

Preliminary Ecological Appraisal



Land to the rear of 88 Knights Way

On behalf of Reading Borough council

March 2023

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Contents

1	Executive Summary	4
2	Introduction.....	5
2.1	Background	5
2.2	Site Description.....	5
2.3	Proposed Works	5
2.4	Aims of Report	5
2.5	Personnel	5
3	Methods	6
3.1	Desk Study	6
3.2	Preliminary Ecological Appraisal.....	6
3.3	Preliminary Roost Assessment	7
3.4	GLTA.....	7
3.5	Limitations/Constraints	7
4	Results and Interpretation.....	9
4.1	Designated Sites	9
4.2	Habitats.....	10
4.3	Protected Species	12
5	Potential Impacts and Recommendations	16
5.1	Designated Sites	16
5.2	Habitats.....	16
5.3	Nesting birds	17
5.4	Bats	18
5.5	Reptiles	19
5.6	Wild mammals	20
5.7	Invertebrates	22
6	Relevant Legislation and Policy	23
7	References	28
Appendix 1 -	Photographs	29
Appendix 2 -	Figures.....	31
Appendix 3 -	Definitions of the Context of Habitat Importance	32
Appendix 4 -	Definitions of the Context of Species Importance	33
Appendix 5 -	Specifications of Recommendations.....	34

1 Executive Summary

Report purpose	This report identifies the potential ecological impacts, mitigation, compensation and enhancement measures for re-development of land to the rear of 88 Knights Way, Reading, RG4 8RH.
Date and methods of survey	A baseline ecological survey of the site was conducted in March 2023 which included an extended habitat survey and daytime building and tree assessments for roosting bats.
Key findings	The site, situated in Emmer Green is 0.06 ha in extent and includes one building, hardstanding, other neutral grassland and eight scattered trees. The site is surrounded by residential gardens on all sides. There is suitable sheltering and foraging habitat for common reptiles and common invertebrates, and priority species including common toad and hedgehog, within the grassland. There is suitable commuting and foraging habitat for bats around the trees. One tree is of low suitability for roosting bats. The trees and building offer suitable nesting habitat for a common assemblage of birds. There are negligible opportunities for other protected or priority species.
Potential impacts	The habitats are of negligible intrinsic ecological interest, being low grade and widespread, nevertheless, they contribute to the biodiversity value of the site therefore the proposals may result in a minor loss in biodiversity. The development will result in the loss of semi-mature and mature trees and grassland habitat. Without mitigation, site clearance could result in the killing and injury of common reptiles, injury of bats and/or destruction of their roosts and destruction of birds' nests. Increased artificial lighting could impact bat foraging habitat and commuting routes. Loss of these habitats could result in the loss of foraging and sheltering opportunities for common reptiles, common invertebrates and priority species common toad and hedgehog.
Further survey	A Biodiversity Impact Assessment will be required to assess the biodiversity value on site post development.
Measures to avoid and/or reduce impacts and deliver biodiversity enhancements	The grassland will be sensitively cleared during the reptile active season (April-September) under ecological supervision. A sensitive lighting scheme will be designed. Vegetation clearance will be undertaken outside the nesting bird season (which is March - August) or following a check for nests by an ecologist and safeguarding any active nests. Holes will be created at the base of any walls/fences to prevent habitat fragmentation for hedgehog. To enhance the site for biodiversity, it is recommended that brash piles and/or buried log piles are created out of the felled trees and located around the site boundaries. The planting scheme will include native trees or those which are of known benefit to wildlife. Bird, bat and insect boxes will be included in the proposals.

2 Introduction

2.1 Background

- 2.1 Ecology by Design were commissioned by Reading Borough Council to undertake a preliminary ecological appraisal of approximately 0.06ha of the land to the rear of 88 Knights Way, Reading, RG4 8RH (Grid Reference: SU 71716 76396), which included a habitat survey, a ground level tree assessment and a preliminary roost assessment of the existing building for bats.

2.2 Site Description

- 2.2.1 The 0.06ha site is situated in the southern part of Emmer Green suburb. The site is located in an urban landscape with residential dwellings surrounding the site on all sides. In the wider landscape there are urban green spaces including parks and play areas.
- 2.2.2 The site is dominated by hardstanding, with small amounts of other neutral grassland, eight scattered trees and a building.

2.3 Proposed Works

- 2.3.1 The proposals are not yet fixed at the time of writing, and the current plan includes the demolition of the existing building and removal of the scattered trees and grassland. A bungalow with associated garden and landscaping will be developed.

2.4 Aims of Report

- 2.4.1 This report presents a preliminary appraisal of the potential ecological impacts of the proposed development works. The report outlines recommendations for avoidance, mitigation, compensation and enhancement measures. This report is not suitable for submission to inform a planning application at the site until the proposals are fixed and a Biodiversity Impact Assessment is conducted to inform the assessment of potential impacts and refine the recommendations.

2.5 Personnel

- 2.5.1 A PEA was undertaken by Ecologist Anna Kogioni BSc (Hons), MSc. Anna regularly undertakes surveys of this scale.
- 2.5.2 Project supervision and review of the report was provided by Associate Ecologist Laura Grant BSc (Hons), MCIEEM who has 15 years of experience in ecological consultancy.

3 Methods

3.1 Desk Study

3.1.1 A desk study was carried out to identify:

- internationally protected sites within 7km of the site;
- nationally protected sites within 5km of the site;
- and non-statutory designated sites and records of protected/notable species within 2km of the site.

3.1.2 A 2km search radius for species and non-statutory designated sites is justified due to the category of the development. It is thought highly unlikely that species or non-statutory sites outside of the search zone would be negatively impacted by the category of development proposed at the site. A larger search radius is applied for internationally and nationally designated sites as these sites are protected to a higher level and can often be more sensitive to impacts. These search distances are also based on industry standard guidance and exceed the minimum distances recommended for international designated sites.

3.1.3 Sources consulted include:

- Thames Valley Environmental Records Centre (TVERC) (returned 14/03/2023);
- MAGIC (www.magic.gov.uk) (accessed 16/03/2023); and
- Local Planning Policy documents and the local planning portal.

