



Landscape, Arboriculture and Ecology

Surveys – Plans – Assessments - Mitigation – Solutions – Methodology

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Preliminary Ecological Appraisal (PEA), Preliminary Roost Assessment (PRA)

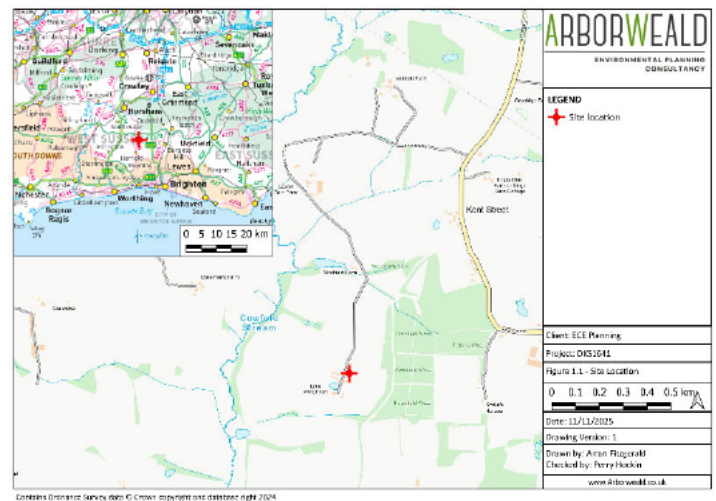
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Declaration: The information which I have prepared and provided for this report is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct; I confirm that the opinions expressed are my true and professional bona fide opinions. Printed: Perry Hockin BSc (Hons.), FDS, ACIEEM – Principal Ecologist Signed: 					

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No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of species abundances or habitat management efficacy described in the report.

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This report and all survey work have been prepared to British Standard 42020 and rely on information and methodology from the Joint Nature Conservation Committee and the Chartered Institute of Ecological and Environmental Management.

Additionally, this report relies on information from other third parties, some of which may include, but not be limited to; DEFRA's MAGIC database, local record centres, local wildlife spotter groups such as , and the NBN atlas.

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EXECUTIVE SUMMARY

- 0.1 Arborweald Environmental Planning Consultancy (AEPC) were commissioned by ECE Planning for Moatfield Farm, Kings Lane, Cowfold, West Sussex, RH13 8BD, TQ 22435 20686 to undertake:
- Preliminary Ecological Appraisal (PEA)
 - Preliminary Roost Assessment (PRA)
- 0.2 The habitats present within the site boundary comprise buildings, hardstanding, bare ground, semi-improved grassland, scrub, hedgerow, and scattered trees. These habitats are typical of an active agricultural holding and of generally low ecological value, with limited areas of semi-natural cover at the periphery.
- 0.3 Development plans on site comprise:
- The demolition of two existing agricultural barns (Building 1 the cow shed and Building 2 the hay barn) and the construction of a new dwelling with an associated annexe/garage.
- 0.4 The primary findings of this report were:
- Great crested newts: No aquatic habitat is present on site, and terrestrial habitat is limited and largely sub-optimal. However, the site lies within a NatureSpace Red Impact Risk Zone, with confirmed GCN records approximately 1.8 km to the north-east and two off-site ponds (Waterbodies 4 and 5) of average to good suitability. A precautionary approach is proposed, noting that the Local Planning Authority can request updated survey information during determination.
 - All other impacts from development are considered to be negligible / de-minimis subject to the application of appropriate mitigation measures, for which this report provides a brief outline.
 - Habitats on site are of low ecological quality, typical of a working farm courtyard dominated by hardstanding, bare ground and scattered scrub, with higher-quality habitat limited to the native boundary hedgerow and semi-mature trees.
- 0.5 The primary recommendations of this report are:
- Phase 2 surveys: Further surveys are not considered proportionate at this stage; works would proceed under a precautionary approach, and the Local Planning Authority may request additional information during determination.
 - Precautionary measures for species – herpetofauna and bats, including a site-specific Precautionary Working Method Statement (PWMS), sensitive vegetation clearance and tree limb removal, staged habitat removal and ecological supervision where required to ensure no protected species are harmed.
 - Future works may entail a Biodiversity Metric Assessment (BMA) and preparation of a full PWMS for amphibians and reptiles should this be requested by the Local Planning Authority.
 - Biodiversity enhancements should be incorporated into the development and section 6 of this report provides detail on potential enhancements.

- 0.6 A Biodiversity Metric Assessment (BMA) was not required at this stage, as the development is a small-scale residential proposal anticipated to fall under one of the recognised exemptions (householder or self-build). The footprint of works is limited and not expected to result in a measurable loss of on-site habitat or hedgerow. However, should the application progress as a full planning submission or the design footprint change, a follow-up Biodiversity Net Gain (BNG) assessment may be required to confirm compliance with the Environment Act 2021 and associated Biodiversity Gain Regulations 2024.

1 INTRODUCTION

- 1.1 Arborweald Environmental Planning Consultancy (AEPC) were commissioned by ECE Planning for Moatfield Farm, Kings Lane, Cowfold, West Sussex, RH13 8BD, TQ 22435 20686 to undertake:
 - Preliminary Ecological Appraisal (PEA)
 - Preliminary Roost Assessment (PRA)
- 1.2 The objectives of the PEA were to assess the potential of the site to support protected species and/or species of conservation importance by identifying potential habitat for protected species and/or species of conservation concern and by evaluating the constraints that the presence of any protected species or species of conservation concern may place on the proposed re-development of the site.
- 1.3 The PRA of buildings on site involved carrying out a detailed assessment to assess their likelihood and potential to support bat species. The assessment comprised of a thorough internal and external inspection of the buildings for the presence of bats and/or any evidence of bats or the likelihood that a particular structure could support bat species.
- 1.4 This document has been written with reference to the following documents:
 - SRA_050_block plan_existing.pdf
 - SRA_150_block plan_proposed.pdf

Surveyors and author competency

- 1.5 Surveys were undertaken on the 09/10/25 by Assistant Ecologist Arran Fitzgerald BSc (Hons.), MSc.
- 1.6 Report writing was undertaken by Assistant Ecologist Arran Fitzgerald BSc (Hons.), MSc.

Arran Fitzgerald – Assistant Ecologist

Arran Fitzgerald is a qualified and experienced ecologist who became associated with Arborweald in 2023 as a part-time surveyor and ecological clerk of works before joining full time in early 2025.

Having achieved a first-class honours degree in Zoology, followed by a master's in applied wildlife Conservation, Arran has since worked in Ecological Landscaping, implementing environmental mitigation measures for medium to large-scale infrastructure and conservation projects across the UK.

Arran's career spans a diverse range of ecological projects, from the installation of hibernacula and newt fencing to woodland/hedgerow regeneration efforts. He has also worked on innovative environmental solutions, such as using hydroseeding techniques to remediate toxic mining tailings. With a balanced approach to conservation and restoration, Arran's dedication extends beyond his professional work, with extensive volunteer experience that has enriched his understanding of ecology from a hands-on perspective.

Legislation and Policy

Protected species

- 1.7 Certain habitats and species including nesting birds, bats, dormice, and great crested newts, are afforded protection under the Conservation of Habitats and Species Regulations 2017 and the Wildlife & Countryside Act 1981 (as amended). Further information on the legislation is included in Appendix A.
- 1.8 In general, the above legislation makes it an offence to:
- Deliberately/intentionally or recklessly kill, injure, or take a protected species;
 - Intentionally or recklessly damage, destroy or obstruct access to any place that a protected species uses for shelter or protection whether the species is present or not;
 - Intentionally or recklessly disturb a protected species while it is occupying a structure or place that it uses for shelter or protection;
 - Deliberately take or destroy the eggs of species protected by this legislation (such as nesting birds).

Natural Environment and Rural Communities Act

- 1.9 Section 41 of the Natural Environment and Rural Communities Act (2006) lists the species and habitats of principal importance for the conservation of biodiversity in England and acts as a guide to local authorities in implementing their duties under Section 40, to have regard to the conservation of biodiversity in England.

Protection of Badgers Act

- 1.10 The Protection of Badgers Act (1992) prohibits reckless and/or intentional cruelty, injury or killing of badgers and the interference with badger setts.

National Planning Policy Framework

- 1.11 Under The National Planning Policy Framework (NPPF, 2024) protected sites and species are a material consideration in determining planning applications in terms of minimising impacts on biodiversity.
- 1.12 National Planning Policy guidance uses a mitigation hierarchy, whereby:
- Potential impacts are first avoided through changes to design plans
 - Unavoidable impacts are mitigated against to reduce the negative effect of the impact;

- Finally, residual impacts that remain after avoidance and mitigation measures are applied are compensated for (BS 42020, 2013, Section 5.2).
- 1.13 Further to this, it is a requirement under National Planning Policy for developers to actively enhance the biodiversity value of development projects.

The Environment Act 2021

- 1.14 In England, biodiversity net gain is now required under statutory frameworks introduced by Schedule 7A of the Town and Country Planning Act 1990 (inserted by the Environment Act 2021). Under this framework, every grant of planning permission will be deemed to have been granted subject to a general biodiversity gain condition. This requires developments to deliver at least a 10% increase in biodiversity value relative to the pre-development biodiversity value of all onsite habitats.
- 1.15 This is a pre-commencement condition requiring the provision of a Biodiversity Gain Plan to be submitted and approved before works can be commenced, but after planning permission has been granted.
- 1.16 In principle, the grant of planning permission is not within the scope of BNG, however it is important to consider as part of the consenting body's decision-making process how a scheme will be able to demonstrate BNG after permission is granted.

Biodiversity Net Gain Hierarchy

- 1.17 The statutory framework allows for the 10% biodiversity gain to be delivered through onsite biodiversity gains, registered offsite biodiversity gains or statutory biodiversity credits. However, as set out in Articles 37A and 37D of the Town and Country Planning (Development Management Procedure) (England) Order 2015, development must consider the biodiversity net gain hierarchy when designing scheme proposals. This sets out hierarchy of actions as follows:
- First, for all medium, high and very high distinctiveness habitats, the avoidance of any adverse effects.
 - Where these can't be avoided, mitigating any adverse effects on medium, high and very high distinctiveness habitats.
 - Then, for all onsite habitats (including low distinctiveness), adverse effects should be compensated by in accordance with the following hierarchy:
 1. Prioritising the enhancement of existing habitats; then
 2. Creation of onsite habitats;
 3. Allocation of registered offsite unit gains; then
 4. Purchase of biodiversity credits
- 1.18 Proposals must demonstrate how the biodiversity hierarchy has been applied to or provide the reasons for any deviation. This biodiversity net gain hierarchy is distinct from the mitigation hierarchy set out in paragraph 186(a) of the National Planning Policy Framework.

Exemptions from the Biodiversity Metric Assessment

1.19 Certain developments are exempt from the Biodiversity Metric Assessment (BMA). They include:

- **Existing planning applications** - If a planning application for a development was made before day one of mandatory BNG on 12 February 2024, the development is exempt from BNG.
- **Variations of planning permission** - Transitional arrangements also apply for variations to existing planning permissions.
- **Developments below the threshold** - A development that does not impact a priority habitat and impacts less than:
 - 5 square metres (5m by 5m) of on-site habitat
 - 5 metres of on-site linear habitats such as hedgerows

A development 'impacts' a habitat if it decreases the biodiversity value
- **Householder applications** - These are applications made by householders as defined within article 2(1) of the Town and Country Planning (Development Management Procedure) (England) Order 2015.
- **Self-build and custom build applications** - You must meet all of the following conditions to qualify for an exemption as a self-build or custom build. The development must:
 - consist of no more than 9 dwellings
 - be on a site that has an area no larger than 0.5 hectares
 - consist exclusively of dwellings that are self-build or custom housebuilding as defined in section 1(A1) of the Self-build and Custom Housebuilding Act 2015
- **Other exemptions** – High speed rail transport network, urgent crown developments, and works under Development Consent Orders (DCOs) such as nationally important infrastructure projects, including permitted development rights.

