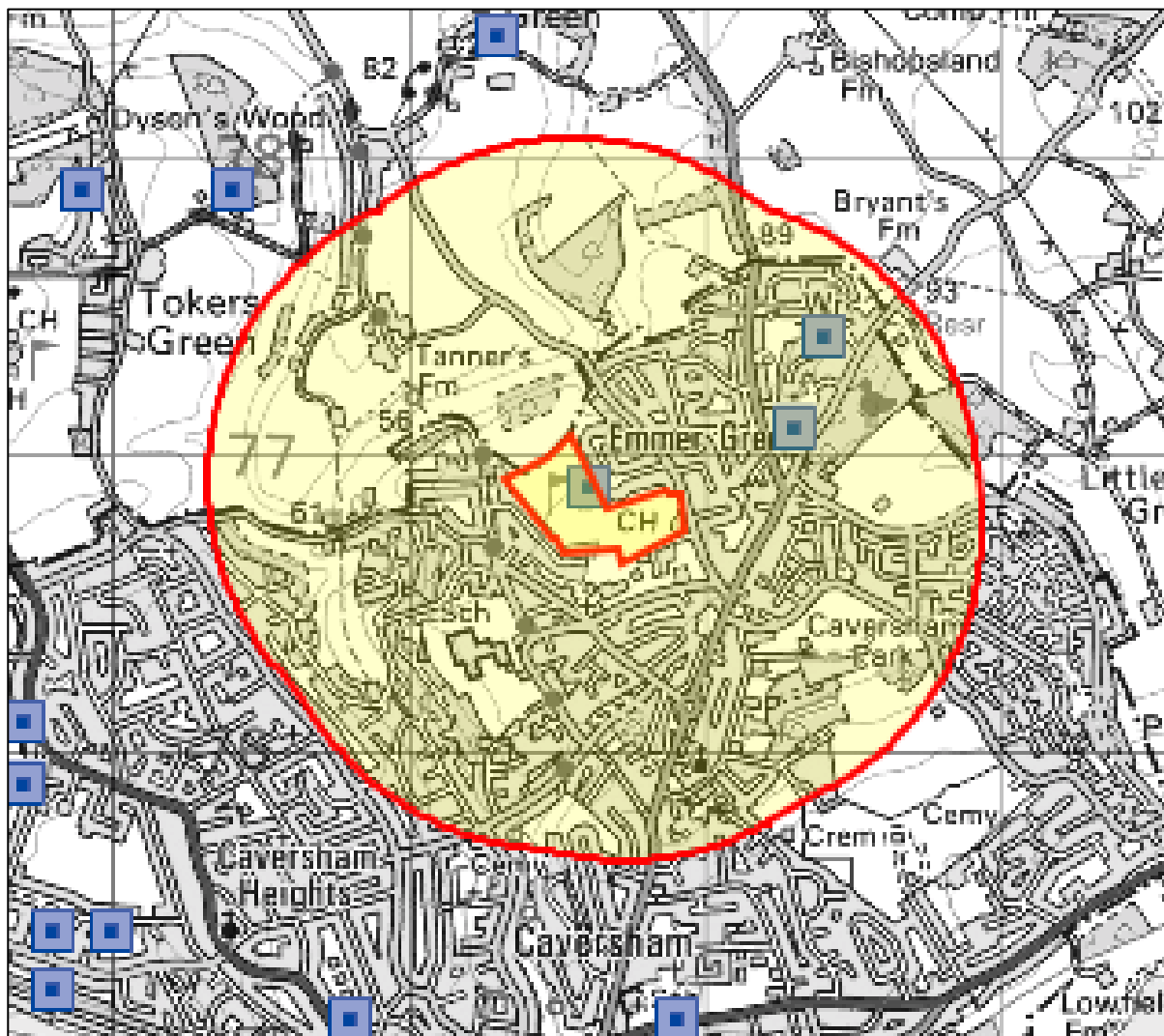


Table 11.2: Summary of Information for Granted European Protected Species (EPS) Licences within 1 km of Reading Golf Club.

Reference Number	Proximity to Study Site	Species Covered	Period Covered	Other Information
EPSM2013-6025	Immediately adjacent to site	Brown long-eared bat <i>Plecotus auritus</i>	26/07/2013 – 31/12/2013	Destruction of a resting place
EPSM2012-4078	400m NE	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	650m NE	Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	01/11/2017 – 30/04/2018	Destruction of a resting place

Figure 11.2: Granted European Protected Species Mitigation Licences (EPSLs) within 1 km of Reading Golf Club. Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>), contains public sector information licensed under the Open Government Licence v3.0).



Habitats

Survey Results

- 11.4.3 Much of the Site is covered by short-sward amenity grassland which serves as fairways and greens of the golf course. The grassland is regularly mown to maintain a very short sward height, some taller areas of grassland are present toward the peripheries of the course. The fairways within the Site are flanked by planted tree belts. The boundaries are marked by a combination of tree belts, hedgerows, dense scrub and garden hedges. Other habitats present within the Site include buildings and hardstanding.
- 11.4.4 **Table 11.3** below lists the Phase 1 Habitat Survey categories found at the Site, with target notes on specific features of interest and the general species composition. The Phase 1 Habitat Map for the Site and key to the standard mapping symbols used is presented in **Volume 4, Appendix G: Ecology** along with photographs of key habitat features.

11.4.5 **Table 11.3** below lists the habitats found at the site according to JNCC guidelines, with target notes on specific features of interest. Further detail on these habitats, with accompanying habitat maps and photographs, and the species composition of the habitats, are provided in **ES Volume 4, Appendix G: Ecology**. Note that detailed information on trees and ponds with respect to bats and great crested newts are presented in separate sections below.

Table 11.3: Habitats Contained within Reading Golf Club.