3.2 Preliminary Ecological Appraisal

3.2.1 A Preliminary Ecological Appraisal (PEA) was conducted on 15 March 2023 by Ecology by Design Ecologist Anna Kogioni using standard techniques and methodologies (CIEEM, 2017) and the nomenclature of Stace (2019).

3.2.2 The PEA includes a survey of the habitats utilising the UK Habitat Classification System (Butcher *et al*, 2020). Weather conditions during the survey were cool (10°C), calm (wind 3 on the Beaufort scale¹) and cloudy (cloud 7/8²). Photographs of the site are given in Appendix 1 and a UKHab habitat map is included in Appendix 3.

¹ The Beaufort scale is an empirical measure from 0-12 which relates wind speed to observed conditions. 0- Calm, 1- Light air, 2- Light breeze, 3- Gentle breeze, 4- Moderate breeze, 5- Fresh breeze etc.

² Cloud cover is measured using the system called oktas. The visible sky is divided into eight and cloud presence is determined within each section. A value of one to eight is then assigned (1 okta being cloudless to 8 oktas being total cloud cover).

3.3 Preliminary Roost Assessment

- 3.3.1 Opportunities for or evidence of protected and priority species were also identified. Where potential impacts on features of ecological interest are identified, the PEA is extended to include an assessment of impact. Any further surveys required are outlined and recommendations are made for appropriate avoidance, mitigation, compensation and enhancement measures.

3.4 GLTA

- 3.4.1 A Ground Level Tree Assessment (GLTA) was conducted by Anna Kogioni on all trees on-site.
- 3.4.2 The surveyor identified features of interest from ground-level. Where possible, each aspect of the tree was inspected to identify features with potential to support roosting bats such as woodpecker holes, rot holes, splits, cracks, flaking bark and/or ivy cover. Where any evidence of use by bats such as droppings, staining or scratches around such features were present this was noted.
- 3.4.3 Each tree or cluster of trees was identified as having high, medium, low or negligible suitability for roosting bats. Collins (2016) categorises the suitability of trees for roosting bats as follows:
- Negligible = Negligible habitat features likely to be used by roosting bats;
 - Low = A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting suitability;
 - Medium = A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status; and
 - High = A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat

3.5 Limitations/Constraints

- 3.5.1 The wildlife and wider ecological interest of a site can change. The report presented here is a statement of the findings of surveys carried out in March 2023. For the purpose of this report the results of site visits are discussed in the present tense. Any appreciable delay in making reference to this report or changes to the proposed development boundary may necessitate a re-survey.
- 3.5.2 The species information gained from local record centres is largely derived from data submitted from members of the public and volunteers. For this reason, it should be understood

that the desk study may not provide an exhaustive list of all protected species that could occur in the local area.

3.5.3 Weather conditions were suitable to conduct the surveys.

4 Results and Interpretation

4.1 Designated Sites

4.1.1 The desk study identified six nationally designated sites for nature conservation within 5km and eight non-statutory sites within 2km of the site. No internationally designated sites for nature conservation are present within 7km of the site.

Table 4.1: Records of Statutory and non-statutory designated sites (5km for National designations and 2km for local designations)

Site Name	Description	Distance (km)	Direction
Rotherfield Way Copse BLWS	1ha site comprising a small broad-leaved woodland in a sheltered dry valley surrounded by residential housing. Eight ancient woodland indicator species present within the ground flora, such as bluebell (<i>Hyacinthoides non-scripta</i>).	0.2	S
Highdown Wood BLWS	2.5ha site comprising a mature beech (<i>Fagus sylvatica</i>) plantation woodland.	0.5	SW
Furzeplat BLWS	1ha site comprising a small area of mixed semi-natural woodland with a closed canopy of mature trees and a dense shrub layer.	0.6	NW
Clayfield Copse LNR, BLWS	9ha site comprising semi-natural ancient woodland with ancient woodland indicator species such as bluebell and wood anemone (<i>Anemone nemorosa</i>).	0.8	NE
Hemdean Bottom BLWS	31ha site comprising a chalk valley with mainly grassland and small areas of woodland and scrub. Mainly comprising neutral grassland species due to historic agricultural improvement, but some chalk indicators present such as wild marjoram (<i>Origanum vulgare</i>).	0.8	W
Reading Golf Course (East) OLWS	3.5ha strip of woodland and grassland on a south-facing chalk bank within Reading golf course with a species-rich calcareous grassland sward.	1.0	N
Blackhouse Wood OLWS	6ha site of oak (<i>Quercus robur</i>) and ash (<i>Fraxinus excelsior</i>) dominated woodland with several ancient woodland indicator species present in the ground flora.	1.2	NE

The Warren Woodland Complex BLWS	A complex of six sites with a total area of 8ha, all of which are semi-natural broadleaved woodlands upon chalk soils, which supports a rich ground flora.	1.5	SW
Reading Gold Course (West) OLWS	1ha steep bank to the west of Reading Golf Course supporting a species-rich calcareous grassland.	1.5	NW
Ali's Pond LNR	0.4ha site comprising a pond rich with aquatic species including 40 species of aquatic/wetland plant and 18 species of dragonfly/damselfly.	4.1	SE
Round Copse LNR	2ha site comprising a dense woodland with a variety of woodland bird species such as nuthatch (<i>Sitta europaea</i>) and treecreeper (<i>Certhia familiaris</i>).	4.3	SW
McIlroy Park LNR	12ha parkland with grassland and heath, along with areas of semi-natural woodland around the periphery.	4.3	SW
Lousehill Copse LNR	13ha semi-natural ancient woodland upon an old sand/gravel pit including streams and boggy areas.	4.6	SW
Highwood LNR	15ha arboretum with a mix of native and exotic trees, forming mixed lowland woodland in areas. Various rare bird sightings including waxwing (<i>Bombycilla garrulus</i>).	4.7	SE

LNR = Local Nature Reserve (National)

BLWS = Berkshire Local Wildlife Site (Local)

OLWS = Oxfordshire Local Wildlife Site (Local)

4.2 Habitats

4.2.1 At the time of the survey (March 2023) the following habitats were recorded on site. They are described in Table 4.2 below, Photographs are included in Appendix 1 and a habitat map is included in Appendix 2.