Site Description

1.20 The site is located in Cowfold, West Sussex (Ordnance Survey Grid Reference: TQ 22435 20686). The development site covers approximately 0.43 ha and comprises two agricultural barns set within a small farm complex, with areas of poured-concrete hardstanding, bare ground, semi-improved grassland, scrub, mixed native hedgerow, and scattered trees. These habitats are typical of a working agricultural yard and are of generally low ecological value overall.

1.21 The location of the site is shown in Figure 1.1 and the extent of the site boundary is shown in Figure 1.2.

1.22 The habitats in the wider landscape are predominantly rural, comprising pasture, arable fields, hedgerows, and scattered patches of broadleaved woodland, including areas of deciduous and ancient woodland. The surrounding area is highly agricultural, with large

open fields and intervening stretches of improved grassland that limit ecological connectivity between woodland blocks and ponds.

Settlement is sparse, consisting mainly of isolated farmsteads and small rural dwellings, becoming more village-like toward Partridge Green and Henfield to the south.

Development Proposals

1.23 Development plans on site comprise:

- The demolition of two existing agricultural barns (Building 1 the former cow shed, and Building 2 the hay barn) and the construction of a new residential dwelling with an associated annexe/garage and minor access improvements within the existing farmyard.

Survey Constraints

General constraints

- 1.24 Due to seasonal behaviour of animals and the seasonal growth patterns of plants, ecological surveys may be limited by the time of year in which they are undertaken.
- 1.25 The information gathered for this ecological survey has facilitated an evaluation of the habitats on site and the likely use of the site by legally protected and notable species. This survey has also given appropriate baseline data for the determination of the requirement for further surveys and/or mitigation and enhancement works.
- 1.26 The UKHab habitat map has been reproduced from detailed field notes and informed by aerial imagery, OS mapping and site maps provided by the client. The accuracy of this figure is therefore ultimately guided by the accuracy of these sources and can only be relied upon to a certain degree of resolution.

Site specific constraints

- 1.27 There were no access or survey constraints encountered during the field assessment. The primary ecological constraint relates to the site's location within a Red Impact Risk Zone for great crested newt *Triturus cristatus* under Natural England's District Level Licensing (DLL) scheme.
- 1.28 This designation indicates a high likelihood of GCN presence in the wider landscape, meaning that precautionary working methods may be required to ensure compliance with relevant legislation.

2 METHODS

Desk Study

- 2.1 The Multi Agency Geographic Information for the Countryside (MAGIC) website provided by the Department for Environment, Food and Rural Affairs (DEFRA) was consulted for information with regard to protected habitats and species within 2 km of the proposed development (red line) boundary.
- 2.2 Aerial photos of the site (Google, 2020) were examined to determine habitats surrounding the site and hence species likely to be present in order to make appropriate recommendations in the wider landscape context.
- 2.3 Following guidance contained within sections 5.5 and 6.2.1 of BS 42020:2013, records from the local biodiversity record centre may be deemed necessary, in which case the results are screened for relevance. This involves an analysis (in conjunction with DEFRA's MAGIC map software) of connectivity between recorded instances and the site boundary. Records are also screened for age; records are prioritised from the last 10 years, with records from the past 20 and 40 years deemed as less accurate, but still included where possible.

Report lifespan

- 2.4 The lifespan of this appraisal and the ecological survey information contained herein has been determined based on CIEEM's Advice Note: On the Lifespan of Ecological Reports and Surveys (CIEEM, 2019), an assessment of the likelihood of presence of important ecological features on Site and consideration of how the ecological status of these features on Site may change over time.
- 2.5 If the commencement of site works is delayed beyond 18 months from the date of issue of this report, an update site walkover should be undertaken by a suitably experienced ecologist.
- 2.6 Following the update walkover, the ecologist will need to determine whether there have been any material changes to the ecological baseline, the potential impacts of the proposed development and/or the ecology-related legal risks associated with the proposed development.
- 2.7 If there have been any material changes in baseline ecological conditions, the potential ecological impacts of the proposed development and/or associated legal risks, or any material changes to relevant ecology-related legislation, standing advice, best practice and/or guidance, an updated report should be produced by a suitably experienced ecologist.

Field Survey

Preliminary Ecological Appraisal (PEA)

- 2.8 The survey was conducted in accordance with The Handbook for Phase 1 Habitat Survey (JNCC, 2016), and included searches for signs of protected species, as described in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).
- 2.9 A Preliminary Ecological Appraisal survey of the site was carried out in order to evaluate any habitat on the site with the potential to support protected species and/or other species of conservation concern that could be relevant in respect of planning policies.
- 2.10 In addition, the habitats within the survey area were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where suitable habitat was identified on site, a search was conducted for signs indicating the presence of protected species such as droppings, burrows, tracks and evidence of feeding. Where species are not specifically evaluated, this indicates that no habitat of potential value for these species was identified during the survey.
- 2.11 Consideration was also given to habitats outside the site boundary, in order to evaluate the ecological context of the site within the wider landscape. Adjacent habitats were also considered with respect to their own ecological value and their potential to enhance the ecological value of habitats within the site.
- 2.12 Searches were made for invasive non-native plant species focussing on those species currently listed in the revised Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Species were listed split into non-natives and invasive non-natives with different advice for each.
- 2.13 The plant species nomenclature follows that of Stace (2019). Plant species observed within each habitat type were recorded using the DAFOR system which stands for Dominant, Abundant, Frequent, Occasional or Rare.
- 2.14 All references to relevant literature required to maintain industry best practice and compliance with legislation is listed in the References section of this report.

Ground Level Tree Assessment (GLTA)

- 2.15 The methods used in the Ground Level Tree Assessment were based on those recommended in English Nature's Bat Mitigation Guidelines (Mitchell-Jones 2004), the Joint Nature Conservation Committee's Bat Worker's Manual (Mitchell-Jones and McLeish 2004), the Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), and CIEEM's methodology for breeding bird surveys. The works were undertaken to the standards set out in BS:42020.
- 2.16 The assessment was purely visual from the ground and did not utilise any climbing or aerial equipment.
- 2.17 Holes, gaps, wounds, tear-outs and loose bark were noted on trees, along with patches of dense ivy and other veteran features suitable to support roosting bats. Age and

location was also noted, along with tree health and species as some species are more likely to develop attributes suitable to support roosting bats.

- 2.18 Signs of likely bat presence as listed above were noted and investigated further where possible to do so in full compliance with legislation. Trees were given a category in the same way as buildings from 'negligible' to 'high' suitability to support roosting bats. Trees given categories of 'Moderate' or 'High' suitability were recommended for further presence / absence dusk bat emergence surveys.
- 2.19 Assessment for suitability to support birds involved a visual assessment of bird activity in and around the tree over a period of 30 minutes in the morning when birds are most active. Signs of nesting activity, including active / defunct nests, bird courting, and nest material gathering were noted and commented upon.

Preliminary Roost Assessment (PRA)

- 2.20 The methods used in the Preliminary Roost Assessment were based on those recommended in English Nature's Bat Mitigation Guidelines (Mitchell-Jones 2004), the Joint Nature Conservation Committee's Bat Worker's Manual (Mitchell-Jones and McLeish 2004) and the Bat Conservation Trust's Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2024).
- 2.21 In broad terms, the following elements play into a building's suitability score:
- Bat presence, either direct or through signs of bats such as droppings
 - Roosting features – If bats can get in, could they roost? Are there hanging or crevice dwelling opportunities?
 - Roosting suitability – If bats can get in, how comfortable would they be? Is it warm and dry, or damp and humid? Noisy or quiet? Well-lit or dark?
 - Accessibility – Can bats even access these opportunities?
 - Surrounding habitat – Where is the site positioned? Is it a suitable area?

Methodology

- 2.22 The suitability of the buildings to support roosting bats was assessed by examining structural features. Structural features that may influence the suitability of a building to support roosting bats include the presence of a roof void, the presence of access points into the building (including gaps beneath barge boards, soffits and fasciae, gaps under lead flashing, gaps within masonry and under loose tiles, gaps between mortise and tenon joints), the complexity and size of any roof void, daytime light ingress, and night time temperatures within a roof void.
- 2.23 The suitability of the buildings for roosting bats was also assessed by examining the surrounding habitat. Important habitat features surrounding the structure which may influence roost potential include whether the structure is in a semi-rural or parkland location, its proximity to significant linear habitat features such as a watercourse, mature hedgerow, wooded lane or an area of woodland.

- 2.24 An external search around the perimeter of the buildings was conducted and any possible access points i.e. gaps and crevices were noted and investigated further where possible.
- 2.25 All surfaces were surveyed for signs of bat presence; as bat presence was ruled out a systematic internal inspection of the building for visual indicators of bat presence was conducted using a high-powered torch to illuminate areas to check for evidence of bats such as feeding remains or droppings.
- 2.26 Features of potential value to bats were surveyed not only for the presence of bats but also for signs that could indicate use by bats, such as:
- Bat droppings;
 - Staining of access points used by bats to enter the structure; and
 - Feeding remains such as moth and butterfly (Lepidoptera) wings.
- 2.27 The primary objective of this exercise was to identify the need for further detailed bat surveys later in the year, or alternatively to obtain sufficient information that would dismiss the need for further assessment.
- 2.28 Taking account of these architectural and habitat features, the buildings were then assigned a level of roost suitability based on the criteria given in Table 4.1 on page 47 of the Bat Conservation Trust's *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2024) and professional judgement.

The categories comprise:

- Confirmed bat roost – Minimum of 3 emergence surveys required
 - High suitability – Minimum of 3 emergence surveys required
 - Moderate suitability – Minimum of 2 emergence surveys required
 - Low suitability – Minimum of 1 emergence survey required
 - Negligible suitability – No minimum survey requirement
 - None – No minimum survey requirement
- 2.29 In cases of uncertainty, the surveyor may increase the suitability score of a building to an appropriately higher level to account for potentially missed features, restricted access, or other constraints.

Recommendation categorisation

- 2.30 So as to ensure biodiversity net gain for all development projects, the enhancement recommendations outlined in Section 6 of this report are categorised as Red, Amber or Green:

Red recommendations should be designated as conditions attached to a planning consent, and the development must not proceed without these enhancements / compensation measures being put in place, as they form a crucial role in achieving biodiversity net gain targets.

These recommendations are designed to be as effective and swift as possible, whilst taking into account cost and ease of implementation / future management in context with the scale of the development site.

Amber recommendations should be included within the development, however it is not necessary for them to be designated as conditions, as the author believes that their implementation is not key to achieving biodiversity net gain targets. The client / developer should seriously consider including these measures to improve the biodiversity value of the site and to reduce their carbon footprint.

These recommendations are designed to be a good balance between efficacy and cost efficiency.

Green recommendations are additional enhancements which would improve the biodiversity value of the site; however, they are not key to achieving biodiversity net gain targets. These recommendations are aimed at clients wishing to 'go the extra mile' with their site so as to improve visual impact, public engagement, and property value

These recommendations are often more costly, either financially or in terms of time input in context with the size of the site, however they can also deliver longer term benefits for a greater original outlay.