Habitat type	Area(ha)/ Length(m)	Target note including general species composition	Assessment of Ecological Value (CIEEM 2017)
Buildings	0.1ha	A modern clubhouse and dwelling are present at the south-eastern corner of the site. Both buildings are constructed from solid red brick with roofs of modern interlocking concrete tiles. Both buildings contain loft voids, however only the space within the clubhouse was accessed during the survey.	Site
Bare Ground/Hard-standing	0.7ha	A carpark of concrete hard-standing exists at the south-eastern corner of the site. A pathway of bare ground, used as a vehicle trackway, extends up the eastern edge of the site.	Site
Amenity Grassland	9.2ha	Extensive areas of short-sward amenity grassland are present in the site's northern and southern halves. The grassland is regularly mown to <3cm. The fairways and greens of the course are totally devoid of herbaceous plant and are likely to receive regular spraying with herbicide. Areas of less intensively managed amenity grassland are present towards the peripheries of the course, although taller relative to the fairways and green, the sward is still maintained at a short height (approximately 5-10cm). Herbaceous plants are present in low abundance within peripheral areas. The habitat is described as species-poor,.	Site
Species-poor Semi-improved Grassland	0.3ha	Areas of species-poor semi-improved grassland form the golf course 'roughs', including an area fringing the driving range at the southern edge of the site and two strips lining the access track running along the northern edge of the site The semi-improved grassland is not considered to qualify as priority habitat such as Lowland Calcareous Grassland (Section 41, NERC Act 2006)	Site
Broadleaved Semi-natural Woodland	0.2ha	The site includes a very small section of woodland at the northern boundary of the site, the area forms part of a larger area of woodland which extend beyond the site boundaries.	District

Habitat type	Area(ha)/ Length(m)	Target note including general species composition	Assessment of Ecological Value (CIEEM 2017)
		<u>The site's broadleaved semi-natural woodland is considered to qualify as priority under Lowland Mixed Deciduous Woodland (Section 41, NERC Act 2006).</u>	
Intact Hedge (species-poor)	730m	A native species-poor hedgerow exists along southern boundary. Sections of the north-eastern and south-western boundaries of the site's southern half are created by non-native garden hedgerows. <u>The native species-poor hedgerow is considered likely to qualify as priority habitat under Hedgerows (Section 41, NERC Act 2006). The garden hedges do not qualify as priority hedgerow habitat.</u>	District (native hedge) Site (garden hedges)
Hedge with trees (species-poor)	120ha	The eastern edge of the site, where the golf club is accessed off the adjacent road, is marked by a beech hedge with a planted row of semi-mature lime <i>Tilia x europaea</i> .	Site
Broadleaved Parkland/ Scattered Trees	0.42ha	Broadleaved tree belts exist along the fairways of the course.	Local
Mixed Parkland/Scattered Trees	2.78ha	Tree belts containing a mixture of broadleaved and coniferous tree line the fairways within the southern half of the site.	Local
Scrub (dense continuous)	0.1ha	A small area of dense bramble exists at the western edge of the site.	Site
Dry Ditch	90m	A dry ditch runs between fairways in the site half, the ditch is covered by amenity grassland and is lined by a tree belt.	Site
Fence	60m	A wooden garden fence exists along a short section of the north-eastern edge of the site.	Site

Interpretation

- 11.4.6 Much of the Site supports habitats which are only ecologically valuable at the **Site level**. However, a hedgerow is considered to be important at the **local level** and the broad-leaved woodland as well as intact native hedgerow contained by the site are considered to be important at the **district level**.

Badgers

Survey results

- 11.4.7 A possible badger sett was found within an area of woodland to the immediate north of the Site during the Phase 1 survey of 21st & 22nd January 2019. The single entrance hole was

monitored by a trail 'cam' from 29th May – 11th June. A map showing the location of this sett is shown in **ES Volume 4, Appendix G: Ecology**.

- 11.4.8 No badgers were recorded by the trail 'cam' during its deployment within the Site. Inspection of the entrance hole in June revealed it was largely obscured by nettles and did not appear to have been used recently.

Pre-existing records

- 11.4.9 The TVERC provided 47 records of badger in the search area. One record from 2009 refers to a sett located approximately 240 m to the west of the Site boundary.

Interpretation

- 11.4.10 A single entrance is indicative of an outlier sett: a refuge used intermittently by individual animals within their home range. The trail 'cam' survey of the entrance hole located to the immediate north of the Site indicates the sett is not currently being used by badgers. However, badgers may forage within the Site and may use this sett or establish new setts at any other time. Habitats within the Site are considered to be of value to badgers at the **Site level** only.

Bats

Survey results

Natural Roost Features – Trees

- 11.4.11 The ground-based scoping assessment identified 10 trees requiring detailed potential roost feature (PRF) inspections using endoscopes, as detailed in **ES Volume 4, Appendix G: Ecology**. All other trees present on the Site were rated as having negligible potential for roosting bats. A map showing the location of these trees is shown in **ES Volume 4, Appendix G: Ecology**.

Built Structures

- 11.4.12 The location of buildings included within the current study and the results of the building inspection are shown in **ES Volume 4, Appendix G: Ecology**.

Bat Activity Surveys – Walked Transects

- 11.4.13 Survey conditions and timings as well as the results of each walked transect survey are summarised in **ES Volume 4, Appendix G: Ecology**. This shows the distribution of all bat 'observations' on each walked transect.
- 11.4.14 Four species of bat were recorded during the walked transect of 28th April 2019, these were: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, noctule *Nyctalus noctula* and serotine *Eptesicus serotinus*. Some sustained foraging by common pipistrelles was recorded at the southern corner of the site and by a serotine around the clubhouse and car park at the eastern site boundary. Regular foraging activity was also recorded amongst the scattered trees at the northern corner of the Site. Other recordings were largely restricted to individual foraging/commuting passes by individual bats.
- 11.4.15 Five species of bat were recorded within the Site during the walked transect of 30th May 2019, consisting of the four species previously recorded and a *Myotis* species. All

recordings were limited to <5 passes, with no sustained foraging behaviour recorded during the survey.

- 11.4.16 Five species of bat were recorded within the Site during the walked transect of 26th June 2019. Some sustained foraging by common pipistrelles was recorded at the southern corner of the Site and by a serotine around the clubhouse and car park at the eastern site boundary. Other recordings were largely restricted to individual foraging/commuting passes by individual bats.
- 11.4.17 Six species of bat were recorded within the Site during the walked transect of 24th July 2019, consisting of the five species previously recorded and serotine *Eptesicus serotinus*. Sustained foraging by common pipistrelle, soprano pipistrelle and noctule was recorded within the Site at the south western boundary and towards the northern corner of the Site.
- 11.4.18 Five species of bat were recorded within the Site during the walked transect of 28th August 2019. Sustained foraging by common pipistrelle, soprano pipistrelle and noctule was recorded within the Site at the south western boundary and towards the northern corner of the Site.
- 11.4.19 Reduced levels of bat activity were recorded during the final transects of 17th September & 10th August 2019, with five species and three species recorded on the respective dates. Recordings were largely restricted to individual foraging/commuting passes by individual bats with limited sustained foraging behaviour recorded.