Table 4.2: Habitat types identified during the habitat survey

Habitat type	Description
Other neutral grassland	Other neutral grassland surrounds the building and is comprised of false oat grass (<i>Arrhenatherum elatius</i>), cow parsley (<i>Anthriscus sylvestris</i>), Yorkshire fog (<i>Holcus lanatus</i>), cleavers (<i>Galium aparine</i>), herb-robert (<i>Geranium robertianum</i>), dock (<i>Rumex spp.</i>), nettles (<i>Urtica spp.</i>), sweet

	violet (<i>Viola odorata</i>), and lords & ladies (<i>Arum maculatum</i>). Sprawling bramble (<i>Rubus fruticosus</i>) and ivy (<i>Hedera helix</i>) were also present as well as two privet (<i>Ligustrum spp.</i>) and sycamore (<i>Acer pseudoplatanus</i>) seedlings. No more than six species were present in each m ² and localised areas of bare ground were present especially under the scattered trees. The grassland is not currently managed and tussocky areas are present where the light reaches the ground in between the tree canopies.
Building	There is a single building on site. Please refer to section 4.3.1 for the assessment of its suitability for roosting bats.
Hardstanding	There are three areas of hardstanding within the site including the driveway leading to the building, a small area of hardstanding west of the building and another small area covered by gravel at the northeast part of the site used for storing electricity machinery.
Scattered trees	There are eight scattered trees within the site boundary comprising sycamore (<i>Acer pseudoplatanus</i>) and ash (<i>Fraxinus excelsior</i>). Tree T1 is a small sized coppiced sycamore with some peeled bark present. Tree T2 is a mature medium sized sycamore and tree T3 is a mature coppiced sycamore with the eastern stem fully covered by ivy. Trees T4 and T6 are sycamore, small sized young and semi-mature respectively with small areas of peeled bark present. Trees T7 and T8 are medium sized mature sycamore and T5 is a mature medium sized ash. All trees except T5 did not contain any obvious roosting features for bats. T5 contains one possible suitable feature for roosting bats. Please refer to section 4.3.2 for the full GLTA assessment.

Adjacent habitats

- 4.2.2 There are 89 parcels of ancient and semi-natural woodland within 5km of the site and 80 parcels of priority woodland within 2km of the site. Of these, none are present on site, and the closest parcel of ancient woodland habitat is situated 700m to the north-east and the closest parcel of priority woodland is located 150m southwest, neither of which are connected to the site. There is a Leyland cypress (*Cupressus × leylandii*) treeline on the eastern boundary of the site, technically out of the site boundary.

Habitat summary

- 4.2.3 The majority of habitats within the site are common, widespread and limited in extent, they are therefore assessed as being of negligible value in accordance with the criteria in Appendix 4. The scattered mature and semi-mature trees are of inherently elevated ecological importance within a local context.

4.3 Protected Species

4.3.1 In Table 4.3, the findings of the desk study and PEA are presented together. Relevant legislation and policy are referred to as appropriate and further details are provided in Section 7. The presence or potential for each species/group to occur within the site is considered.

4.3.2 There is only a small watercourse (<100m in length) within 500m of the site boundary, which is unlikely to support species such as white-clawed crayfish (*Austropotamobius pallipes*), otter (*Lutra lutra*) and water vole (*Arvicola amphibius*). This watercourse is separated from the site by roads and houses. Therefore, these species are considered unlikely to be affected by the proposals. As such, they are not discussed further within this report.

Table 4.3: Presence of or potential for protected/notable/invasive species within the site and local area

Species	Protection or Status *	Presence/potential at the site
Bats	EPS. Some species are also SPIs. W&CA 1981 Sch5	781 records of at least 11 bat species have been recorded within 2km of the site, the most notable of which include Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>), serotine (<i>Eptesicus serotinus</i>), Leisler's (<i>Nyctalus leisleri</i>) and western barbastelle (<i>Barbastella barbastellus</i>) amongst commoner/more widespread species. 25 records of at least six species of widespread/common species of bat overlap the site boundary, however this record is at low resolution (1km grid-square) therefore may have not been from within the site redline boundary. A common pipistrelle (<i>Pipistrellus pipistrellus</i>) day roost was recorded 90m north east of the site in 2018 at a high resolution (1m grid-square). Individuals are likely to forage over the site and to commute along tree canopies. There is also potential for them to roost in tree T5. Potential adverse impacts likely, further consideration and surveys required.
Dormouse (<i>Muscardinus avellanarius</i>)	EPS. SPI. W&CA 1981 Sch5	No records of the species were returned by the desk study. The site does not contain any suitable habitat for dormice to nest or forage, and there is no suitable habitat adjacent to the site either, making the site also unsuitable for dormice to commute through it. No adverse impacts likely.
Great crested newt (<i>Triturus cristatus</i>)	EPS. SPI. W&CA 1981 Sch5	No records of the species were returned by the desk study. No European Protect Species Licences (EPSL) were returned for GCN within 2km of the site. There are no ponds within 250m of the site, and the habitats on site are unsuitable for resting, breeding, commuting, or foraging individuals. The lack of suitable woodland habitat adjacent to the site also makes it unlikely that GCN would commute through the site to reach other habitats. No adverse impacts likely.