2.31 Recommendations are prioritised into the above categories taking into account multiple factors, including, but not limited to:

- Measurable impact on biodiversity net gain using the methodology of Biodiversity Metric
- Habitat classification factors utilised by the Natural England Biodiversity Metric; for instance, how valuable would the enhancements be from a habitat creation / modification perspective
- Likelihood of the client to undertake or follow through with recommendations, and to maintain recommendations post-development [as appropriate]
- Ease and cost of implementation, such that high impact and swiftly effective recommendations are prioritised over slower or less easily maintained enhancements on smaller development sites
- Surveyor and author experience of effectiveness of enhancement features in areas similar to the site, such as on other sites nearby, or enhancements already implemented as a part of local designated-site management plans (such as AONB strategies)

3 RESULTS

Desk Study

- 3.1 Records of designated sites and European sites within 2 km of the site boundary were obtained from Multi Agency Geographic Information for the Countryside (MAGIC) website provided by the Department for Environment, Food and Rural Affairs (Defra).

Designated sites

- 3.2 There are no international/European designated sites within 2km of the proposed site.
- 3.3 There are no statutory designated site located within 2km of the proposed development site.
- 3.4 The site is not designated for its specific nature conservation interest, and the scale of development is such that it is unlikely to significantly affect local designated sites.

Designated habitats

- 3.5 The habitats in the wider landscape comprise pasture, arable fields, and patches of broadleaved woodland, with occasional farmsteads and rural dwellings. The surrounding area is predominantly agricultural in character, with field boundaries defined by hedgerows and scattered mature trees.
- 3.6 Further to the surrounding landscape includes three Habitats of Principal Importance (HPIs) under Section 41 of the Natural Environment and Rural Communities Act 2006, comprising deciduous woodland (including areas of ancient woodland), lowland meadow, and wood pasture and parkland.

Waterbodies

- 3.7 There are 11 waterbodies within 500m of the site. The 500m buffer is shown in Figure 3.1.
- 3.8 Waterbody 1 is a large, privately managed pond with steep sides and heavy waterfowl use. The surrounding grassland is short and maintained as amenity. There are few emergent macrophytes, and water quality appears poor due to nutrient enrichment. The Habitat Suitability Index (HSI) score was 0.4463 - Poor suitability for great crested newt (GCN).
- 3.9 Waterbodies 2 and 3 are small woodland ponds located within surrounding fields. These were not surveyed during the assessment as their presence was unknown at the time. Both are reasonably isolated from the site by expanses of farmland and lack continuous vegetative or hydrological connectivity. They are considered unlikely to support GCN populations functionally linked to the site.
- 3.10 Waterbody 4 is a small pond located on the edge of woodland, heavily shaded and filled with leaf litter and mud. It appears shallow and likely to dry out seasonally. The HSI score was 0.6494 - Average suitability for GCN. Connectivity is limited due to intervening grazed fields.

- 3.11 Waterbody 5 is a woodland pond associated with a shallow ditch. It supports moderate macrophyte cover and a diverse structure, though it is fairly shaded and exhibited an oily surface film. The HSI score was 0.75 - Good suitability for GCN. Despite the good habitat quality, its distance and intervening paddock and pasture limit direct connectivity to the site.
- 3.12 Waterbody 6 was not surveyed but appears to be a large agricultural pond, likely used for farm purposes given the visible track marks and disturbed margins. The pond lies on the edge of the 500m buffer and lacks vegetative or hydrological connectivity. It is considered ecologically disconnected from the development site.
- 3.13 Waterbody 7 is a large, managed pond surrounded by amenity grassland. It experiences heavy waterfowl use and displays limited macrophyte growth due to bank erosion and nutrient enrichment. The HSI score was 0.4463 - Poor suitability for GCN.
- 3.14 Waterbodies 8 and 9 are small woodland ponds located approximately 340 m from the site. These were not surveyed during the assessment as they were unknown at the time. Both are separated from the site by arable land and multiple vehicle tracks, resulting in poor ecological connectivity and a negligible likelihood of supporting GCN populations linked to the site.
- 3.15 Waterbody 10 is situated on the outer edge of the 500 m buffer and is isolated from the site by extensive farmland with no vegetative or watercourse links. It is considered ecologically disconnected and unlikely to influence GCN presence in relation to the development.
- 3.16 Waterbody 11 lies approximately 470 m from the site and appears to be of reasonable size. It was not surveyed due to its distance and the absence of connecting habitat or drainage features. Surrounded by open fields, it is considered ecologically isolated and unlikely to support GCN populations functionally associated with the site.
- 3.17 Although several ponds within 500 m provide suitable habitat for great crested newt, the site itself is separated from these features by expanses of intensively managed farmland, heavily grazed short-sward pasture, and fenced paddocks with limited vegetation structure, resulting in poor overall ecological connectivity. A number of field ditches are present in the surrounding landscape; however, none extend directly to or within close proximity of the site. These ditches appear to be more closely associated with the Cowfold Stream catchment and do not provide a viable hydrological or vegetative corridor for amphibian movement between nearby ponds and the development area.

Biological Records

- 3.18 Following guidance contained within sections 5.5 and 6.2.1 of BS 42020:2013, it was deemed not necessary to obtain biological records from the local Biological Records Centre for the following reasons:
- Protected species impacts are predicted to be minimal.
 - Development is of a small scale.

- Development can be contained within areas of lowest quality habitat, as existing habitats comprise predominantly built habitats with 'zero habitat value' with the remainder comprising a mixture of scrub, ruderal and short sward grassland.
- It is recognised that several waterbodies within 500 m of the site display moderate to good suitability for great crested newt (GCN). However, given the nature of the intervening habitat and the limited suitability of the site itself, desk-based biological records are not considered essential at this stage.
- Notwithstanding this, should the scope of works change, or should the Local Planning Authority request further information during determination, local biological records and/or targeted survey work may be required to further inform protected species presence in the wider landscape.

Field Study

Phase 1 Habitat Survey

- 3.19 The habitats present on site are shown in Figure 3.2 and are described in detail below.
- 3.20 The site at Moatfield Farm, Kings Lane, Cowfold, West Sussex comprises two at-cost-style agricultural barns set among an existing farm complex and areas of hardstanding, pasture, and boundary vegetation. The wider holding includes adjoining fields and paddocks, though the development footprint is centred on the two barns and immediate surrounding hardstanding and grassland.
- 3.21 Habitats recorded within the site boundary comprise buildings, hardstanding, bare ground, semi-improved grassland, scrub, and hedgerow.

Buildings

- 3.22 There are two buildings on site discussed in more detail in the PRA section below.

Hardstanding

- 3.23 The western half of the site, from the barns outward, comprises poured concrete hardstanding in poor condition, with erosion particularly visible at the northern entrance where bright shingle and hardcore are exposed in potholes. Some grass colonisation is present along cracks and around the central access track and fencing but does not exceed 10% cover overall.

Semi-improved grassland

- 3.24 Semi-improved grassland occurs between the barns and along the track leading to the northern entrance. Vegetation is short (10–30 cm) and patchy in places due to vehicle wear, increasing to around 50 cm near the fencelines. The sward is dominated by tall fescue *Festuca arundinacea*, Yorkshire fog *Holcus lanatus*, brown bent *Agrostis capillaris*, and bristly oxtongue *Helminthotheca echioides*, with other common associates including creeping buttercup *Ranunculus repens*, English cinquefoil *Potentilla anglica*, field speedwell *Veronica arvensis*, field chamomile *Anthemis arvensis*, and broadleaf plantain *Plantago major*.
- 3.25 Diversity is low to moderate and typical of agricultural influence and vehicle disturbance. The grassland margins display localised colonisation by ruderal species.

Scrub

- 3.26 Scrub is present in the southwest and eastern corners of the site, forming small patches of even age. These areas are dominated by bramble *Rubus fruticosus* and nettle *Urtica dioica* with frequent spear thistle *Cirsium vulgare* and occasional old man's beard *Clematis vitalba*. Structural and floristic diversity are low, and all patches are considered to be of limited ecological value.

Tall ruderal

- 3.27 There are patches of tall ruderal and ephemeral short perennial vegetation particularly to the east of the main building. These areas are almost entirely made-up of the same ruderal species as within the grassland with less than 20% grass coverage. The tall ruderal areas are markedly different from the scrub due to the lower density of bramble and higher dominance of nettle and *Rumex spp.*

Scattered trees

- 3.28 A mature sessile oak *Quercus petraea* stands at the northern entrance, with an approximate canopy spread of 8 m. The tree displays minor decay features, ivy coverage, and several small holes, offering some potential for roosting or nesting fauna. An early-mature oak is also located in close proximity to the western corner of the southern barn, forming part of the site's scattered boundary vegetation.
- 3.29 In addition, a pair of young oaks occurs along the western boundary, and further immature trees and shrubs including dogwood *Cornus sanguinea*, rose *Rosa sp.*, white elm *Ulmus laevis*, and blackthorn *Prunus spinosa* are present within the hedgerow and to the rear of the barns.

Hedgerows

- 3.30 The site boundaries support mixed native hedgerow comprising blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna*, dogwood *Cornus sanguinea*, goat willow *Salix caprea*, and sweet briar rose *Rosa rubiginosa*. The hedgerow is semi-continuous and locally gappy, providing moderate structural diversity but limited connectivity across the wider landscape.

Other items

- 3.31 An area of bare ground is located to the south of the site opposite the southern barn, extending approximately 18 m before reaching an area used for machinery and grain storage. This area is compacted and sparsely vegetated.

Protected Species

- 3.32 The habitats present on site provide suitable potential to support a range of protected species [REDACTED]
[REDACTED] These species are considered in greater detail below, along with protected species for which the habitats on site are suboptimal or unsuitable.

Bats

Roosting

Trees

- 3.33 Standardly, a Ground Level Tree Assessment (GLTA) for bats is undertaken on all trees on site of an age or condition that they are likely to hold features suitable to support roosting bats.
- 3.34 These features are most typical on larger trees or those that have been wounded or veteranized, and their prevalence is also affected by the species of tree as some are more likely to survive the aging or veteranizing process than others.
- 3.35 Features searched for include lifted bark, lesions and cracks, holes, dead wood, cavities, and missing limbs.
- 3.36 A large mature sessile oak *Quercus petraea* at the northern entrance displays minor features such as ivy cover and small fissures that could offer limited roosting potential. This tree will be fully retained and lies outside the area of potential disturbance.
- 3.37 An early-mature oak located against the western side of the southern barn exhibits some light ivy growth and several small cavities within the lower limbs, offering low roost suitability for bats. As this tree stands immediately adjacent to a structure proposed for demolition, precautionary mitigation measures will be implemented during dismantling to safeguard any potential roost features.

Buildings

- 3.38 The results of the PRA survey are detailed in Figure 3.2 and Table 3.11 below.

Table 3.11: Preliminary Roost Assessment Survey results

Building Number/ Reference	Building Description	PRA criteria testing	Suitability to Support Roosting Bats
1	(Cow shed) - A steel-girder framed agricultural barn with corrugated asbestos roofing incorporating occasional translucent plastic panels for natural light. The structure is open-faced along one elevation, providing no enclosed roof void, soffits, or wall cavities suitable for roosting bats. The interior is exposed, with a bare concrete floor and metal framework throughout.	Bat presence - No direct or indirect evidence recorded.	Negligible suitability Due to the open, exposed nature of the structure and lack of enclosed voids or crevice features.
		Roosting features - None present; no crevices, soffits, or suitable gaps.	
		Roosting suitability - Internal environment highly exposed, light, and subject to temperature fluctuations.	
		Accessibility - Structure fully open; unsuitable for stable roosting.	
		Surrounding habitat - Predominantly open fields and pasture, though rural in character with linear features such as hedgerows and remnant woodland providing some foraging and commuting potential.	