Bat Activity Surveys – Automated Static Detector Deployment

- 11.4.20 A total of 3191 bat passes by at least 8 species of bat were recorded within the Site over 17 nights between 3rd May and 3rd September 2019.
- 11.4.21 15 nights of high – moderate/high activity by common pipistrelle and soprano pipistrelle was recorded at the southern corner of the Site. Activity by these species was moderate/high – moderate at the south western site boundary.
- 11.4.22 Two nights of moderate/ high activity by noctules *Nyctalus noctule* were recorded at the southern corner of the Site with a single night of moderate-high activity by this species recorded at the south western boundary.
- 11.4.23 Moderate/high – moderate/low activity by *Myotis* spp. was recorded at the southern corner of the Site, whilst only low levels of activity by these species was recorded at the south western boundary.
- 11.4.24 Activity by serotine, *Plecotus* spp. Nathusius' pipistrelle and barbastelle *Barbastella barbastellus* was restricted to moderate/low – low levels.
- 11.4.25 The results of these bat activity surveys are shown in **ES Volume 4, Appendix G: Ecology**.

Pre-existing records

- 11.4.26 The TVERC provided 492 bat records in the search area comprising 11 identified species within the search area, these are summarised in **Table 11.44**. 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 11.2**.

Table 11.44: Bat Records held by TVERC within a 2 km Radius of the Reading Golf Club.

Species	Number of Records
Common pipistrelle <i>Pipistrellus pipistrellus</i>	131
Soprano pipistrelle <i>P. pygmaeus</i>	105
Nathusius' pipistrelle <i>P. nathusii</i>	6
Brown long-eared <i>Plecotus auritus</i>	48
Serotine <i>Eptesicus serotinus</i>	6
Noctule <i>Nyctalus noctula</i>	71
Leisler's bat <i>N. leisleri</i>	6
Daubenton's bat <i>Myotis daubentonii</i>	26
Natterer's bat <i>M. nattereri</i>	4
Whiskered bat <i>M. mystacinus</i>	1
Western barbastelle <i>Barbastella barbastellus</i>	1
Unidentified bat species	87

Interpretation

- 11.4.27 All buildings within the Site have been assessed as having 'negligible' roost potential and roosting bats are considered likely to be absent. The buildings' unsuitability for roosting bats are largely due to their good condition and the modern materials used in their construction.
- 11.4.28 Opportunities for roosting bats have been identified within trees contained within the Site. Two trees have been assessed as having 'high' roost potential, with another two specimens assessed as having 'moderate' potential and a single tree was assessed as having 'low' bat roost potential. Further survey work (emergence/re-entry survey) would be required to precisely assess the value of the Site's tree roost resource, however with the use of trees by bats changing regularly as trees age and decay, this data may be better gathered for a detailed planning application, nearer to the time of the Proposed Development.
- 11.4.29 The activity surveys conducted to date have demonstrated that the habitats contained within the Site do support foraging bats. High levels of activity by both the common pipistrelle and soprano pipistrelle were recorded within the Site. These species are the most common and widespread of all British species, occur in a wide variety of habitats and are relatively tolerant of human activity. Other common and widespread species include noctule and brown long-eared bat.
- 11.4.30 The serotine bat is only found in southern England and the very southern edge of Wales and this Site is close to the northern range for this species.
- 11.4.31 *Myotis* bats are extremely difficult to distinguish to species level from calls, however there are no records for the rare Bechstein's *Myotis bechsteinii* or Alcahloe *M. alcahloe* within 2 km of the Site and Alcahloe bats have never been recorded in Berkshire. *Myotis* bats using the Site are most likely to be Natterer's bat *M. Nattereri* and/or whiskered bat *M. mystacinus* which are relatively common and widespread.

- 11.4.32 The recording of Nathusius' pipistrelle and barbastelle within the Site is considered significant as these species are uncommon/rare within Berkshire. Nathusius' pipistrelle is a migratory species, whereas barbastelle is a woodland species restricted to the south of England.
- 11.4.33 Given the above information the Site is assessed as being of value to foraging/commuting bats at the **local level**.
- 11.4.34 The Site's hedgerows and tree belts provide linear foraging/commuting corridors for all species recorded to date and are considered to be the features of greatest value to bats within the Site.

Breeding Birds

Survey results

- 11.4.35 To date, 33 species of bird were recorded during the survey effort; of these, 5 species are 'red' listed under the Birds of Conservation Concern (BoCC) and a further 5 are 'amber' listed. The following species recorded during the survey are also listed under Section 41 of the NERC Act (2006): house sparrow *Passer domesticus*, bullfinch *Pyrrhula pyrrhula*, starling *Sturnus vulgaris*, dunnoek *Prunella modularis* and herring gull *Larus argentatus*. A single Schedule 1 species (red kite) was recorded during each breeding bird survey and an active nest of this species was recorded. Due to the sensitive nature of this information, the exact location of the red kite nest is not provided, however you may contact the Ecology Co-op if more details are required.
- 11.4.36 Survey conditions and timings as well as the results of the breeding bird surveys are indicated in **ES Volume 4, Appendix G: Ecology**.

Pre-existing records

- 11.4.37 The TVERC provided numerous bird records for the search area concerning a total of 44 species. Most of these species are relatively common and widespread, but the list includes 17 species of principle importance for conservation (Section 41, NERC Act 2007), and 15 species listed on Schedule 1 of the Wildlife and Countryside Act. In addition, 21 species are red listed on the Birds of Conservation Concern.

Interpretation

- 11.4.38 The breeding bird surveys have confirmed that the Site's breeding bird assemblage consists largely of common and widespread species typical for suburban environments. A total of 3 red list species (bullfinch, starling, song thrush 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) are likely to breed within the Site.
- 11.4.39 Of particular note is the confirmed presence of breeding red kites. This species is afforded special protection from disturbance as it is listed on Schedule 1 of the Wildlife and Countryside Act (1981). 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 Reading and beyond. The species remains relatively

localised in its distribution, but the population is considered to be continuing to expand its range¹⁵.

- 11.4.40 Based on these findings, the breeding bird assemblage supported by Reading Golf Club is considered to be important for the conservation of birds at **local level**.

Dormice

Pre-existing records

- 11.4.41 There are no records of dormice from within 2 km of the Site. This search radius is standard for ecological reports and recommended in the CIEEEM guidelines.

Interpretation

- 11.4.42 Although woodland and hedgerows within the Site provide potentially suitable (yet sub-optimal) habitat for dormice, the TVERC holds no records of the species within 2 km of the Site and it is understood that very few populations of the species remain within Berkshire and Oxfordshire.
- 11.4.43 It is therefore considered highly unlikely that dormice are present within the Site. Given the limited amount of potential habitat (a very small section of woodland and a single hedge bordering a school playing field), the suburban context of the Site on the edge of a large town and the geographical position of the Site (relative to known dormouse populations), the Site is considered to be of negligible importance with regard to dormice.