Badger (<i>Meles meles</i>)	Protection of Badgers Act 1992.	53 records of badger were returned by the desk study, with a record of a sett overlapping the site boundary, however, at a low resolution of 1km grid-square. Due to the lack of suitable habitat for sett creation on site, it is unlikely that badger will make use of the site for resting. Badgers are highly active mammals and they could commute across the site. Some potential adverse impacts, further consideration required.
Nesting birds	W&CA 1981 Sch1 / Sch5	793 records of 54 bird species were returned by the desk study, comprising a mix of species typical of urban, arable, wetland, woodland and heathland habitat. Two relatively high resolution (100m grid-square) records overlap the site boundary; records of house sparrow (<i>Passer domesticus</i>) and song thrush (<i>Turdus philomelos</i>) from the year 2000. There are opportunities for foraging and nesting birds within the site. Nesting opportunities included the building and trees on site. Some potential adverse impacts, further consideration required.
Reptiles	W&CA 1981 Sch5	22 reptile records comprising grass snake (<i>Natrix helvetica</i>), slow-worm (<i>Anguis fragilis</i>) and adder (<i>Vipera berus</i>) were returned by the desk study, all located 1-2km south of the site within predominantly residential areas. The other neutral grassland is suitable for foraging/commuting reptiles however, the small size and high degree of shading within the site reduced its suitability. Some potential adverse impacts, further consideration required.
Brown Hare (<i>Lepus europaeus</i>)	SPI	No records of the species were returned by the desk study. There are no suitable habitats for brown hare on the site or in the adjacent areas due to the lack of open grassland. This makes it unlikely that brown hare would be present on site for commuting, foraging, or resting. No adverse impacts likely.
Common toad (<i>Bufo bufo</i>)	SPI	13 records of the species were returned by the desk study, with the closest record 0.8km north of the site boundary. The lack of ponds within 250m of the site make the area less suitable for toads. The other neutral grassland is suitable for foraging/commuting toads. Some potential adverse impacts, further consideration required.
Invertebrates	EPS. SPIs.	292 records of 23 protected invertebrate species were returned by the desk study, including the stag beetle (<i>Lucanus cervus</i>), an EPS, of which there are 238 records within 2km of the site boundary. A relatively low resolution (100m grid-square) record of stag beetle dating from 2015, overlaps approximately 0.01ha of the north eastern corner of the site. There are opportunities for few common invertebrates on the site, however there is no deadwood habitat within the site and the dominant buildings and hardstanding within the site provide unsuitable habitat for rarer and protected species. No adverse impacts likely.

Protected plants	W&CA 1981 Sch8. SPIs	37 records of three protected plant species were returned by the desk study, including bluebell (<i>Hyacinthoides non-scripta</i>), grape hyacinth (<i>Muscari neglectum</i>) and shepherd's-needle (<i>Scandix pecten-veneris</i>). The habitats present within the site are considered unsuitable for protected plant species and therefore it is unlikely that they will be present. No adverse impacts likely.
Invasive species	W&CA 1981 Sch9	14 records of six invasive plant species were returned by the desk study. No invasive plant species were identified on site during the PEA. No adverse impacts likely.

* Where: EPS = European Protected Species under the provisions of the Conservation of Habitats and Species Regulations 2017 (as amended)

SPI = Species of Principal Importance under Section 41 of the NERC Act 2006

W&CA 1981 = Wildlife and Countryside Act 1981 (as amended)

Sch1 = Schedule 1 Birds which are Protected by Special Penalties (W&CA 1981)

Sch5 = Schedule 5 Animals which are Protected (W&CA 1981)

Sch8 = Schedule 8 Plants which are Protected (W&CA 1981)

Sch9 = Schedule 9 Animals and Plants to which Section 14 Applies (W&CA 1981)

Preliminary Roost Assessment (PRA)

- 4.3.3 There is a single building (c. 4m in height) in the middle of the site. This has been historically used as a gardening centre and then as storage but has since been abandoned and is currently not used. The building is single skin with concrete cladding walls and corrugated metal pitched roof. There are timber doors on the east and west aspects and timber cladding over the doors. There are also single glazed windows on the north and south aspects most of which are broken and boarded with plywood. There are multiple entry points including broken windows and gaps over the door frames. Due to the presence of the broken doors and windows the interior of the shed is very well lit and a draft is present. The timber cladding is lifted in places, and the gaps formed lead into the building. No evidence of bats including bat droppings/urine stains etc. was present inside the building. Given the lack of suitable features the building is therefore considered to be of negligible suitability for roosting bats.

GLTA

- 4.3.4 The majority of trees within the site are young to semi-mature and the trees are in good condition such that they are of negligible suitability for roosting bats. Tree T5 has a knot hole at 2m from the ground facing east which is of low suitability for roosting bats (see Photograph 7). The knot hole is shallow and there was no evidence of historical use of the feature by roosting bats such as straining or scratch marks.

Conclusion

- 4.3.5 The valuation of species importance below is based on set criteria or professional judgement as appropriate within a fixed range of geographic contexts (CIEEM, 2017) as outlined in Appendix 5.
- 4.3.6 The site is considered to be of negligible ecological importance for protected or priority species. Regardless, some species may have implications to development of the site as a result of legislative protection or planning policy (see Section 7).

5 Potential Impacts and Recommendations

5.1 Designated Sites

Potential Impacts

- 5.1.1 Natural England defines Impact Risk Zones (IRZs) around SSSI's, SACs, SPAs and RAMSAR sites and categories of development for local authorities to determine if they need to consult Natural England in regard to potential impacts upon them. The site is located within the IRZ of Lambridge Wood SSSI, Bear, Oveys and Great Bottom Woods SSSI, Highlands Farm Pit SSSI and Harpsden SSSI. However, this development does not fall into any of the risk categories that would trigger a requirement to consult with Natural England. Given the small scale of the proposals and the distance of the site from the SSSIs, there is not considered to be any impacts to any statutory designated sites as a result of the development.
- 5.1.2 The non-statutory designated sites are largely designated for supporting, woodland and species-rich grassland. None of these habitats are present on site and the site does not provide any connectivity to these sites, being isolated within a residential area. Therefore, it is not considered likely that the development will impact these sites.

5.2 Habitats

Potential Impacts

- 5.2.1 The proposed development is likely to result in the loss of other neutral grassland and scattered trees. In the absence of mitigation, it is considered that the loss of these habitats would result in a loss of biodiversity on-site. Recommendation R2 details recommended on-site enhancement and recommendation R3 addresses the requirement of biodiversity net gain.

Recommendation R1: Safeguarding Trees

- 5.2.2 Any site trees to be retained should be fully safeguarded from harm as part of any detailed proposals through the demarcation and fencing of root protection areas during construction works or as otherwise indicated by a suitably qualified appointed arboriculturist. The trees on site to be removed must be replaced with native trees to compensate for their loss where possible.

Recommendation R2: Planting

- 5.2.3 Proposals have included native planting of local provenance and/or planting of known benefit to local wildlife. Wherever appropriate, biodiversity gain has been maximised.

- 5.2.4 New planting to support biodiversity can comprise a mixture of native and formal landscaping species that simultaneously provide resources to local wildlife and remain appropriate to amenity or residential settings.