Building Number/ Reference	Building Description	PRA criteria testing	Suitability to Support Roosting Bats
2	(Hay Barn) - Similar in construction to Building 1, comprising a steel-girder frame with corrugated asbestos roofing and open sides. The structure provides no enclosed roof void or potential access features for bats. A minor accumulation of bird droppings was recorded in one corner, but no signs of bat use were identified.	Bat presence - No direct or indirect evidence recorded.	Negligible suitability Due to the open, exposed nature of the structure and lack of enclosed voids or crevice features.
		Roosting features – Minor, no crevices, soffits, or suitable gaps, some ivy cover on the western wall.	
		Roosting suitability - Internal environment highly exposed, light, and subject to temperature fluctuations.	
		Accessibility - Structure fully open; unsuitable for stable roosting.	
		Surrounding habitat - Predominantly open fields and pasture, though rural in character with linear features such as hedgerows and remnant woodland providing some foraging and commuting potential.	

Commuting and foraging

- 3.39 The habitats within the site boundary offer some foraging and commuting opportunities for bats. The grassland and boundary hedgerows provide some insect prey and navigational structure, while the adjacent oaks and nearby linear features such as hedgerows and field margins contribute to local connectivity.

Opportunities in the wider landscape

- 3.40 The wider landscape is predominantly rural, and as such bat roosting opportunities are likely to be present within the wider landscape in remnant woodland and older buildings.

Evidence

- ### 3.41 No evidence of bats was recorded during the surveys

Breeding birds

Evidence

- 3.42 Observations during the site visit recorded a small number of common species typical of rural farmland settings. Species observed or heard included blackbird *Turdus merula*, robin *Erithacus rubecula*, wren *Troglodytes troglodytes*, and woodpigeon *Columba palumbus*.

Nesting / roosting

- 3.43 No intact or defunct nests were discovered during the survey.
- 3.44 All of the habitats on site provide nesting opportunities for breeding birds, with further opportunities found within the wider landscape.

Foraging

- 3.45 The site provides moderate foraging opportunities for common garden and farmland birds, primarily through invertebrate prey within grassland and seeds and berries from hedgerow vegetation.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[illegible]

Dormice

Evidence

3.53 No signs of dormice were recorded during the survey.

Key features for survival

3.54 The site provides limited habitat suitable to support dormice with few features key for their survival. These features include:

- Hazel coppice with dense canopy for arboreal activity, and of a mature enough stock to produce nuts;
- Good connectivity with areas of higher quality habitat

The site provides limited habitat suitable to support dormice, with few features critical to their survival. Although the on-site hedgerows are of good structural quality, they are short and discontinuous, offering only small sections of suitable woody cover. The central and western parts of the site are open, comprising hardstanding and grassland which prevent arboreal connectivity.

Connectivity

3.55 Connectivity within the development site is limited, with short, fragmented hedgerow sections and a lack of continuous canopy cover. The boundary hedgerows will be retained in full and lie outside the proposed development footprint, ensuring no direct impact. However, being roadside in nature, they are subject to ongoing disturbance and provide restricted connectivity to the wider landscape. Sensitive management of these boundaries could help maintain what limited habitat value currently exists.

Opportunities in the wider landscape

3.56 Although a few recent records of hazel dormouse exist within 5 km of the site (NBN Atlas), the woodland and hedgerow network surrounding Moatfield Farm is highly fragmented, interspersed with large expanses of pasture and farmland. While some

hedgerows in the wider landscape are of good structural quality, both these and nearby woodland blocks lack the structure and abundance of flowering and fruiting species preferred by dormice. The hedgerow will also remain intact. Consequently, the likelihood of dormouse presence within or adjacent to the site is considered very low.

Great crested newts

Evidence

- 3.57 No signs of great crested newts were recorded during the survey.

Breeding habitat

- 3.58 There are no waterbodies on site.
- 3.59 The site lies within the red zone of the Great Crested Newt District Level Licensing (DLL) Impact Risk map (Nature Space Partnership, 2023).
- 3.60 There are 11 waterbodies within 500m of the development boundary, of these five were identified as having potential relevance to great crested newt (GCN) presence in relation to the site (see Figure 3.1).
- 3.61 **Waterbody 1** – Located approximately 50 m south-west of the site, this medium sized private pond lies within a complex of historic farm buildings and amenity garden. It is steep-sided, sees heavily used by waterfowl, and likely stocked with fish (Rudd) according to a previous owner. Water quality is poor water and limited in aquatic vegetation. The pond is separated from the site by a narrow lane, and the HSI score of 0.4463 (Poor), combined with its isolation and high disturbance, indicates negligible suitability for GCN. It has therefore been discounted as functionally relevant to the proposed development.
- 3.62 **Waterbodies 2 and 3** – Two small woodland ponds located approximately 250m north-east of the site. Both are isolated by expanses of improved pasture and a country lane, with no continuous vegetative or hydrological connectivity. Although within potential dispersal distance, GCNs would be more likely to utilise the better-connected ponds to the west, rather than crossing open farmland to reach the eastern ponds. These are considered functionally disconnected from the site.
- 3.63 **Waterbody 4** – A small, heavily shaded pond on the edge of woodland, filled with leaf litter and mud, and likely to dry seasonally. The HSI score of 0.6494 (Average) indicates moderate suitability. While connectivity to the site is poor, its ecological linkage to waterbody 5 and other smaller ponds further east suggests it may form part of a functionally connected pond network.
- 3.64 **Waterbody 5** – A woodland pond associated with a shallow ditch supporting moderate macrophyte cover and a relatively diverse structure, though it exhibited an oily surface film. It scored 0.75 (Good) under HSI assessment. Despite the intervening pasture, its quality and association with other nearby ponds make it ecologically significant within the local network.

Terrestrial habitat

- 3.65 The site comprises predominantly hardstanding and patches of scrub and hedgerow, with only small pockets of semi-natural vegetation. As such, it provides negligible terrestrial habitat suitable for great crested newts.

Hibernation habitat

- 3.66 Potential hibernation features are limited to isolated hedgerow and tree roots, but these are sparse and unlikely to support hibernating newts on any meaningful scale.

Connectivity, wider landscape, and access

- 3.67 The site lies within a red zone of the Great Crested Newt District Level Licensing (DLL) Impact Risk Map, indicating a higher likelihood of GCN presence within the surrounding landscape.
- 3.68 Approximately 24 ponds occur within 2 km, forming a pond-rich rural environment interspersed with irrigation ditches and offshoots of Cowfold Stream. Although these watercourses are not directly connected to the site, they may assist dispersal at a landscape scale. A map of these can be seen in Appendix C of this report.

Confirmed GCN records occur within the *Great Crested Newt Class Survey Licence Returns (England)* dataset (Natural England, 2014; accessed via MAGIC Maps on 12 November 2025) approximately 1.8 km north-east of the site near Wineham Place, suggesting a population is present within the wider metapopulation range. Given this, and the good suitability of Waterbody 5 and moderate suitability of Waterbody 4, migration between these and other nearby ponds cannot be ruled out.

Hedgehog

Evidence

- 3.69 No signs of hedgehog were recorded during the survey.

Key features for survival

- 3.70 Some features that hedgehogs require for survival include:
- Areas of tall grass or vegetation, or leaf litter offering a supply of invertebrates such as slugs and snails
 - Gaps in fences, walls or hedgerows that allow movement between areas of higher quality habitat.
 - Suitable hibernation sites, such as log piles, unlit bonfires, compost heaps, or other natural debris accumulations
 - Dense undergrowth and scrub providing cover from predators and shelter for nesting
 - Freshwater sources such as ponds, ditches, or damp areas that support invertebrates and provide drinking water
- 3.71 The site supports limited potential for hedgehogs. The majority of the land comprises hardstanding and short-sward grassland, with isolated scrub patches and short sections

of hedgerow along the boundaries. While these provide some refuge and limited foraging opportunities, the overall structure is fragmented and suboptimal.

- 3.72 Some additional sheltering opportunities are present in the form of hay bales, discarded timber, and old machinery, which could provide temporary resting or hibernation sites. However, these features are scattered and not extensive. No freshwater sources were observed on site.

Connectivity

- 3.73 Connectivity across the site is generally open due to the absence of barriers such as walls or close-board fencing, but internal movement is restricted by open and exposed areas. External connectivity is moderate, limited by surrounding farmland and access tracks, which reduce safe dispersal between areas of higher-quality habitat.

Opportunities in the wider landscape

- 3.74 The wider landscape is predominantly rural and agricultural, comprising open pasture and arable fields interspersed with scattered woodland and hedgerows. These features likely support local hedgehog populations, though functional linkage with the site is weak due to fragmentation and the lack of continuous shelter corridors.

Reptiles

Evidence

- 3.75 No signs of reptiles were recorded during the survey

Basking, commuting and foraging habitat

- 3.76 The site provides some suitable habitat for common reptile species, including slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*, although opportunities are limited in extent and quality.
- 3.77 Areas of hardstanding and bare ground offer potential basking sites, while adjacent scrub and hedgerow provide cover and refuge from predators. The perimeter vegetation and less disturbed edges of the site offer the best foraging opportunities, where invertebrate prey is most abundant.

Hibernation habitat

- 3.78 There are limited opportunities for hibernation, primarily within piles of debris, hay bales, old machinery, as well as within tree and hedgerow root systems along the margins. These features could offer frost-free refuge during winter but are isolated and suboptimal.

Connectivity, wider landscape, and access

- 3.79 Although connectivity with the wider landscape is reduced by surrounding pasture and managed farmland, both slow worm and common lizard are known to persist in fragmented, semi-brownfield environments. As such, low-level presence cannot be ruled out, particularly along the southern and western boundaries where vegetation is denser and less disturbed.

3.80 Given that precautionary measures will be implemented for great crested newts, any reptiles potentially present would be adequately covered by the same measures.

Other species

3.81 There are no other species of note present on site.

4 EVALUATION

Habitats

- 4.1 The habitats present on site are generally of low ecological quality, dominated by hardstanding, patchy scrub, and fragmented grassland with limited botanical diversity. Ecological value is slightly higher within boundary features, particularly the native hedgerow and trees

Protected species legislation

- 4.2 Protected species legislation, its importance, and the penalties that would be incurred if an offence were committed are summarised in Appendix A of this report.

Species – Constraints vs. suitability

This section discusses two separate issues;

- **Habitat suitability** and **species constraints**
- **Future potential** to support protected species

Activities that present species-specific risks are outlined for each species in the tables below. The following risk assessment criteria are considered:

Likelihood of presence

Whether, given the site suitability, the species is likely to be present on site. This is decided by assessing the following elements:

- Direct evidence of that species, such as anecdotal or direct sightings
- Surrounding habitat – Where is the site positioned? Is it a suitable area such that a source population would utilise the site?
- Regardless of its suitability, can the species access the site, and if so, how easily?
- Does the site provide enough foraging opportunities to independently support the species, or would it only form part of a wider foraging territory?
- If on site, is the species likely to be predated upon, or is there significant cover?
- Are the right breeding or hibernation opportunities available on site or in the Zone of Influence (ZOI)?

The following categories are used:

- **High** – the species has a good local population, can access the site / feature, and would thrive on site. Potential direct evidence.

- **Moderate** – the species is present in the wider landscape and would utilise the site, possibly as a part of a wider territory. Access may be restricted, or habitats may be sub-optimal in some way. No direct evidence.
- **Low** – the species is unlikely to be on site due to a lack of suitable habitat, poor access, or likely absence from the wider landscape – either demonstrable, or likely absent due to surrounding habitat unsuitability. Incidental or ‘vagrant’ occurrence cannot be ruled out, however.
- **Discounted** – the species is known to be absent from the wider landscape, or access would be impossible due to multiple barriers such as inappropriate habitat. Incidental occurrence can be ruled out.