Amphibians

Survey results

- 11.4.44 There are no ponds within the Site or immediately adjacent to the Site boundary. A single large pond was identified approximately 250 m to the south of the Site, the location of which and a photograph is shown in **ES Volume 4, Appendix G: Ecology**.
- 11.4.45 This pond is described as a “community duck pond” within an area of public open space and surrounded by busy roads and residential development. At the time of the survey a large number of waterfowl were present on the pond. The banks are engineered along the northern edge of the ponds and are bordered by bankside vegetation (mature weeping willow *Salix babylonica* and bramble scrub) along its southern and eastern edges. The water within the pond is described as being of ‘poor quality’ as a result of heavy disturbance and pollution caused by waterfowl. No aquatic vegetation was visible within pond.
- 11.4.46 The HSI assessment of the pond concluded that the waterbody is of ‘Poor’ suitability for supporting a breeding population of great crested newts. This output is largely a consequence of high numbers of waterfowl leading to poor water quality and an absence of aquatic vegetation. Full results of the assessment are provided in **ES Volume 4, Appendix G: Ecology**.

Pre-existing records

¹⁵ <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/red-kite/conservation/>

- 11.4.47 The TVERC holds no records of the great crested newt from within 2 km of the Site. The records centre provided 44 records of other amphibian species in the search area. This included 5 records for smooth newt *Lissotriton vulgaris*, 15 records for common frog *Rana temporaria* and 24 records for common toad *Bufo bufo*. Individual historic records (both from 1986) exist of common frog and common toad within the Site. Amphibians, including the great crested newt, are considered to be absent from the Site.

Interpretation

- 11.4.48 Based on the lack of suitable ponds within 250 m of the Site boundaries, lack of recent pre-existing records, no further surveys were considered necessary and it is concluded that the presence of great crested newts or other amphibian are not a material consideration for the Proposed Development.

Reptiles

Survey results

- 11.4.49 No reptiles were recorded within the Site or within the wider landholding of Reading Golf Club. The full results of these surveys are shown in **ES Volume 4, Appendix G: Ecology**.

Pre-existing records

- 11.4.50 The TVERC returned 24 reptile records in the search area, including: 12 records of slow worm, 11 of grass snake and a single adder record. The closest of these was a slow worm recorded at a location 750 m from the boundary of the Site in 1992.

Interpretation

- 11.4.51 Based on the survey results and the absence of recent pre-existing records nearby, the site is considered to be of **negligible** importance with regard to reptiles.

Other Notable Species

Survey results

- 11.4.52 A dead hedgehog was observed within the Site on 10th June 2019.

Pre-existing records

- 11.4.53 A hedgehog has been recorded from a location to the immediate north of the Site (within the wider landholding of Reading Golf Club).

Interpretation

- 11.4.54 Hedgerows, woodland and amenity grassland 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**.
- 11.4.55 Habitats within the Site are unsuitable for other non-invertebrate protected/notable species of wildlife.

Invertebrates

Pre-existing Records

- 11.4.56 The TVERC holds 397 records of notable/protected invertebrates from within the search area. Of these records, 93 records concern stag beetles *Lucanus cervus* from within the local area.
- 11.4.57 Notable species of butterfly recorded within the local area include: small heath *Coenonympha pamphilus*, wall *Lasiommata megera*, small blue *Cupido minimus*, white-letter hairstreak *Satyrus w-album* and purple emperor *Apatura iris*. All of the butterfly records returned within the data search are >20 years old and are unlikely to provide accurate information regarding the current status of the species within the local area.
- 11.4.58 Glow worm were recorded within offsite areas of the golf course to the immediate north of the Site.
- 11.4.59 The TVERC holds 265 records of 33 species of notable moth from within the search area. Species of moth recorded within the local area include: ghost moth *Hepialus humuli*, forester *Adscita statice*, oak hook-tip *Watsonia binaria*, lackey *Malacosoma neustria*, blood-vein *Timandra comae*, spinach *Eulthis mellinata*, small phoenix *Ecliptopera silaceata*, grey dagger *Acronicta psi* and various other species.

Interpretation

- 11.4.60 Stag beetles are saproxylic: requiring partially buried deadwood habitat or tree stumps in dappled shade to complete their lifecycle. The woodland habitat contained within the Site is suitable for stag beetles because of the presence of dead wood which may support this species in their larval stage.
- 11.4.61 Small heath, wall and small blue occur in species-rich grassland habitat, whereas as white-letter hairstreak and purple emperor occur in areas of deciduous woodland, or broadleaved parkland and scattered trees, with the former's range restricted by its elm foodplant (not present within the Site). The wall butterfly and small blue prefer unimproved grasslands and have specific habitat requirements that are not represented on the Site. Given the relatively small amount of woodland and highly managed grassland habitats within the Site, notable species of butterfly are likely to be absent from the Site.
- 11.4.62 Many of the moth species listed on Section 41 remain common and widespread but are suspected to have suffered population declines. Research on this issue is on-going and the recorded species are likely to include many of these species where the status is uncertain. The Site is likely to support a rich variety of moths including a number of species of principal importance.
- 11.4.63 The site is considered valuable at a **local level** in terms of the invertebrate assemblage it supports.

Invasive Non-native Species

Survey Results

- 11.4.64 A number of cotoneaster *Cotoneaster* spp. were found within garden hedgerows at the Site boundaries during the ecological surveys of the site. Several species of cotoneaster are listed under Schedule 9, Section 14, WCA.

Pre-existing Records

- 11.4.65 The TVERC provided 24 records of non-native/invasive plants and 1 non-native/invasive mammal (American mink *Neovision vision*) in the search area. The closest of these is a record of *Rhododendron ponticum* from a location 75m to the south of the Site, dated from 1985.

Interpretation

- 11.4.66 Given the context of invasive/non-native species within the Site (i.e. planted within adjacent ornamental garden hedges), these species pose relatively low-level threat to native species within the Site (see Section **Error! Reference source not found.**) and are considered to be important at the Site level only

11.5 Identification and Description of Changes Likely to Generate Effect

- 11.5.1 In this section, the predicted impacts and effects of the Proposed Development 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.
- 11.5.2 Activities that may occur during the proposed construction and operational phases that could give rise to significant ecological impacts include:

Construction

- disturbance effects (for example to foraging bats and breeding birds) through noise, artificial lighting, vibration and the movement of people and construction machinery;
- potential protected species impacts through site preparation works, including disturbance and risk of killing or injury;
- soil compaction and other damage to adjacent habitats;
- habitat severance caused by construction works on-site; and
- habitat destruction and loss; Removal of two sections of woodland to provide road access between the two fields and conversion of arable fields into built environment.