Recommendation R3: Biodiversity Impact Assessment

- 5.2.5 A biodiversity impact metric and assessment of the site should be completed to establish the net change in relation to biodiversity. Once the landscaping for the site has been finalised, a recognised biodiversity metric (e.g. Defra 3.1) should be used to evaluate the existing value of the site in relation to biodiversity and the biodiversity value of the proposed landscaping for the site. In accordance with Policy EN12 of the Local Plan, the proposals should seek a net gain in biodiversity.

5.3 Nesting birds

Potential Impacts

- 5.3.1 The trees and building on site provide suitable nesting habitat for birds which would result in a contravention of relevant wildlife legislation if active nests are present and are destroyed or in some cases with schedule 1 birds, disturbed. Recommendation R4 will effectively negate this risk.

Recommendation R4: Safeguarding Nesting Birds

- 5.3.2 Any birds' nests are protected whilst in use. If any active birds' nests are found prior to the works within any vegetation/trees or building to be affected, then these must be left alone until they cease to be in use. Ideally, works to suitable nesting habitat/features should be scheduled to avoid the bird nesting season (March to August inclusive). Should such works take place during March-August inclusive, they must be immediately preceded by a check for any active nests by a suitably qualified ecologist. Any active nests identified during works (regardless of time of year) would need to be protected and left with a suitable buffer (to be defined by the ecologist) until the nest is no longer active.

Recommendation R5: Bird Boxes

- 5.3.3 Two house sparrow (*Passer domesticus*) and three open nest boxes suitable for common species e.g. robin (*Erithacus rubecula*) and wren (*Troglodytes troglodytes*) boxes will be installed on the new buildings or mature trees. Boxes can be affixed to the outside of the building. Example specifications are provided in Appendix 6.
- 5.3.4 A suitably qualified ecologist must direct and/or approve the installation of bird boxes to ensure their suitable placement; this can be achieved by:

- signing off on detailed design plans showing inclusion within architectural drawings; and
- signing off on evidence of installation such as photos; or
- attending site to direct installation during construction.

Residual Impacts

- 5.3.5 Following completion of works, the residual opportunities provided by the site to nesting and foraging birds would largely remain, with an improvement of foraging habitat from the implementation of Recommendation R2. The improvement of foraging habitat and additional nesting features provided by Recommendation R4 would have a positive residual impact on nesting birds with significance within a local context.

5.4 Bats

Potential Impacts

- 5.4.1 There is a single scattered tree within the site that contains a possible roosting feature of low suitability for roosting bats (T5). All other trees and the building were of negligible suitability for roosting bats. The site is of limited value to foraging and commuting bats, with the site adjacent treeline being of low suitability for commuting bats, as this does not provide connectivity to the wider landscape given it is intersected by hardstanding and buildings.
- 5.4.2 Nevertheless, it is recommended any exterior lighting is designed sensitively to prevent any impacts arising (Recommendation R7) and to provide integrated bat boxes to offer enhanced roosting opportunities within the site (Recommendation R6).

Recommendation R6: Bat Box Installation

- 5.4.3 It is recommended that two bat boxes are included as part of the proposed development. Specified boxes should target UK Species of Principal Importance for which records were returned within the surrounding area. Example specifications are provided in Appendix 6.
- 5.4.4 The boxes must be integrated into the building such as Ibstock Enclosed bat box or Habibat Bat Box 001. Boxes must be positioned at a minimum height of 3m with a clear flight path to the entrance. Boxes will ideally be placed on a south-western, south-eastern or southern aspect.
- 5.4.5 A suitably qualified ecologist must direct and/or approve the installation of bat boxes to ensure their suitable placement; this can be achieved by:
- signing off on detailed design plans showing inclusion within architectural drawings; and
 - providing detailed instruction and signing off on evidence of installation such as photos; or
 - attending site to direct installation during works.

Recommendation R7: Sensitive Lighting

- 5.4.6 Increased levels of artificial light can cause disturbance to bats. Though several bat species can take advantage of artificial lighting systems for foraging, feeding off the insects they attract, other species avoid them as foraging within an illuminated area increases the risk of predation by nocturnal birds of prey or even domestic cats. If lighting is intensive and widespread, particularly lighting from lamps, which emit UV light (such as mercury vapour); it can deter some bats from utilising the site and in some instances can act as a barrier across commuting lines. Research has also shown that certain types of artificial lighting have been proven to disturb the emergence patterns of bats when they are placed within the vicinity of entrances to a bat roost.
- 5.4.7 No additional significant lighting should be added in close proximity to the adjacent treeline to the east or the newly created roosting features (bat boxes). If there is scope for significant additional light spill on these features the following principles should be adopted:
- Maintaining dark corridors along the site boundaries; and
 - Not illuminating any newly created roosting features (i.e. bat boxes).
- 5.4.8 Where lighting is required, detailed proposals should include the following measures wherever practicable/appropriate:
- Light levels are less than 3 Lux;
 - LED luminaires with a warm white spectrum ideally <2700Kelvin (to avoid blue/UV elements);
 - Bollard or low-level downward directional luminaires are used and mounted on the horizontal (with no upward tilt); and
 - Security lighting, if required, is motion-activated with short (1 minute) timers.

Recommendation R8: Pre-works inspection

- 5.4.9 In line with NE guidance, low suitability trees require one inspection which has been carried out and no evidence of bats was found. Precautionary measures should be taken during works; therefore, it is recommended that a further inspection of the knot hole is undertaken by a licensed ecologist using an endoscope immediately prior to felling. If any bats or evidence of bats is found, a European Protected Species mitigation licence will be required.

5.5 Reptiles

Potential Impacts

5.5.1 There are few opportunities for sheltering reptiles on site within the other neutral grassland itself which is of low suitability to reptiles.

5.5.2 The site is surrounded by residential buildings on all sides and it is considered highly unlikely reptiles would be impacted by the development, given the lack of connectivity to suitable habitats. It is understood that the grassland will be removed to facilitate development. As a precautionary measure any vegetation clearance must be sensitively conducted (Recommendation R8), to avoid killing or injuring any reptiles.

Recommendation R9: Sensitive vegetation clearance

5.5.3 Vegetation clearance will be preferentially be conducted September-November inclusive to avoid impacts on nesting birds and ensure reptiles are active and able to disperse into retained habitats, however can be conducted March-August inclusive if a nesting bird check is conducted as per R4.