Necessity of actions

In this context, this refers to whether these actions / activities are required as a part of the development. If so, they have already been deemed necessary to facilitate development under the NPPF mitigation hierarchy, and avoidance measures have already been tested.

Where the action has been deemed not necessary (“No”) this implies that this action is not considered necessary within the next 6 months, and seasonal growth patterns or other factors are unlikely to change this fact. After this period, reassessment may be necessary to ensure all impacts are properly assessed.

Likelihood of species being affected

If present, would this species be affected by the proposed activity. This takes account of the likely population of the species, the scale of the activity, and the effect of any mitigation measures. The following categories are used:

- **Very likely** – where an impact is almost guaranteed, and additional assessment may be required, and / or bespoke mitigation must be designed into the scheme.
- **Likely** – where an impact is predicted due to the size of the species population or the scale of the activity; additional assessment may be required, with strong mitigation guaranteed to be required.
- **Possible** – where an impact could occur if the species is present, and standard mitigation will be required to reduce the risk to that species.
- **Unlikely** – species population is low enough, or scope of the activity is minimal, such that an impact can be mitigated through simple measures.
- **Discounted** – where an impact can almost be guaranteed not to occur, as that species is not present or scope of activity is *de-minimis*. No specific mitigation is required.
- **N/a** – where an impact is not possible, as that feature does not exist on site, or that activity is not necessary for the development.

Recommendations

Recommendations are expanded upon in Section 6; in section 4, the scale of mitigation is discussed and broken down into the following categories:

- Special mitigation will be required, such as additional surveys, special control measures, or changes to the design to mitigate otherwise unacceptable impacts, as outlined in Section 6.
- The species does not pose a constraint subject to the application of 'Standard mitigation' measures as outlined in Section 6. No special mitigation required.
- Whilst there is no guarantee, the surveyor has used the evidence gathered to confirm likely absence of this species, and no specific mitigation will be required. No further action will be required for this species, and it will not be individually covered in Section 6. These species are still protected, and any changes to their status may result in mitigation being required.

Surveys required

Are extra surveys needed, such as species-specific surveys to inform the extent or type of mitigation *e.g. dusk bat emergence surveys*.

Future potential

Whether prudent habitat management can be targeted towards a species to improve the ability of that species to survive or encourage it into the site.

If a site fails enough of the suitability criteria, and this is unlikely to change - or is likely to get worse or be insurmountable (such as access) - then the site may not hold future potential to support that species.

Bats

- 4.3 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2017, and the Wildlife and Countryside Act 1981 (as amended).

Suitability of habitats

Roosting

Buildings

- 4.4 Both buildings on site (Barn 1 the cowshed and Barn 2 the hay barn) are open-faced, steel-framed structures with corrugated asbestos roofing incorporating occasional translucent plastic panels for natural light. Neither building provides enclosed voids, soffits, or crevices suitable for roosting bats.
- 4.5 Bat evidence was recorded, and internal conditions are too exposed, draughty, and disturbed to support roosting species. Both structures are therefore considered to have negligible potential to support roosting bats.

Trees

- 4.6 A veteran, large oak at the northern entrance. This tree exhibits age-related features (ivy cover, minor cavities, fissures) that could offer limited bat roost potential. It will be fully retained, with no works proposed within its canopy or Root Protection Area (RPA). No further survey is required, but it should be protected in accordance with BS 5837:2012.
- 4.7 An early-mature oak on the south-west side, leaning toward the southern barn. This tree has minor potential roost features and is immediately adjacent to demolition works and will require precautionary measures

Commuting and foraging

- 4.8 The site and surrounding area offer some foraging and commuting potential for bats, particularly along hedgerows and tree lines on the boundaries. The wider landscape comprises open pasture and farmland with intermittent linear features and small woodland pockets providing limited connectivity. Overall, foraging suitability within the site is moderate, constrained by the dominance of hardstanding and a lack of diverse vegetation structure surrounding site.

Likelihood of bat presence	Roosting	LOW
	Foraging / commuting	MODERATE

Impact risk assessment

Bats are typically most vulnerable to the following activities:

- Building disturbance, including but not limited to demolition, works to roof materials including tiles and sarking, works to hanging tiles or weatherboarding, and changes to or increases in artificial lighting.
- Tree removal, particularly those with roosting features.
- Habitat loss, particularly foraging habitat and commuting features.

Activity	Necessary on site?	Bats likely to be affected?	Recommendations
Works to buildings (where applicable)	Yes	Unlikely	Standard mitigation
Tree removal / pruning	Yes	Unlikely	Standard mitigation
Habitat loss	No	Possible	Compensatory planting scheme
Lighting design	Yes	Likely	Sensitive lighting plan

Surveys required?

- 4.9 Given the negligible roost suitability of both barns, further bat surveys are not required. Precautionary measures will be implemented during demolition and construction, as detailed within the Species-Specific Mitigation Measures section of this report.

Future potential and compensation

- 4.10 The site has potential to support bats in future, as compensation and enhancement features will increase the ability of local populations to survive. Section 6 provides further details on enhancements.

Breeding birds

- 4.11 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.
- 4.12 Failure to observe mitigation measures leading to birds being disturbed whilst nesting would constitute a criminal offence.

Current usage

- 4.13 All of the habitats on site provide foraging and nesting opportunities for breeding birds.

Likelihood of bird presence	Nesting	MODERATE
	Foraging / commuting	HIGH

Impact risk assessment

Birds are typically most vulnerable to the following activities:

- Building disturbance, including but not limited to demolition, works to roof materials including tiles and sarking, and works to hanging tiles or weatherboarding.
- Tree and vegetation removal, particularly dense habitats such as scrub and introduced shrubs. Grasslands can also be used by ground-nesting birds.
- Habitat loss, particularly foraging habitat and nesting features.

Activity	Necessary on site?	Birds likely to be affected?	Recommendations
Works to buildings (where applicable)	Yes	Very likely	Standard mitigation
Tree removal / pruning	Yes	Very likely	Standard mitigation
Habitat loss	Yes	Likely	Compensatory planting scheme

Surveys required?

- 4.14 No. All risks to birds can be successfully mitigated through a combination of a precautionary approach, seasonal avoidance measures, and pre-works checks.

Future potential and compensation

- 4.15 The site has potential to support birds in future, as compensation and enhancement features will increase the ability of local populations to survive. Section 6 provides further details on enhancements.

Dormice

- 4.21 Hazel dormice are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is a criminal offence to intentionally or accidentally harm, capture, or destroy dormice, or to disturb a breeding area.

Current usage

- 4.22 No signs of dormice were recorded during the survey.

Foraging, connectivity and hibernation

- 4.23 Dormice generally require large areas of connected ancient woodland with healthy, stratified vegetative layers providing a heterogeneous habitat (Bright et al., 2006). They also utilise hedgerows to a lesser extent, particularly for foraging and commuting and less so for nesting. This heterogeneous habitat is not provided by the site.
- 4.24 While some hedgerows are present, these are short and discontinuous, largely roadside, and fragmented from the wider landscape. They lack strong connectivity to the nearest woodland blocks, which are separated from the site by expanses of farmland. Fruit-bearing species are present in low abundance, and nesting or commuting suitability is therefore poor.
- 4.25 The limited scrub and immature trees along the southern and western boundaries provide only minimal foraging or nesting potential, and there are no continuous arboreal routes
- 4.26 Given the dominance of low-quality habitat, poor structural connectivity, and fragmented landscape context, the presence of dormice on site is considered highly unlikely, though it cannot be entirely ruled out. This cautious approach is supported by the presence of recent hazel dormouse records within the wider landscape to the north.
- 4.27 Dormouse presence in the wider landscape is considered to be possible in the areas of ancient woodland present.

Likelihood of dormouse presence	LOW
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Impact risk assessment

Dormice are typically most vulnerable to the following activities:

- Removal of dense vegetation, particularly woodland or other habitats well connected with large areas of woodland such as scrub and hedgerows
- Habitat loss, particularly foraging habitat and interruption or removal of commuting features.

Activity	Necessary on site?	Dormice likely to be affected?	Recommendations
Vegetation removal / pruning	Yes	Unlikely	No specific mitigation required above a precautionary approach for this species

Habitat loss	No	Unlikely	Compensatory planting scheme
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Surveys required?

4.28 No. All risks to dormice can be successfully mitigated through a combination of a precautionary approach, provision of escape routes, and pre-works checks.

Future potential and compensation

4.29 The site has **no realistic potential to support dormice in future**, and as such **no specific enhancements are recommended**. This is due to the site's **continued fragmented and isolated nature**, with **sub-optimal habitat** and **poor connectivity** to the wider landscape that will persist despite any on-site enhancements.

Great crested newts

- 4.30 Great crested newts are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is a criminal offence to intentionally or accidentally harm, injure or destroy great crested newts or their eggs.

Current usage

- 4.31 No signs of great crested newts were recorded during the survey.
- 4.32 The likelihood of a meta-population being present within the wider landscape is considered to be high as there are 11 waterbodies within 500m of the site boundary and a further 24 in 1km.
- 4.33 The site itself contains no standing or running water, and the nearest potential breeding ponds are located over 200 m away, separated by short, grazed pasture and hardstanding, which are unsuitable for safe migration.
- 4.34 Confirmed GCN records occur approximately 1.8 km north-east of the site near Wineham Place (Natural England, 2014; MAGIC Maps, accessed 12 November 2025), indicating a population within the wider metapopulation range. Justifying surveys on the eastern ponds, of which Waterbodies 4 and 5 returned average (0.65) and good (0.75) HSI scores respectively

Foraging, connectivity, breeding and hibernation

- 4.35 Foraging habitat within the site is limited to patches of scrub and grassland along the boundaries. Most of the site comprises hardstanding and bare ground, offering negligible suitability for amphibians which are disconnected from features in the wider landscape.
- 4.36 Limited hibernation opportunities are present in hedgerow and tree root systems, but these are suboptimal compared to surrounding countryside features.
- 4.37 Although occasional field ditches occur within the wider area, none connect directly to the site and most are associated with Cowfold Stream further south.
- 4.38 Furthermore, there is no breeding habitat on site such that a meta-population of newts would be unlikely to regularly return to site, and their presence would be incidental as a part of normal foraging.

Likelihood of great crested newt presence	LOW
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Impact risk assessment

Great crested newts are typically most vulnerable to the following activities:

- Habitat loss, especially removal of dense vegetation, particularly tussocky grass and scrub.
- Clearance of hibernation features such as log / brash piles, as well as man-made features such as construction debris
- Removal of trees and hedgerows with roots suitable for hibernation
- Turf stripping

- Works to waterbodies

Activity	Necessary on site?	Great crested newts likely to be affected?	Recommendations
Habitat loss	Possible	Possible	Precautionary Working Brief (PWB), seasonal avoidance measures and vegetation clearance methodology
Hibernation feature removal	No	Likely	Removal of hibernation features in active season
Tree / hedge removal	No	Possible	PWB, seasonal avoidance
Turf stripping	Yes	Likely	PWB, seasonal avoidance
Works to waterbodies	No	Discounted	No waterbodies on site

Surveys required?

- 4.39 Further survey work is not considered proportionate at this stage, as great crested newts are unlikely to be present or affected by the proposals and survey outcomes would not alter the mitigation measures proposed. It is acknowledged that, given the site's location within a Great Crested Newt Impact Risk Zone, the Local Planning Authority may request additional information during determination. In accordance with CIEEM guidance and JNCC Phase 1 survey methodology, the development is considered suitable to proceed under a precautionary approach without the need for district-level licensing.
- 4.40 It is recommended that a site-specific Precautionary Working Method Statement (PWMS) is provided prior to the commencement of works, to expand upon the mitigation measures outlined within Section 6 of this report.