Operation

- permanent habitat fragmentation of the woodland parcel;
- chronic disturbance from noise, lighting, vibration and the movement of people, vehicles on-site; risk of traffic collisions;
- increased recreational use of adjacent habitats leading to soil compaction, human/dog disturbance, littering, physical damage to trees; and
- increase in numbers of people and pets on Site.

11.6 Assessment of Likely Significant Effect

Construction Phase

Designated Sites

- 11.6.1 Reading Golf Course (east) LWS exists within the Site's immediate zone of influence and within the landholding of the wider golf course. The Proposed Development will not result in any foreseeable direct impacts on the LWS during the construction phase, given the distance between the Site and the LWS (100 m).
- 11.6.2 There are no foreseeable direct impacts on other statutory/non-statutory sites of nature conservation importance (SNCIs).

Priority Habitats

- 11.6.3 The priority hedgerow habitat at the southern site boundary is retained as part of the scheme design. However, there remains potential risk of damage to this habitat to occur through construction activities nearby affecting the root systems and compaction of the surrounding soils.
- 11.6.4 With the retention and protection of the priority Lowland Mixed Deciduous Woodland at the northern corner of the Site there will no direct impacts on this habitat during the construction phase.
- 11.6.5 Based on the above, in the absence of mitigation, construction of the Proposed Development represents possible adverse effects on priority woodland habitat, considered to be significant at the local level. This constitutes a **minor adverse** effect.

Badgers

- 11.6.6 Given the likely absence of active badger setts within the Site and the immediate surroundings the Proposed Development will not result in any foreseeable impacts on sheltering badgers or their setts. There is no proposed hard landscaping within 30 m of the inactive outlier badger sett identified at the northern corner of the Site. Should this sett become active in the future it is situated a sufficient distance from the construction zone that disturbance as a result of noise/vibration is unlikely to occur.
- 11.6.7 Without the adoption of precautionary measures there is potential for badgers to become trapped/injured/killed by uncovered excavations during construction.
- 11.6.8 The Proposed Development will result in the temporary loss of grassland habitats that are potentially important to badgers for foraging. However, suitable foraging habitat for badgers exists all around the construction zone and this loss represents a small proportion of the total resource available.
- 11.6.9 Uncovered excavations pose a risk of harm to individual badgers as a result on entrapment/killing/injury.
- 11.6.10 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.

- 11.6.11 Overall, the impact of construction upon badgers is considered to be significant at site level only. This would constitute a **minor adverse** effect.

Bats

- 11.6.12 Demolition of existing buildings within the Site will have no foreseeable impacts on bats given the unsuitability of the structures to function as roosts. Furthermore, with the retention of all trees identified as having roost potential there are no direct foreseeable impacts on bat roosts in trees. There are no other likely effects during the construction phase.

Breeding Birds

- 11.6.13 Without sensitive timing to works, the Proposed Development has the potential to result in the disturbance to a pair of nesting red kites during the construction phase as a result of increased noise, human activity and construction traffic.
- 11.6.14 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.
- 11.6.15 The bird assemblage supported by the 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 Development and are likely to return to some degree (e.g. robin, dunnoek, song thrush) once construction is completed and the soft landscaping matures.
- 11.6.16 Prior to mitigation, there will be potential destruction of active bird nests and the disturbance of a species listed on Schedule 1 of the Wildlife & Countryside Act, 1981. This would result in a certain adverse effect significant at the local level and would be in contravention of UK wildlife legislation. The impact of destruction of bird nests and disturbance of Schedule 1 species is **minor adverse**.

Invertebrates

- 11.6.17 The Proposed Development will result in the temporary loss of extensive areas of amenity grassland and small areas of semi-improved grassland. These habitats are unlikely to support important invertebrate assemblages. The hedgerows, scattered semi-mature/mature trees and woodland that has higher potential value to invertebrates is retained within the Proposed Development. The pre-mitigation effect is therefore considered negligible.

Other Notable Species

- 11.6.18 Without the adoption of precautionary measures there is potential for hedgehogs to become trapped/injured/killed by uncovered excavations.
- 11.6.19 The hedgehog has suffered dramatic declines in population in recent decades, although it remains fairly widespread and has declined less in urban areas than rural areas¹⁶. Without appropriate mitigation the development would cause a likely adverse effect on hedgehogs

¹⁶ (Warwick, H. (2016) Britain's Hedgehogs: research and the conservation effort in the face of serious decline. British wildlife Vol. 28, pp78-86).

at the local level. The effect on notable species such as hedgehogs will therefore be **minor adverse**.

Invasive Non-native Species

- 11.6.20 There is a risk for the planting and subsequent spread of invasive/non-native species during the landscaping of the developed site. Without appropriate mitigation the development would cause a likely adverse effect at the site level. The effect of invasive or non-native species from the Proposed Development is **minor adverse to negligible**.

Embedded Mitigation Measures

Priority Habitats

- 11.6.21 The southern hedgerow boundary will be retained and protected in accordance with BS5837:2012 and the establishment of a 2 m wide buffer strip to protect roots of the feature.
- 11.6.22 A 15 m buffer will be established around the small area of priority woodland habitat present at the northern corner of the Site in accordance with current national planning policy.

Bats

- 11.6.23 All trees with potential for roosting bats will be retained within the Proposed Development. Consequently, no specific mitigation measures or further surveys are currently required. Should the assessment of the Site's roost resource or foraging/commuting habitat value change a bat mitigation strategy will be required.

Breeding Birds

- 11.6.24 Any vegetation removal shall only be undertaken outside of the breeding bird season (avoiding March-August inclusive).
- 11.6.25 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 50 m 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. 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.

Invertebrates

- 11.6.26 The creation of new residential gardens and areas of public open space will potentially create new habitat for a variety of invertebrates through the soft landscaping scheme and domestic gardens.

Other Notable Species

- 11.6.27 All excavations should 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.

Invasive Non-native Species

- 11.6.28 Only native species (preferably of local origin) will be incorporated into the landscape planting of the developed site.

Anticipated Effects

Designated Sites

- 11.6.29 Given that no foreseeable direct impacts on Reading Golf Course (east) or other designated sites have been identified during the construction phase of the Proposed Development residual impacts on such sites are considered to be **negligible**.

Priority Habitats

- 11.6.30 With the adoption of impact avoidance and suitable mitigation measures it is considered that residual impacts of construction on priority habitats are **negligible**.