5.5.4 Vegetation clearance will be directional towards the site boundary in the direction of the area of retained habitat allowing reptiles to move into this area unharmed.

5.5.5 Clearance of tall vegetation should be undertaken using a strimmer or brush cutter with all cuttings raked and removed the same day. Cutting will be undertaken in a phased way:

- Cutting vegetation to a height of no less than 150mm at the first cut and 75mm at the second cut.

5.5.6 A destructive search of the short grassland will be overseen by an ecologist.

Recommendation R10: Reptile enhancement

5.5.7 To encourage reptiles across the site after development, it is recommended that partially buried log piles are created along the boundaries of the site to provide reptiles with more hibernation and resting places; this will also be beneficial to amphibians, small mammals and saproxylic invertebrates such as stag beetle. These can be created from the trees that will be cut down.

Residual Impacts

5.5.8 Following completion of works, the residual opportunities provided by the site to reptiles would remain and an increase in opportunities for hibernating and sheltering reptiles will be achieved across the site providing recommendation R10 is followed.

5.6 Wild mammals

Potential Impacts

- 5.6.1 Wild mammals may make use of the site for foraging/commuting. There is potential for badger, fox (*Vulpes vulpes*) and other wild mammals to enter active construction sites and become either injured or trapped.
- 5.6.2 This would contravene relevant wildlife legislation and therefore represent an adverse ecological impact of significance within a local context. Provided that Recommendation R10 is implemented, the risk of injuring/trapping a badger or other wild mammal as a result of the proposals would be negligible and after the works are complete they will still be permitted to forage/commute across the site.

Recommendation R11: Safeguarding wild mammals

- 5.6.3 Detailed proposals should include measures to safeguard wild mammals, including badger, should they enter or utilise the site during construction works, and to discourage wild mammals from entering the site. This can be achieved by implementing the following standard mitigation measures:

- the creation of temporary brash or log piles within the site should be avoided as these may be adopted by wild mammals for shelter;
- any newly discovered mammal entrances within the site should be safeguarded and left in-situ until reported to a suitably qualified ecologist, who will advise on appropriate steps if needed for works to resume;
- trenches or pits left overnight should be provided with a means of escape for wild mammals should they enter such as a collapsed edge or a flat roughened stable plank (no steeper than 45°) acting as a ramp to the surface;
- pipes should be capped off overnight to prevent animals entering and becoming trapped;
- all trenches and pits will be inspected each morning to ensure no wild mammals have become trapped overnight. Should a badger become trapped in a trench it will likely dig itself into the side of the trench. Should a trapped badger be encountered, a suitably qualified ecologist should be contacted immediately for further advice;
- the prolonged storage of uncontained and uncovered topsoil in piles on site should be carefully considered and possibly fenced-off if needed as these are readily adopted by burrowing animals such as foxes (*Vulpes vulpes*) for dens;
- chemicals should be contained in such a way that wild animals cannot access or knock them over;
- fires should be avoided altogether within the site; and

- loose litter and food should not be left in accessible areas of the site overnight.

Residual Impacts

- 5.6.4 Provided that Recommendation R11 is implemented, the risk of injuring/trapping a wild mammal as a result of the proposals would be negligible. Following completion of works, the residual opportunities provided by the site to wild mammals would remain.

Recommendation R12: Hedgehog Highways

- 5.6.5 Hedgehog highways should be included within the proposed fencing on site to allow hedgehogs to move freely through the gardens and into the wider landscape. In order to increase the probability that these hedgehog highways are not blocked by future residents, they will each be labelled both sides with an appropriate painted stencil (e.g. "Hedgehog Highway – please do not block") or plaque (see Appendix 6 for specifications).

5.7 Invertebrates

Potential Impacts

- 5.7.1 It is not considered that any specialist invertebrate species are present within the site, however, stag beetle are present within the local area. The loss of grassland and trees will lower the ecological value of the site for common and widespread species of invertebrates. In addition to the native planting (Recommendation R2) as well as the log pile specified in R10, an insect box should be incorporated into the landscape plan (Recommendation R13). The log pile would be beneficial to stag beetles as well as other common and widespread species of invertebrates.

Recommendation R13: Invertebrate enhancement

- 5.7.2 An insect box should be incorporated into the landscape plan to provide further habitat for insects. Following completion of works, the residual opportunities provided by the site to invertebrates would remain.

6 Relevant Legislation and Policy

6.1 Local Plan

- 6.1.1 The Reading Borough Local Plan was adopted in November 2019. The following policy is of relevance to this development:

EN12: BIODIVERSITY AND THE GREEN NETWORK

- 6.1.2 **(A)** The identified Green Network, the key elements of which are shown on the Proposals Map, shall be maintained, protected, consolidated, extended and enhanced. Permission will not be granted for development that negatively affects the sites with identified interest or fragments the overall network. The Green Network comprises:

Sites with identified biodiversity interest - Local Wildlife Sites, Local Nature Reserves, Biodiversity Opportunity Areas, protected and priority species and their habitats, Priority and Biodiversity Action Plan habitats, and the River Thames and all its tributaries (including the River Kennet and the Kennet & Avon Canal); and

Areas with potential for biodiversity value and which stitch the Green Network together – designated Local Green Space and open green spaces, and existing and potential Green Links.

- 6.1.3 New development shall demonstrate how the location and type of green space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map.

- 6.1.4 **(B)** On all sites, development should not result in a net loss of biodiversity and geodiversity and should provide a net gain for biodiversity wherever possible. Development should:

Protect and wherever possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals wherever practicable; and

Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) wherever practicable.

- 6.1.5 In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be: 1) avoided; 2) mitigated or; 3) compensated for on-site; then new development will provide off-site compensation to ensure that there is “no net loss” of biodiversity. Provision of off-site

compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics. It should not replace existing alternative habitats and should be provided prior to development.

6.2 Exit from European Union

6.2.1 The Conservation of Habitats and Species Regulations 2017 (as amended), referred to as the '2017 Regulations,' are one of the pieces of domestic law that transposed the land and marine aspects of the Habitats Directive (Council Directive 92/43/EEC) and certain elements of the Wild Birds Directive (Directive 2009/147/EC) (known as the Nature Directives). Changes to the 2017 Regulations have been made by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (referred to as the '2019 Regulations') to transfer functions from the European Commission to the appropriate authorities in England and Wales.