Future potential and compensation

- 4.41 The site is not considered to have future potential to support great crested newts. This is due to the absence of breeding habitat, the lack of suitable terrestrial and hibernation features, and the site's limited connectivity with suitable habitats in the wider landscape. Furthermore, the proposed development would result in increased management and levels of disturbance, with fewer unmanaged habitat pockets available in the future. While great crested newts are likely to be present within the wider landscape, the site does not form part of a functional terrestrial corridor and does not provide habitat that would be preferentially utilised by the species.

Hedgehogs

4.42 Hedgehogs are a species of principal importance under the NERC Act 2006.

4.43 Hedgehogs are also protected from capture or killing by certain methods by the Wildlife and Countryside Act 1981 (as amended).

Current usage

4.44 No signs of Hedgehogs were recorded during the survey.

Foraging, connectivity and hibernation

4.45 Hedgehogs generally require a mosaic of interconnected habitats, including woodland edges, hedgerows, grasslands, and gardens, which provide shelter, foraging opportunities, and nesting sites (Morris, 2006). They rely on dense undergrowth, leaf litter, and log piles for nesting and hibernation, as well as varied vegetation supporting a rich supply of invertebrates. While hedgerows can serve as important corridors for movement and foraging, they are less commonly used for nesting.

4.46 The site supports some limited foraging and hibernation potential within boarder vegetation, hay bales, and old machinery, as well as under dense scrub and hedgerows around the perimeter. However, much of the site comprises hardstanding and short vegetation, making it sub-optimal for regular use.

4.47 Connectivity with the wider landscape is moderate, as the site is open to surrounding pasture and woodland, but roadside hedgerows and intermittent boundaries reduce safe movement across the area.

Hedgehog presence in the wider landscape is considered to be possible due to the areas of woodland present.

Likelihood of hedgehog presence	MODERATE
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Impact risk assessment

Hedgehogs are typically most vulnerable to the following activities:

- Habitat loss, especially removal of dense vegetation, particularly tussocky grass and scrub.
- Clearance of hibernation features such as log / brash piles and bonfires

Activity	Necessary on site?	Hedgehogs likely to be affected?	Recommendations
Habitat loss	No	Possible	Precautionary watching brief, seasonal avoidance measures and vegetation clearance methodology

Hibernation feature removal	Possible	Likely	Removal of hibernation features in active season by hand. Bonfires to be hand searched.
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Surveys required?

- 4.48 No further surveys for hedgehogs are necessary as they can be adequately protected using standard mitigation measures.

Future potential and compensation

- 4.49 The site has limited to moderate potential to support hedgehogs in future, as the proposed development will replace areas of hardstanding and bare ground with soft landscaping and garden habitats, substantially improving foraging and shelter opportunities. Further enhancement measures, such as log piles, taller grass margins, and hedgehog highways within boundary fencing, will also increase permeability and habitat value for local populations. Section 6 provides further details on these enhancements.

Reptiles

4.50 All species of reptile are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is a criminal offence to intentionally or accidentally harm, injure or destroy reptile species or their eggs.

Current usage

4.51 No signs of reptiles were recorded during the survey.

Foraging, connectivity, basking and hibernation

4.52 The site provides a small variety of microhabitats supporting common reptiles in their daily activities. While much of the site comprises hardstanding and short grazed grassland, areas of scrub, boundary habitats and discarded machinery offer limited potential foraging, basking, and refuge opportunities.

4.53 Hibernation habitat is limited to the roots of trees and hedgerows, with suboptimal opportunities provided by stored materials and machinery.

4.54 Connectivity to the wider landscape is moderate, with pasture and hedgerows linking the site to other suitable habitats. Reptile presence in the wider area is probable, particularly for common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*, which are tolerant of fragmentation and disturbed ground.

Likelihood of reptile presence	LOW
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Impact risk assessment

Reptiles are typically most vulnerable to the following activities:

- Habitat loss, especially removal of dense vegetation, particularly tussocky grass and scrub.
- Clearance of hibernation features such as log / brash piles, as well as man made features such as construction debris
- Removal of trees and hedgerows with roots suitable for hibernation
- Turf stripping

Activity	Necessary on site?	Reptiles likely to be affected?	Recommendations
Habitat loss	Yes	Possible	Precautionary Working Brief (PWB), seasonal avoidance measures and vegetation clearance methodology
Hibernation feature removal	Yes	Likely	Removal of hibernation features in active season
Tree / hedge removal	No	Possible	PWB, seasonal avoidance
Turf stripping	Yes	Likely	PWB, seasonal avoidance

Surveys required?

- 4.55 In accordance with CIEEM guidance and JNCC Phase 1 methodology, this meets the threshold for a precautionary approach without the need for further Phase 2 herptile survey effort.

Future potential and compensation

- 4.56 The site has some limited potential to support reptiles in future, particularly around the boundary features and vegetated edges. Simple enhancements such as log and brash piles, rough grassland margins, and improved hedgerow connectivity may enhance the site's function as a commuting and foraging corridor, improving permeability for local reptile populations. Section 6 provides further details on these enhancements.

5 CONCLUSION

Site summary

- 5.1 The proposed development site is currently considered to have low ecological value within a local context as it comprises locally common habitats supporting locally abundant species typical of the wider landscape.
- 5.2 The biodiversity value of the total site area is largely attributed to the following factors:
- The dominance of hardstanding, bare ground and short sward grassland, with more diverse or higher-value habitats restricted to the site boundaries.
 - The fragmented and poorly connected nature of vegetated habitats within the development area, reducing opportunities for notable species to utilise the site.
 - The ease with which biodiversity enhancement measures can be implemented within the overall site boundary without compromising amenity value.

Development proposals

- 5.3 The demolition of two existing agricultural barns (Building 1 the cow shed and Building 2 the hay barn) and the construction of a new dwelling with an associated annexe/garage.

Habitat impacts

- 5.4 Impacts to habitats are expected to be minimal, limited to small areas of scrubby ruderal vegetation, and short sward grassland within the central part of the site. Boundary features such as hedgerows and trees will be retained and protected where necessary and enhanced through sensitive management and new planting delivered under the Landscape and Ecological Enhancement Plan.

Species likely present

- 5.5 In the absence of mitigation, the current development proposals have the potential to affect protected species. To reduce the risk of an offence being committed, recommendations are outlined in Section 6 of this report. These should be followed to ensure that any potential impacts to protected species are adequately addressed during the planning stage, development and post-development stage.
- 5.6 The following species require no specific mitigation, and can be discounted from future consideration:
- N/a
- 5.7 The following species require 'standard' mitigation, such that subject to application of a combination of non-site-specific measures, a precautionary approach, and toolbox talks no impacts are predicted on these species:

- Bats

■ [REDACTED]

- Breeding birds
- Hedgehogs

5.8 The following species required additional mitigation measures, being additional surveys, precautionary approach and/ or additional site-specific mitigation measures due to the fact that the development presents unique risks to them:

- Herptiles

6 RECOMMENDATIONS

6.1 Section 6 discusses the following separate elements:

- Biodiversity enhancement measures to achieve Biodiversity Net Gain.
- Species specific mitigation measures for those species that would otherwise be at risk of injury, death, or legislative breach without mitigation measures

Mitigation

- 6.2 The quality of the habitats that could be affected and their potential to support protected and notable species is such that without mitigation, the development has the potential to harm, injure, kill or disturb protected or notable species.
- 6.3 These recommendations are therefore mitigative and are designed to work on a worst-case scenario basis, and to offer biodiversity enhancements to benefit the local area by attracting species in.

Species specific mitigation measures

Bats

All of the habitats on site have the potential to support foraging and commuting bats.

Bats are considered likely to be absent from the buildings on site, and no further bat surveys are required. However, dismantling of the western wall of the southern barn will involve works in close proximity to ivy cover and an early-mature oak which are minor potential roosting features. To avoid any risk of harm to bats, these works should be carried out with great care under an ecologist-led precautionary method. Ecological supervision is recommended during the removal of any limbs, ivy, or associated features.

Regardless of potential bat presence, a precautionary approach to bats will be required to comprise the following outline measures:

Timings

Works to the buildings are to commence during the active season of April to September inclusive so that should bats be found during the works, they can be successfully relocated under licence to a bat box as moving bats during hibernation season presents serious risks to their survival.

Toolbox talk

Prior to works commencing a toolbox talk will be required for operatives explaining:

- The importance of bat conservation.
- How to identify signs of bat presence, as well as distinguishing bats from other mammal species.

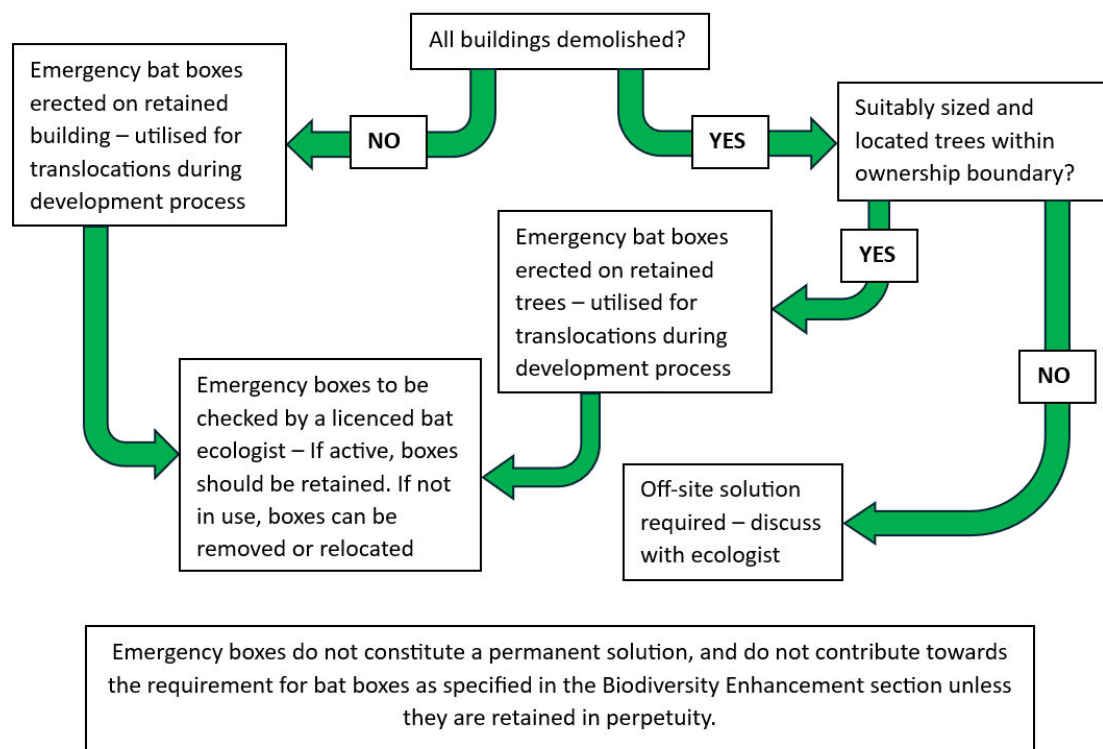
- The risks that works could present to bats should they be present.
- The methods that will be utilised on site to reduce the risks to bats should they be present.
- Emergency information should bats be found, including licenced bat contacts and wildlife rescue centres.

Erection of compensation features

Bat boxes should be erected prior to works commencing so that an artificial roost space is available for immediate translocation should bats be discovered during the demolition works.

For boxes placed on buildings, boxes similar to the Schwegler 1FF should be used. For boxes to be hung from trees, boxes similar to the Schwegler 2F should be used.

Consult the following flow chart to choose the location for an emergency translocation roost.