Badgers

- 11.6.31 With the adoption of the above avoidance/mitigation measures and additional mitigation measures outlined below, the potential for residual impacts of construction on badgers within the Site is considered to be **negligible**.

Bats

- 11.6.32 With the adoption of the below additional mitigation measures residual impacts of construction on roosting and foraging bats are considered to be **negligible**.

Breeding Birds

- 11.6.33 Even with the adoption of suitable mitigation and impact avoidance measures, 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.
- 11.6.34 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. Therefore the effect of displacing breeding birds is considered to be **negligible**.

Invertebrates

- 11.6.35 The adverse effects resulting from the temporary loss of low-value amenity grassland and semi-improved grassland habitat within the Site is considered to be outweighed by the likely positive effects resulting from new habitat creation within the developed site. Without mitigation, the Proposed Development will likely result in an overall likely positive effect on invertebrate assemblages and populations at the site level. This translates to a **minor beneficial to negligible** effect on invertebrate habitats.

Other Notable Species

- 11.6.36 With the adoption of the above avoidance/mitigation measures, impacts on hedgehogs resulting from construction are considered to be **negligible**.

Invasive Species

- 11.6.37 With the adoption of the above avoidance measures, residual impacts resulting from invasive non-native species are considered to be **negligible**.

Operational Phase

Designated Sites

- 11.6.38 The increased levels of human activity associated with the Proposed Development have the potential to indirectly impact on the LWS.
- 11.6.39 Increased human recreational activity could lead to a degradation of Lowland Mixed Deciduous Woodland and Lowland Calcareous Grassland habitats for which the Site is designated, through damage to vegetation, compaction and erosion of soils, localised nutrient enrichment (deposition of dog waste), disturbance to wildlife and litter accumulation/fly tipping.
- 11.6.40 To a lesser extent, the above potential impact also applies to the Chilterns Dipslope and Plateau CTA, however the CTA is designated primarily as an area identified for potential landscape-wide targeted biodiversity enhancement as opposed to existing ecological features and is therefore less susceptible to damage.
- 11.6.41 There are no foreseeable impacts on other statutory/non-statutory sites of nature conservation importance (SNCIs).
- 11.6.42 In the absence of mitigation, the potential impacts of the operating Proposed Development represent possible adverse effects on designated sites, considered to be significant at the county level. Therefore the impact of human activity on designated sites is considered **moderate adverse**.

Priority Habitats

- 11.6.43 During the operational phase of the Proposed Development the hedgerow will form the curtilage boundaries for residential gardens and gardens surrounding the medical centre and will form part of the screening for the Site. There are no foreseeable direct impacts on the priority hedgerows during the operation of the Site, although there is an increased risk of litter accumulation/fly tipping.
- 11.6.44 The increased levels of human activity within the Site will result in increased usage of the footpath bisecting the woodland at the northern corner of the Site. The increased human activity has the potential to result in the degradation of the priority woodland habitat for the same reasons as stated in paragraph 11.6.39 .
- 11.6.45 Based on the above, in the absence of mitigation, the Proposed Development represents possible adverse effects on priority woodland habitat, considered to be significant at the local level. This would constitute a **minor adverse** effect.

Bats

- 11.6.46 In the absence of mitigation, artificial light-spillage onto trees identified as having bat roost potential could deter roosting bats. Light spillage onto linear features (hedgerows and tree belts) also has the potential to impact upon bat activity within the Site.
- 11.6.47 Light spillage onto trees identified as having bat roost potential present a possible adverse impact significant at the site/local level (dependant on the species affected and the nature of any roosts impacted upon, if any). The impact of light spillage on bat roosts is therefore **minor adverse**.
- 11.6.48 Increased artificial lighting is considered to affect foraging/commuting bats and will predominantly affect common and widespread species. The survey effort has confirmed moderate/low – low activity of rarer bat species (Nathusius' pipistrelle and barbastelle) within the Site. As such, this impact represents a likely adverse effect significant at the local level. Therefore, the impact of artificial lighting on foraging/commuting bats is considered to be **minor adverse**.

Breeding Birds

- 11.6.49 Increased human activity during the operational phase of the Proposed Development has the potential to permanently deter a pair of red kites from returning to the existing nest site.
- 11.6.50 The bird assemblage supported by the 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 Development and are likely to return to some degree (e.g. robin, dunnoek, song thrush) once construction is completed and the soft landscaping matures.
- 11.6.51 Suitable alternative nesting habitat for red kites exists within woodland contained within the wider landholding of the golf course and around the Site. The species is common and widespread within Oxfordshire and Berkshire. Increased human activity presents a likely adverse effect on breeding birds considered to be significant at the site level only. Translating to a **negligible** effect.

Other Notable Species

- 11.6.52 Small-scale loss of semi-improved 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 greenspace 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.
- 11.6.53 The hedgehog has suffered dramatic declines in population in recent decades, although it remains fairly widespread and has declined less in urban areas than rural areas¹⁷ Without appropriate mitigation the development would cause a likely adverse effect on hedgehogs at the local level. Constituting a **minor adverse** effect on notable species such as the hedgehog.

¹⁷ (Warwick, H. (2016) Britain's Hedgehogs: research and the conservation effort in the face of serious decline. British wildlife Vol. 28, pp78-86).

Invasive Species

- 11.6.54 Cotoneaster will remain within adjacent garden hedges (not within the site ownership) at the edge of the Site.
- 11.6.55 Planting schemes have yet to be prepared, however should these include invasive/non-native species (such as those listed on Schedule 9 of the Wildlife & Countryside Act, 1981) there is potential for establishment within the Site and spread beyond the Site.
- 11.6.56 In the absence of precautionary measures, the Proposed Development presents opportunity for a possible adverse effect on ecology at the local level, through the spread of invasive non-native species. Therefore, the effect on invasive species from the Proposed Development is considered **minor adverse**.

Embedded Mitigation Measures

Priority Habitats

- 11.6.57 To prevent impacts from increased recreational pressure, measures shall be put in place to maintain the existing access routes and deter further public access into the woodland. These measures will include improvement of the existing path bisecting the woodland, together with strategic use of dead-hedging and fencing to restrict access to more sensitive areas. The soft landscape scheme shall include planting of dense thorny shrubs such as hawthorn and blackthorn around the woodland edges to discourage uncontrolled access.

Breeding Birds

- 11.6.58 The Proposed Development will introduce potentially enhanced opportunities for nesting birds in the form of buildings, garden and landscape planting.

Other Notable Species

- 11.6.59 All new garden fencing should contain accessible gaps (10 cm x 15 cm) at their base to allow movement of hedgehogs between garden plots. An ecological permeability plan (showing hedgehog movement routes) should be included in the Landscape Ecological Management Plan (LEMP), which should be secured by condition.