6.2.2 The amendments prescribed by the 2019 Regulations allow existing protections afforded by current wildlife legislation and transposed EC Council Directives to be operable from 01 January 2021.

6.2.3 The 2019 Regulations protect rare and vulnerable birds and the habitats that they depend upon. This is achieved in part through the classification of Special Protection Areas (SPAs). The Habitats Directive aims to protect plants, habitats and animals other than birds. This is achieved in part through the creation of Special Areas of Conservation (SACs). SPAs and SACs are collectively referred to as the 'National Site Network'.

6.2.4 Designated Wetlands of International Importance (known as Ramsar sites) do not form part of the National Site Network, however, all Ramsar sites remain protected in the same way as SACs and SPAs.

6.2.5 At the time of writing (March 2023), the 2019 Regulations are still Draft; therefore the 2017 Regulations have been referred to within this report.

6.3 Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance (England)

6.3.1 The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.

- 6.3.2 The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the ‘Biodiversity Duty.’
- 6.3.3 Guidance for public authorities on implementing the Biodiversity Duty has been published by Defra. One of the key messages in this document is that ‘conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.’ In England the administration of the planning system and licensing schemes are highlighted as having a ‘profound influence on biodiversity conservation.’ Local authorities are required to take measures to “promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that ‘the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.’
- 6.3.4 In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework, which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England.
- 6.3.5 In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

6.4 National Planning Policy Framework

- 6.4.1 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021) thereby replacing the older version of February 2019. The new framework sets out in section 15 that to protect and enhance biodiversity and geodiversity, plans should:
- identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and

areas identified by national and local partnerships for habitat management, enhancement, restoration or creation and

- 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.

6.4.2 When determining planning applications, local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

6.4.3 The following should be given the same protection as habitats sites:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

6.4.4 The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

6.5 Bats

- 6.5.1 All species of bats are protected under The Conservation of Habitats and Species Regulations 2017 (as amended) with additional protection provided under the Wildlife and Countryside Act 1981 (as amended). This makes it illegal to injure or kill a bat, to disturb, damage, destroy or obstruct a bat roost.

6.6 Birds

- 6.6.1 All nesting wild birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

6.7 Wild mammals (Protection) Act 1996

- 6.7.1 The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbits in their burrows.

7 References

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- Reading Borough Council (2019). *Reading Borough Local Plan*.
https://images.reading.gov.uk/2019/12/Local_Plan_Adopted_November_2019.pdf

Appendix 1 - Photographs

Photograph 1: Building (east elevation)



Photograph 2: Building (west elevation)



Photograph 3: Other neutral grassland



Photograph 4: Hardstanding (west aspect)



Photograph 5: Scattered trees



Photograph 6: Hardstanding south aspect



Photograph 7: Possible roosting feature on T5

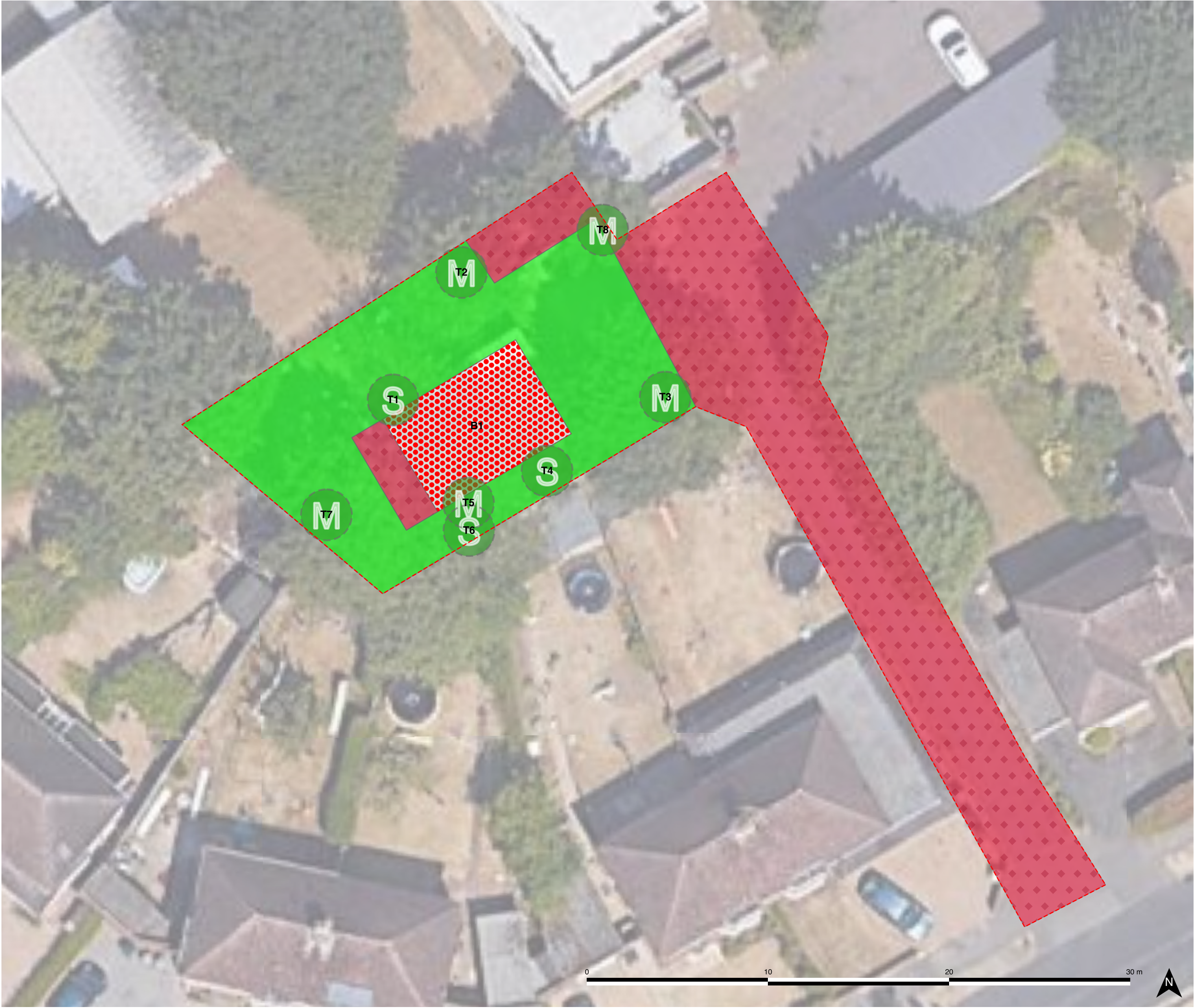


Photograph 8: Interior of building



Appendix 2 - Figures

Figure 1: EBD_2938_DR001_UKHABS



LEGEND

Site boundary (0.06 ha)