Workers should be careful not to damage nearby trees during erection, with only tertiary branches removed to provide a clear flight path to the box. Boxes should be erected on the south side of features to allow warming in the daytime and remain unlit throughout the day and night.

Immediately prior to works commencing

Immediately before works commence, a walkover check should be undertaken by operatives having been informed by the toolbox talk to identify potential bat presence. This should comprise an internal and external search of the building for signs of bat presence, including beneath roofing and in other crevices. Where bat absence cannot be confirmed by observation alone, endoscopes or other cameras should be utilised.

Where uncertainty remains, a trained [and where necessary, licenced] ecologist should be contacted for a secondary assessment. Works cannot begin until bat presence has been effectively ruled out.

Construction activities

Works to existing buildings that could affect bats include, but are not limited to:

- Demolition
- Roof works, including removing tiles, sarking, or any works to the loft space or timbers
- Siding, such as weatherboarding or hanging tiles

All of these works should be undertaken using hand tools under a 'soft strip' process with all arisings checked for signs of bat presence.

At all times during the works

Should roosting bats be confirmed or suspected at any time all works must cease and Arborweald contacted for a second assessment. The area must be cordoned off and works halted until the appropriate survey effort has been undertaken and licencing acquired.

Bats are not to be handled by anyone not covered under a Natural England Licence *unless their actions prevent further harm to an individual at immediate risk of further harm should those actions not be undertaken.*

Failure to cease works and undertake the adequate survey and licencing effort, or disturbing, harming bats, or obstructing a roost constitutes a strict liability criminal offence. The maximum penalty is 6 months in prison and an unlimited fine.

Lighting

While different species of bat react differently to night-time lighting, research has found that bats overall are sensitive to artificial lighting. Excessive and/or poorly directed lighting may delay bats in emerging from their roosts; shortening the time available for foraging, as well as causing bats to move away from suitable foraging grounds, movement corridors or roosting sites, to alternative dark areas (Jones, 2000).

To minimise indirect impacts from lighting associated with the proposed development, it is recommended that artificial lighting is only directed where necessary for health and safety reasons. Lighting should not illuminate any trees, hedgerows or mitigation and compensation features, such as hanging tiles and integrated bat boxes, or suspected or confirmed bat roosting sites. Lighting should only be used for the period of time for which it is required (Jones, 2000). This can be achieved by following accepted best practice (Fure, 2006; Institute of Lighting Engineers 2009; Bat Conservation Trust 2024):

- The level of artificial lighting including flood lighting should be kept to an absolute minimum;

- Where this does not conflict with health and safety and/or security requirements, the site should be kept dark during peak bat activity periods (0 to 1.5 hours after sunset and 1.5 hours before sunrise);
- Lighting required for security or safety reasons should use a lamp of no greater than 2000 lumens (150 Watts) and should comprise sensor-activated lamps;
- Lights utilising LED technology are the preferred option as these lights do not emit on the UV spectrum, are easily controllable in terms of direction/spill and can be turned on and off instantly;
- Avoid the use of sodium or metal halide lamps, these gas lamps require a lengthy period in which to turn off and the diffuse nature of the light emitted makes light spillage a significant problem.
- Lights required for night time deliveries or security patrols could be set to activate with pressure activated sensors set into the ground;
- Lighting should be directed to where it is needed to minimise light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield/hood/cowl/ that directs the light below the horizontal plane and restricts the lit area;
- Artificial lighting should not directly illuminate any confirmed or suitable bat roosting features or habitats of value to commuting/foraging bats. Similarly, any newly planted linear features or compensatory bat roosting features should not be directly lit.

Breeding birds

The scattered trees, hedgerows and buildings on site have the potential to support breeding birds. This also applies to trees that hang over into the site such as those at the boundaries.

All tree and hedge cutting works as well as any potential clearing or roof stripping works should be confined to outside of the bird breeding season (February – October inclusive) or should be undertaken under ecological supervision where works are undertaken within nesting season.

If an active nest is found all works must cease and a suitably experienced, qualified (and where necessary, licenced) ecologist contacted. Works can only resume once the species of bird has been identified, and an adequate buffer zone erected around the nest suitable to the species affected. This buffer must remain in place until fledging of the chicks *and* confirmation of the nest becoming defunct by the site ecologist.

No further surveys for breeding birds are deemed necessary at this stage.

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Trenches and holes should be covered each evening to prevent [REDACTED] animals from falling in. Provision should be made to allow animals to escape should they enter excavations, which could comprise a ramp leading to ground level.

Herptiles

Necessity for phase 2 surveying

Further survey work for great crested newts is not considered proportionate at this stage, despite the site's location within a Great Crested Newt Impact Risk Zone and the presence of waterbodies of moderate to good suitability within the wider landscape. This is due to the negligible suitability of the site itself and the fact that survey outcomes would not alter the mitigation measures proposed.

A precautionary approach is therefore recommended, to be implemented through a site-specific Precautionary Working Method Statement (PWMS). It is acknowledged that the Local Planning Authority may request additional information during determination.

Further herptile surveys are not considered necessary for common reptile species, as the site offers only limited and fragmented suitability, with hardstanding and patchy scrub, low refugia density, and ongoing disturbance. Their presence would likely be limited to occasional 'vagrant' individuals moving through the boundary habitats rather than a sustained population. Accordingly, common reptiles can be fully protected through a precautionary approach comprising a site-specific toolbox talk, sensitive vegetation clearance, phased cutting, and informal translocation where required.

The term 'informal translocation' refers solely to manual encouragement of non-licensable species from the work area and does not imply handling of licensable species unless authorised under licence.

Herptile season

Hibernation season for herptiles comprises the coldest and darkest months in which they enter a state of torpor due to the lack of sunlight hours and opportunities to warm themselves and become active. Whilst there is no specific definition of the months that herptiles hibernate due to climatic variability and species differences, it is generally accepted that herptiles are hibernating in November, December, January and February, with some limited activity in October and March, increasing as daytime temperatures increase.

Active season comprises the warmest months of the year, and are generally accepted to be April, May, June, July, August, and September, with some activity expected in warmer periods of March and October. Additional consideration should be given to amphibian **breeding season** which occurs in the period March to June inclusive subject to weather conditions.

Capture and translocation of herptiles

Species identification

Identification of the target species for translocation is extremely important so as to manage risks to both the captor and the target individual.

Can be captured and translocated	Must not be captured	Reason
Common frog	Great crested newt	Protected species
Common toad	Sand lizard	Protected species
Smooth newt	Smooth snake	Protected species
Palmate newt	Adder	Venomous
Common lizard		
Grass snake		
Slow worm		

If in doubt regarding the species, stop works and contact an appropriately trained, experienced and where necessary licenced ecologist.

General notes

Mitigation measures for amphibians such as great crested newts and common toads are similar to those for reptiles such as common lizards and slow worms. Where they differ is in their speed of movement, and their level of protection, as well as some differences in habitat.

Broadly all species are found within similar dense habitats such as tussocky grass, scrub, and occasionally woodland, making use of dense woody features for cover. Amphibians are more often found near water, although newts are broadly terrestrial having only a brief aquatic period in March to June.

When organising mitigation, there are a few salient points to remember:

- Capturing or excluding a great crested newt without a licence is an offence, *unless rescuing the newt was an emergency measure that would otherwise negate the risk of a more serious offence being committed*. This includes restricting newts to a fenced area.
- All herptiles hibernate in the same sorts of habitats, being natural log and brash piles, holes in the ground, and man-made features such as construction waste and bonfires.
- All herptiles hibernate at roughly the same time (the winter months) and are active in the warmer months.
- Reptiles broadly move faster than amphibians and are more capable of fleeing activities such as vegetation clearance. As such, amphibians are most vulnerable to destructive activities.

Mitigation measures

Due to the methods that will be employed to create footings and other hard features, it will be necessary for the works to be mitigated through seasonal avoidance measures and a precautionary approach.

The precautionary approach laid out below should be followed to ensure that in the event that vagrant reptiles are discovered appropriate mitigation measures are put in place to avoid the risk of an offence being committed, and so that construction workers are aware of the constraints that herptile species could present to the development.

At a glance:

- Assessment of the working area by a qualified and experienced ecologist
- Toolbox talk to inform operatives
- Fence installation as necessary
- Formal translocation effort if required
- Seasonal constraints applied as necessary
- Timed vegetation clearance with informal translocation of stragglers / encouragement towards safe habitat outside of working area
- Maintenance of site
- Works commence under precautionary approach once site has been made safe for herptiles

Toolbox talk

Prior to works commencing, a toolbox talk will be presented to all operatives to inform them of the following:

- The legislation protecting herptile species
- The importance of their conservation
- How to identify them so as to prevent injury
- The site-specific risks to them
- What to do in the event a herptile is discovered or suspected
- Who to contact in the event a herptile is discovered
- How to identify areas with herptiles, including signage provisions
- Logging of herptile incidents

Fencing

No exclusion fencing will be installed unless a European Protected Species licence has been granted by Natural England. This is to avoid the risk of unlawfully trapping or excluding GCN. For reptiles, short sections of drift fencing may be used temporarily to guide animals away during vegetation clearance, but not for exclusion

Translocation

Under the current scheme, herptiles will be encouraged to disperse from the site naturally through phased vegetation removal. Active translocation will only be carried out for species not subject to licensing constraints from the 'Can be captured' table above.

If there is any doubt as to the species present, works must cease and an appropriately trained and licenced ecologist contacted, as capturing a great crested newt would constitute an offence. Natural England will need to be consulted.

So as to reduce the risk of an offence being committed, Natural England's guidance should be followed as outlined in the Reptile Mitigation Guidelines handbook, such that herptiles are captured and excluded from the work area and relocated to the adjacent receptor site within the ownership boundary that will be subject to restoration and enhancement.

Timing of works

At a glance

- All works under ecological supervision
- Construct a compensatory feature for displaced herptiles
- Cut vegetation to ground level during the active season
- Maintain at this level until winter / until supervision is available
- Strip turf and topsoil during winter / under ecological supervision

Prior to works commencing

A hibernaculum or log pile should be constructed within the habitat unaffected by the development / offsite to provide a translocation receptor site should herptiles be discovered.

Vegetation removal

Vegetation removal should occur during the active season of March to October, to include removal of any scrub plants and phased cutting of all vegetation to ground level.

The entire working area should be checked by the ecologist prior to works commencing, including a hand search where necessary of any dense refugia.

Vegetation cutting works should be undertaken in a staged manner consisting of cut and collect to 150mm, left for 24 hours, then final cut and collect to ground level. This will also reduce the risk to breeding birds.

Hibernacula removal

Any hibernation features such as rubble or spoil piles, bonfires, or dense refugia such as log or brash piles should be slowly dismantled by hand during the active season of March to October only.

Maintenance of the site

Once any areas of vegetation to be affected by the development have been cut to ground level, it should be maintained as such until work operations can begin so as to keep the site as unsuitable for habitation by herptiles as possible.

The site should be cut every two weeks to discourage re-colonisation. All materials or spoil should be kept off the ground to prevent usage as hibernacula or cover.

Turf stripping

Prior to turf stripping (no more than 5 days before work start), a site walkover should be undertaken to ensure no new refugia have formed.

Turf stripping must only be undertaken once all herptiles have either been excluded from the works area (in the case of fully fenced sites), or once herptiles have been encouraged away from the site through phased vegetation clearance and the site has been maintained at ground level until turf stripping can begin.

Turf stripping during the hibernation season of November to February is only possible if the site has been maintained at ground level, and no hibernation features will be affected – this is at the sole discretion of the ecologist. If this cannot be guaranteed, turf stripping works must occur under ecological supervision during the active season.