Invasive Species

- 11.6.60 Impacts resulting from non-native species will be avoided through the adoption of native planting schemes.

Anticipated Effects

Priority Habitats

- 11.6.61 With the adoption of impact avoidance and suitable mitigation measures it is considered that residual impacts on priority habitats are **negligible**.

Breeding Birds

- 11.6.62 There remains a risk that the 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.

- 11.6.63 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 residual impact on the displacement of breeding birds is considered to be negligible.
- 11.6.64 The addition of buildings, garden and landscape planting will potentially provide enhanced opportunities for nesting birds will result in a likely positive effect significant at the Site level. This would create an overall **negligible to minor beneficial** effect on breeding birds.

Other Notable Species

- 11.6.65 With the adoption of the additional mitigation measures below, in conjunction with creation of new garden habitats, the Proposed Development presents a likely positive impact on hedgehogs at the site level. Constituting a **minor beneficial to negligible** effect.

11.7 Scope for Additional Mitigation Measures

Potential Additional Mitigation Measures

Construction

Badgers

- 11.7.1 All excavations will 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.
- 11.7.2 Updated badger surveys will be conducted every 6 months in order to confirm the continued absence of active setts or to inform badger mitigation strategy. 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 30 m), 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.

Operation

Overall Biodiversity

- 11.7.3 In accordance with the National Planning Policy Framework, 2019, the Proposed Development will seek to achieve a 10% net gain in biodiversity. This will be achieved through on-site enhancement or biodiversity offsetting elsewhere in the local area. A detailed LEMP, incorporating a Biodiversity Impact Calculation (using the DEFRA Metric 2.0) will be produced to demonstrate how high-value habitat will be created and managed to achieve a 10% net gain in biodiversity.

Designated Sites

- 11.7.4 There should be a review of the current management regime of the Site, and introduction of management to maximise biodiversity value of the Site to safeguard existing

designated features (e.g. scrub clearance, grazing/cutting of calcareous grassland). 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 altered to achieve the desired outcomes.

- 11.7.5 A Habitat and Visitor Management Plan for Reading Golf Course (east) LWS site will be prepared in order to manage recreational pressure on the designated site. This plan should be secured by planning condition. 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.

Priority Habitats

- 11.7.6 Given that all areas of priority habitat will be retained within the Site, and adoption of mitigation measures to reduce degradation of woodland, no specific compensation measures are required.

Badgers

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

Bats

- 11.7.8 Incorporation of new bat roosting features within new buildings would present a possible positive impact on roosting bats at the site level.
- 11.7.9 The Proposed Development will incorporate a 'sensitive lighting plan' developed as part of the detailed design, in accordance with guidelines set out by the Bat Conservation Trust. This should include measures to create 'dark corridors' through the Site along the retained hedgerows and tree belts, and measures to minimize light spill onto all semi-natural habitats. All street lighting should be directed downwards and use light sources that are not attractive to insects. Reflective white line marking should be used in preference to artificial lighting in all non-essential applications.

Breeding Birds

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

Other Notable Species

- 11.7.11 Given that no residual impacts have been identified, no specific compensation is considered necessary with regard to hedgehogs.

Invasive Species

- 11.7.12 Seed mixes and tree/shrub planting schemes should be detailed within a site-wide LEMP.

Likely Effectiveness of Additional Mitigation Measures

Overall Biodiversity

- 11.7.13 A 10% biodiversity net gain is considered to be **moderate beneficial**.

Designated Sites

- 11.7.14 With the adoption of a suitable management/enhancement scheme it is considered that the Proposed Development could result in a positive impact at the local level. After mitigation, the impact of the Proposed Development on designated sites is considered to be **minor beneficial**.

Bats

- 11.7.15 With the adoption of the avoidance and additional mitigation measures outlined below, residual impacts on roosting and foraging bats are considered to present a likely positive impact on at the site level. The potential for residual impacts on bats is therefore considered to be **negligible to minor beneficial**.

Invasive Species

- 11.7.16 With the adoption of additional and embedded mitigation measures outlined below, residual impacts resulting from invasive non-native species are considered to be **negligible**.

11.8 Residual Effects

- 11.8.1 No significant residual effects are anticipated as a result of the construction or operation of the Proposed Development.

11.9 Cumulative Effects

- 11.9.1 This ES has given consideration to 'Cumulative Effects' for committed developments located within a 1 km radius from the boundary of the Site. Committed developments slightly beyond the 1 km radius have also been considered due to the size of these schemes. The committed developments that have the potential to lead to cumulative effects have been presented in **Volume 2, Chapter 3: EIA Methodology, Table 3.7**.

Designated Sites

- 11.9.2 With the adoption of a suitable management/enhancement scheme (secured through the development) the cumulative effects of the development and surrounding development on the LWS are considered to be **negligible**.

Priority Habitats

- 11.9.3 With the adoption of impact avoidance and suitable mitigation measures it is considered that the cumulative effects of the development and surrounding development on priority habitats are **negligible**.

Badgers

- 11.9.4 With the adoption of the above avoidance/mitigation measures, the potential for cumulative effect on badgers is considered to be **negligible**.

Bats

- 11.9.5 With the adoption of the above avoidance and mitigation measures cumulative effects on roosting and foraging bats are considered to be **negligible**.

Breeding Birds

- 11.9.6 The potential cumulative effect that may result from previous 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. Cumulative effects are therefore considered to be **negligible**.

Other Notable Species

- 11.9.7 With the adoption of the above avoidance/mitigation measures, in conjunction with creation of new garden habitats, the cumulative effects of the Proposed Development and surrounding development on hedgehogs are considered to be **negligible**.

Invasive Species

- 11.9.8 With the adoption of the above avoidance measures, the cumulative effects resulting from invasive non-native species are considered to be **negligible**.