Habitats

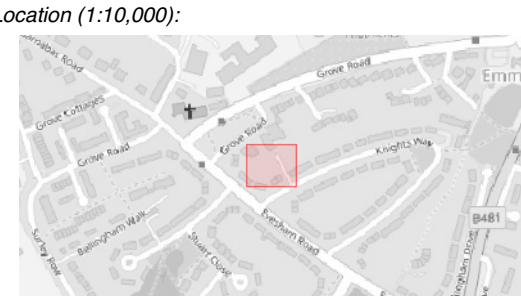
g4 - modified grassland (0.0242 ha)

u(11) - scattered tree, medium (5 trees)

u(11) - scattered tree, small (3 trees)

u1b5 - buildings (0.0051 ha)

u1b6 - hardstanding (0.0278 ha)



Project:
Land to the rear of 88 Knights Way

Client:
Reading Borough Council

Drawing Title:
UK Habitats map

Drawing No.: EBD_2938_DR001	Scale (@A3): 1:200
Central Eastings, Northings: 471718, 176389	Date Drawn: 16/03/2023
Drawn by: AK	Approved by: BG

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Appendix 3 - Definitions of the Context of Habitat Importance

Geographic Context of Importance	Examples
International	Ramsar Sites, Special Protection Areas, Biosphere Reserves, Special Areas of Conservation. Sites supporting populations of internationally important species.
National	SSSIs or non-designated Sites meeting SSSI selection criteria, NNRs, Marine Nature Reserves, NCR Grade 1 Sites. Sites containing viable areas of key habitats identified in the UK Biodiversity Action Plan.
Regional	Sites containing viable areas of threatened habitats listed in a Regional BAP (or some Natural Areas), comfortably exceeding SINC criteria, but not exceeding SSSI criteria.
County / Metropolitan	Sites meeting the criteria for county or metropolitan designation (SINC, CWS, etc.). Ancient semi-natural woodland, LNRs or viable areas of key habitat types listed in county BAPs/Natural Areas.
District / Borough	Undesignated Sites or features considered to appreciably enrich the habitat resource in the District or Borough.
Parish / Neighbourhood	Undesignated Sites or features which appreciably enrich the habitat resource within the Parish or Neighbourhood.
Negligible	Low grade and widespread habitats.

Appendix 4 - Definitions of the Context of Species Importance

Geographic Context of Importance	Examples
International	Any regularly occurring population of an internationally important species, which is threatened or rare in the UK. i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) or of uncertain conservation status or of global conservation concern in the UK BAP. A regularly occurring, nationally significant population/number of any internationally important species.
National	Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (see local BAP). A regularly occurring, regionally or county significant population/number of any nationally important species.
Regional	Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation; A regularly occurring, locally significant number of a regionally important species.
County/ Metropolitan	Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan “red data book” or BAP on account of its regional rarity or localisation; A regularly occurring, locally significant number of a County/Metropolitan important species.
District / Borough	A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation; A regularly occurring, locally significant number of a District / Borough important species during a critical phase of its life cycle.
Parish / Neighbourhood	Species that are not threatened but are valued at a local level on intrinsic appeal.
Negligible	Common or widespread species.

Appendix 5 - Specifications of Recommendations

Products	Description
Example Bat Boxes	
	Ibstock Enclosed Bat Box 'C' A self-cleaning integrated bat box suitable for pipistrelle bat. https://www.nhbs.com/ibstock-enclosed-bat-box-c
Example Bird Boxes	
	Sparrow terrace nest box (or similar) The boxes can be hung to fit the shape of any building. The Terrace should be installed at least two to four metres off the ground making sure that there is a clear flight path to the nest. Boxes may also be sited directly under the eaves, but make sure that they are away from areas used by house martins. https://www.nhbs.com/sparrow-terrace-nest-box



Vivara Pro Barcelona WoodStone Open Nest Box

These open nest boxes are suitable for wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds. They can be mounted on mature trees preferably under dense ivy at 1.5-3m in height.

<https://www.nhbs.com/vivara-pro-barcelona-woodstone-open-nest-box>

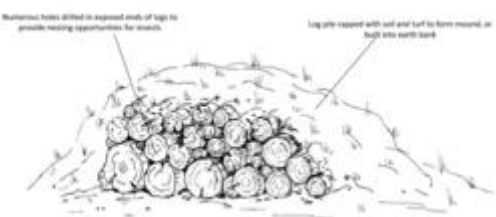
Additional enhancements



National Trust Apex Insect House

With a variety of shelter types, this insect house offers a perfect habitat for important invertebrates such as lacewings, ladybirds, and even some butterflies. This should be placed less than 2m from the ground or place in a sheltered position amongst vegetation.

<https://www.nhbs.com/national-trust-apex-insect-house>



Buried Log Piles

Partially buried log piles provide valuable shelter and foraging resources to a range of invertebrates and other wildlife, particularly saproxylic species (associated with dead wood). Buried log piles are particularly beneficial when constructed from pre-existing dead wood taken from the site.



Image taken from the London Wildlife Trust publication: Stag Beetle: an advice note for its conservation in London, 2000.

Wood from any broadleaved tree can be used but oak, beech and fruit trees support the richest invertebrate assemblages.



Hedgehog Highways

Hedgehog highways are formed by a series of ground-level holes in boundary fences. The holes must be 150 mm x 150 mm and marked on both sides by either a sign (see left and link below) or a spray-painted stencil labelling them as:

"Hedgehog Highway

Please keep this hole open".

<https://www.arkwildlife.co.uk/product/hedgehog-highway-sign/>