11.10 Summary, Residual Effects and Conclusions

- 11.10.1 Fairfax (Reading) Limited instructed the Ecology Co-op to undertake an Ecological Impact Assessment of a Proposed Development at Reading Golf Club, Reading. Following a Preliminary Ecological Appraisal, including Phase 1 Habitat mapping, of the Site by The Ecology Co-op on 21st & 22nd January 2018, further ecological surveys were undertaken, including protected species surveys and desk-top studies between April and September 2019 in order to provide sufficient baseline information for this assessment. This chapter presents the findings of these surveys and a full Ecological Impact Assessment in accordance with CIEEM Guidelines to inform a planning application for the Proposed Development.
- 11.10.2 The Site consists of the southern half of an active golf course. The Site covers approximately 12.15 ha (the entire course covers 43.5ha) and is located at the very northern end of Berkshire; adjacent to the county boundary with South Oxfordshire. Habitats contained within the Site include short-sward grassland (greens and fairways), taller grassland (roughs lining the fairways), mature tree belts, native hedgerow and small amounts of semi-natural broadleaved woodland habitat. The clubhouse and a neighbouring dwelling, located at the south eastern corner of the Site, are included within the current assessment.
- 11.10.3 The protected species surveys identified:
- buildings with 'negligible' bat roost potential;
 - trees with 'low-high' bat roost potential;
 - common species of foraging bat (low –high activity);
 - a rarer species of foraging bat (barbastelle) (low activity);
 - likely absence of reptiles, common dormice and great crested newts;
 - likely absence of active badger setts;
 - an active red kite nest;
 - possible breeding by 4 red-list bird species;
 - suitable habitat for notable invertebrates (moths and stag beetles); and

- confirmed presence of hedgehogs.

11.10.4 Predicted impacts from the Proposed Development are provided in Section 11.6 of this report. Most impacts upon protected and notable species and habitats are considered important at a site or local level only, however the potential for impacts to the Reading Golf Course (east) Local Wildlife Site are considered significant at a county level.

11.10.5 **Table 11.5** summarises the topic effects resulting from the Proposed Development. With the proposed embedded and additional mitigation, there are no likely significant effects on ecology as a result of the Proposed Development.

Table 11.5: Summary of Residual Effects.

Receptor	Value / Sensitivity of Receptor	Activity or Impact – Effect on Receptor	Significance of effect before embedded design mitigation	Embedded Design Mitigation	Magnitude/Spatial Extent/Duration/ Likelihood of occurrence	Significance of effect	Additional Mitigation	Residual Magnitude of Impact	Significance of Residual effect
Construction									
Reading Golf Course (east) LWS	County	Disruption and pollution from construction	Negligible	None	Negligible	Negligible	None	None	Negligible
Priority Habitats contained by the site	District	Degradation through increased recreational pressure	Minor Adverse	Hedgerow retention	Negligible	Negligible	None	None	Negligible
Badgers	Site	Injury, trapping or killing in construction works, such as trenches, removal of foraging habitat (grassland)	Minor adverse to negligible	None	Minor / Site / Permanent /	Minor adverse to negligible	Covering trenches, updated badger surveys every 6 months, badger mitigation strategy if a sett appears within 30m of construction site	None	Negligible
Bats (roosting, and foraging / commuting)	Local	Loss of roosts and foraging habitat	Negligible	Retention of all trees.	Negligible	Negligible	None	None	Negligible

Receptor	Value / Sensitivity of Receptor	Activity or Impact – Effect on Receptor	Significance of effect before embedded design mitigation	Embedded Design Mitigation	Magnitude/Spatial Extent/Duration/ Likelihood of occurrence	Significance of effect	Additional Mitigation	Residual Magnitude of Impact	Significance of Residual effect
Breeding birds	Local	Disturbance of red kites from nests, removal of vegetation causing injury or death of birds and their young/eggs	Minor Adverse	Sensitive vegetation removal, monitoring of red kite nest.	Negligible	Negligible	None	None	Negligible
Invertebrates	Local	Temporary removal of amenity grassland habitat	Negligible	Creation of new grassland habitat on site as part of development	Minor / Local / Permanent	Minor Beneficial – Negligible	None	Minor	Minor Beneficial – Negligible
Other notable species: west European hedgehog	Local	Injury, trapping or killing in construction works, such as trenches,	Minor Adverse	Covering holes and trenches over night	Negligible	Negligible	None	None	Negligible
Invasive and Non-Native Species	Local /Site	Impact of planting and subsequent spread of invasive/non-native species during the landscaping of the developed site	Minor Adverse to negligible	Only native species (preferably of local origin) will be incorporated into the landscape planting of the developed site.	Negligible	Negligible	None	None	Negligible
Operation									

Receptor	Value / Sensitivity of Receptor	Activity or Impact – Effect on Receptor	Significance of effect before embedded design mitigation	Embedded Design Mitigation	Magnitude/Spatial Extent/Duration/ Likelihood of occurrence	Significance of effect	Additional Mitigation	Residual Magnitude of Impact	Significance of Residual effect
Overall Biodiversity	N/A	N/A	N/A	N/A	N/A	N/A	Adoption of LEMP to achieve 10% biodiversity net gain	None	Moderate Beneficial
Reading Golf Course (east) LWS	County	Degradation through increased recreational pressure	Moderate Adverse	None	Moderate / County / Permanent /	Moderate Adverse	Habitat and Visitor Management Plan	None	Minor Beneficial
Priority Habitats contained by the site	District	Degradation through increased recreational pressure	Minor Adverse	Improvement of footpath and thorny hedging to restrict resident access secured through development	Negligible	Negligible	None	None	Negligible
Bats	Local	Disturbance from lighting	Minor Adverse	None	Minor / Local/ Permanent	Negligible – Minor Adverse	Sensitive lighting scheme for development, Incorporation of roosting features within new buildings	Minor	Negligible – Minor Beneficial
Breeding birds	Local	Disturbance of red kites from nests, Disturbance of other common nesting birds	Negligible – Minor Adverse	Enhanced opportunities for nesting birds	Minor / Local / Permanent	Negligible – Minor Beneficial	None	Minor	Negligible – Minor Beneficial

Receptor	Value / Sensitivity of Receptor	Activity or Impact – Effect on Receptor	Significance of effect before embedded design mitigation	Embedded Design Mitigation	Magnitude/Spatial Extent/Duration/ Likelihood of occurrence	Significance of effect	Additional Mitigation	Residual Magnitude of Impact	Significance of Residual effect
Other notable species: west European hedgehog	Local	Barrier to movement from new fences around garden spaces	Minor Adverse	None	Minor / Local / Permanent	Minor Adverse	An ecological permeability plan (showing hedgehog movement routes) should be included in the Landscape Ecological Management Plan (LEMP).	Minor	Negligible – Minor Beneficial
Invasive and Non-Native Species	Local/Site	Impact of planting and subsequent spread of invasive/non-native species during the landscaping of the developed site	Minor Adverse	Impacts resulting from non-native species will be avoided through the adoption of native planting schemes.	Negligible	Negligible	Seed mixes and tree/shrub planting schemes should be detailed within a site-wide LEMP.	None	Negligible
Cumulative Effects – Construction									
No cumulative effects anticipated.									
Cumulative Effects – Operation									
No cumulative effects anticipated.									