In the unlikely event that herptiles are found at any time during the development, work should cease immediately, and an ecologist – suitably licenced where necessary - should be sought. Thereafter work can only recommence upon working in accordance with legislatively compliant recommendations. Failure to do so constitutes a criminal offence.

Biodiversity enhancement and compensation

Necessity for planning conditions – note to the LPA

Sometimes it can be deemed necessary for biodiversity enhancements and compensation measures to be recommended to be designated as conditions attached to a planning consent.

The following symbols will be utilised below, with categorisation methodology explained in Section 2:

Red recommendations should be designated as conditions attached to a planning consent, and the development must not proceed without these enhancements / compensation measures being put in place, as they form a crucial role in achieving biodiversity net gain targets.

Amber recommendations should be included within the development, however it is not necessary for them to be designated as conditions, as the author believes that their implementation is not key to achieving biodiversity net gain targets. The client / developer should seriously consider including these measures to improve the biodiversity value of the site and to reduce their carbon footprint.

Green recommendations are additional enhancements which would improve the biodiversity value of the site; however, they are not key to achieving biodiversity net gain targets. These recommendations are aimed at clients wishing to 'go the extra mile' with their site so as to improve visual impact, public engagement, and property value.

In all cases, effort should mainly be concentrated on planting native species where possible. We have created an 'Alternative Planting List' covering trees, hedgerows, and wildflower species suggestions, available on request.

Mandatory enhancements

Hedgehog highways should be a part of the development, with any and all new fencing and walls having a minimum 13cm x 13cm hole integrated into their design to allow access and egress from the site. Hedgehogs are a species of principal importance under Section 41 of the NERC Act 2006, and their conservation is of paramount importance due to severe declines in their populations and range.

Bird boxes, bat boxes, and bee bricks should be a part of the development, including dedicated swift boxes for hirundines, multi species bird boxes, and bat boxes.

Bird boxes

Bird boxes should be placed at a minimum height of 4.5 metres i.e. first floor / eaves height away from doors and windows and areas of high disturbance (footpaths, lighting etc.).

Bird boxes should be placed on the eastern or western aspects of buildings so that they remain partially shaded during parts of the day to reduce the risk of overheating. They should comprise built-in features as they are better for security, longevity, reduced maintenance, reduced predation, thermal stability and aesthetic integration with the building design.

It is recommended that bird boxes are constructed of woodcrete / woodstone similar to such boxes as the Schwegler 1SP nest box, which is suitable for both built-in and hung installations.

The swift box should be similar to the Vivara Pro WoodStone built-in swift nest box, or the Schwegler 17A triple cavity box, which is suitable for both built-in and hung installations.

One brick is the equivalent of one nesting cavity, thereby where a multiple cavity brick is provided, this would result in the same provision but with a lower number of bricks.

As a minimum, a single (1) bird box should be provided along with a minimum two (2) swift cavities / swift boxes / bricks on the eastern aspect of each new building

Multi-species bird boxes and swift boxes should be placed away from each other where possible.

Bat boxes

Although the buildings on site have negligible potential to support roosting bats, and works are unlikely to affect bats, it is recommended that a bat box is installed as a precautionary enhancement. This will provide an immediate safe refuge should a bat be encountered unexpectedly during dismantling works and will contribute positively to the local bat assemblage given the suitability of the surrounding rural landscape.

It is recommended that hanging bat boxes can be utilised such as the Schwegler 1FF or 2F flat hanging box on either buildings or mature retained trees.

Care should be taken when erecting bat boxes to ensure they remain sheltered, but accessible with clear flight paths and without damaging surrounding trees during erection. Tertiary

branches that block the flight path to the box should be trimmed, with the whole area remaining unlit.

A single bat box should be placed on a suitable retained mature tree or building within the site or the wider ownership boundary prior to works commencing.

The installation of the bat box provides a small but meaningful ecological enhancement and aligns with the site's rural context, where bats are likely to be present in the wider landscape even if absent from the buildings themselves.

Arborweald receive no commission for recommendation of brands of wildlife boxes, and other brands are available.

Bee bricks

Bee bricks should be included on each new building to comprise one (1) Ibstock EcoHabitat brick at a minimum of 1m above ground level adjacent to landscape planting that is of benefit to wildlife, comprising native species as detailed in the 'Wildflower planting' section below.

For buildings without a suitable brick face for installation, a Woodstone Insect Block or similar should be installed externally in a suitable location.

Hedge planting: The development should include new hedge planting along linear boundaries using a native species-rich hedgerow mix to include a minimum of 7 species from the following list: hazel, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, spindle *Euonymus europaea*, wayfaring tree *Viburnum lantana*, crab apple *Malus sylvestris*, hornbeam *Carpinus betulus*, dog rose, field maple *Acer campestre* and wych elm *Ulmus glabra*. Furthermore, any existing hedgerows in the wider site boundary should be gap planted and bolstered with species from the list above.

These species are hardy allowing them to be managed in multiple ways and provide excellent privacy once full grown. If further privacy is required in specific areas, then yew *Taxus baccata* and beech *Fagus sylvatica* should be considered. Non-native species should be avoided.

Scattered mature standards comprising hornbeam *Carpinus betulus*, field maple, or lime *Tilia cordata* var. 'Green Spire' should be planted across the site to increase woody coverage and connectivity. These species are hardy, low maintenance and also do not risk dominating the landscape in later life as they can be coppiced or pollarded effectively.

Additionally, honeysuckle *Lonicera periclymenum* should be included in hedgerow mixes.

Areas of hedgerow with non-native invasive species should have these species removed and replaced with native species.

New hedgerows should be planted at a density of 10 plants per metre in two rows of 5 plants each, with rows 30cm apart and plants 20cm apart. Bolster planting should be undertaken at the same density taking into account existing mature individuals as contributing to this density; *e.g. existing hedgerow has density of 3 plants per metre, bolster planting would comprise 7 additional plants.*

It is recommended that 15 metres of new species-rich native hedgerow is planted along an appropriate section of the site boundary. This will function as a multi-benefit

ecological enhancement, improving structural connectivity and providing valuable shelter, foraging resources, and movement corridors for a range of fauna.

Log Pile Creation: A log pile should be created near the site boundary, positioned outside the construction footprint but within a quiet, undisturbed area. This will serve as both a receptor feature for any vagrant herpetofauna encountered during precautionary works and as a long-term biodiversity enhancement.

The log pile will provide:

Shelter and refuge habitat for reptiles, particularly slow worm and common lizard.

Nesting and overwintering opportunities for hedgehogs, which favour dense, undisturbed woody debris.

Microhabitats for invertebrates, fungi, invertebrates and detritivores, thereby strengthening the site's ecological food web.

Logs should be untreated hardwood sourced on-site where possible. Material should be stacked loosely to create internal cavities, with branches and leaf litter added to enhance moisture retention. The pile should be partially sunken into the ground to improve thermal stability and should remain unlit and undisturbed throughout the site's operational lifespan.

This feature will function both as a mitigation receptor during works and as a valuable long-term enhancement within the wider ownership boundary.

Non-mandatory enhancements

New trees; the development should include new trees to ensure an appropriate level of cover for bats and to provide a micro-climate between trees to support insect species. Fruit trees also work well within linear boundaries such as hedgerows.

These should be scattered throughout the site boundary, and comprise robust native woody species such as hornbeam, field maple, or lime *Tilia cordata*, or fruiting species such as pear *Pyrus spp.*, apple *Malus spp.*, or mountain ash *Sorbus aucuparia*. These could include historically important varieties rare in the county. These species provide foraging opportunities for [REDACTED] birds and small mammals.

Sward management around planted trees should be careful to avoid damage to trees and should be as varied as the rest of the amenity grassland within the wider site boundary.

Hedge planting; the development should include new hedge planting along linear boundaries using a native species-rich hedgerow mix to include a minimum of 7 species from the following list: hazel, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, spindle *Euonymus europaea*, wayfaring tree *Viburnum lantana*, crab apple *Malus sylvestris*, hornbeam *Carpinus betulus*, dog rose, field maple *Acer campestre* and wych elm *Ulmus glabra*. Furthermore, any existing hedgerows in the wider site boundary should be gap planted and bolstered with species from the list above.

These species are hardy allowing them to be managed in multiple ways and provide excellent privacy once full grown. If further privacy is required in specific areas, then yew *Taxus baccata* and beech *Fagus sylvatica* should be considered. Non-native species should be avoided.

Scattered mature standards comprising hornbeam *Carpinus betulus*, field maple, or lime *Tilia cordata* var. 'Green Spire' should be planted across the site to increase woody coverage and connectivity. These species are hardy, low maintenance and also do not risk dominating the landscape in later life as they can be coppiced or pollarded effectively.

Additionally, honeysuckle *Lonicera periclymenum* should be included in hedgerow mixes.

Areas of hedgerow with non-native invasive species should have these species removed and replaced with native species.

New hedgerows should be planted at a density of 10 plants per metre in two rows of 5 plants each, with rows 30cm apart and plants 20cm apart. Bolster planting should be undertaken at the same density taking into account existing mature individuals as contributing to this density;

e.g. existing hedgerow has density of 3 plants per metre, bolster planting would comprise 7 additional plants.

Mowing regime; areas of grassland on site should be mown on a scheme that benefits both biodiversity and the usage of the site. Areas away from roadways should be left long and cut once in October to allow the soil nutrients to be removed. These measures can also be supplemented for 'planting of a wildflower meadow' below.

Hedge cutting; Existing and new hedgerows on site should be cut biannually (every 2 years) except around gateways (annually). Hedgerows gradually lose their shape and density at the cost of amenity and functionality as they mature; therefore, hedge laying in the traditional Kent or Sussex style should occur every 10 years on rotation to maintain hedge structure.

Planting of a wildflower meadow; an increase in invertebrate habitat should be a key part of the plan, to include wildflower planting for bees and other pollinators within the site boundary to the east and south of the development to help increase the number of foraging opportunities available for bats.

Wildflower meadow mixes are available online, and should preferably focus on native bee-friendly mixtures to include the following species:

Common agrimony	Cornflower	Wild marjoram
Borage	Ox-eye daisy	Meadow cranesbill
Wild clary	Wild foxglove	Musk mallow
Red clover	Common knapweed	Common poppy
White clover	Greater knapweed	Ragged robin
Corn cockle	Purple loosestrife	Sainfoin
Field scabious	Bird's-foot trefoil	Yarrow

Wildflower mixes should focus on supporting invertebrates (such as bees, ants, wasps, butterflies and flies) and birds, and should ideally not contain non-native species as these can out-compete native plants for pollination.

Climbing plants should be trained up the walls of the new buildings or fences using trellis. Species could include; passion flower, honeysuckle, hops, ivy, star jasmine, wisteria, climbing roses, or clematis. These species all provide feeding opportunities for invertebrates and small mammals, and nesting opportunities for birds once they reach maturity.

Butterfly planting should focus on species rare in Sussex and Kent such as the silver-spotted skipper *Hesperia comma*, dingy skipper *Erynnis tages*, grizzled skipper *Pyrgus malvae*, Adonis blue *Polyommatus bellargus*, chalk hill blue *Polyommatus coridon*, small heath *Coenonympha pamphilus*, and fiery clear wing *Pyropteron chrysidiformus*. Plant species to encourage these butterflies should include the following in a large planter or area of ornamental planting (species that support more than one of these butterfly species are in bold):

Common sorrel	Tormentil	Birds foot trefoil
Curled dock	Salad burnet	Horseshoe vetch
Sheep's fescue	Agrimony	Wild strawberry

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FIGURES

Figure 1.1 Location of site

Figure 1.2 Extent of site boundary

Figure 3.1 Waterbodies within 500 m of site boundary

Figure 3.2 Preliminary Roost Assessment results

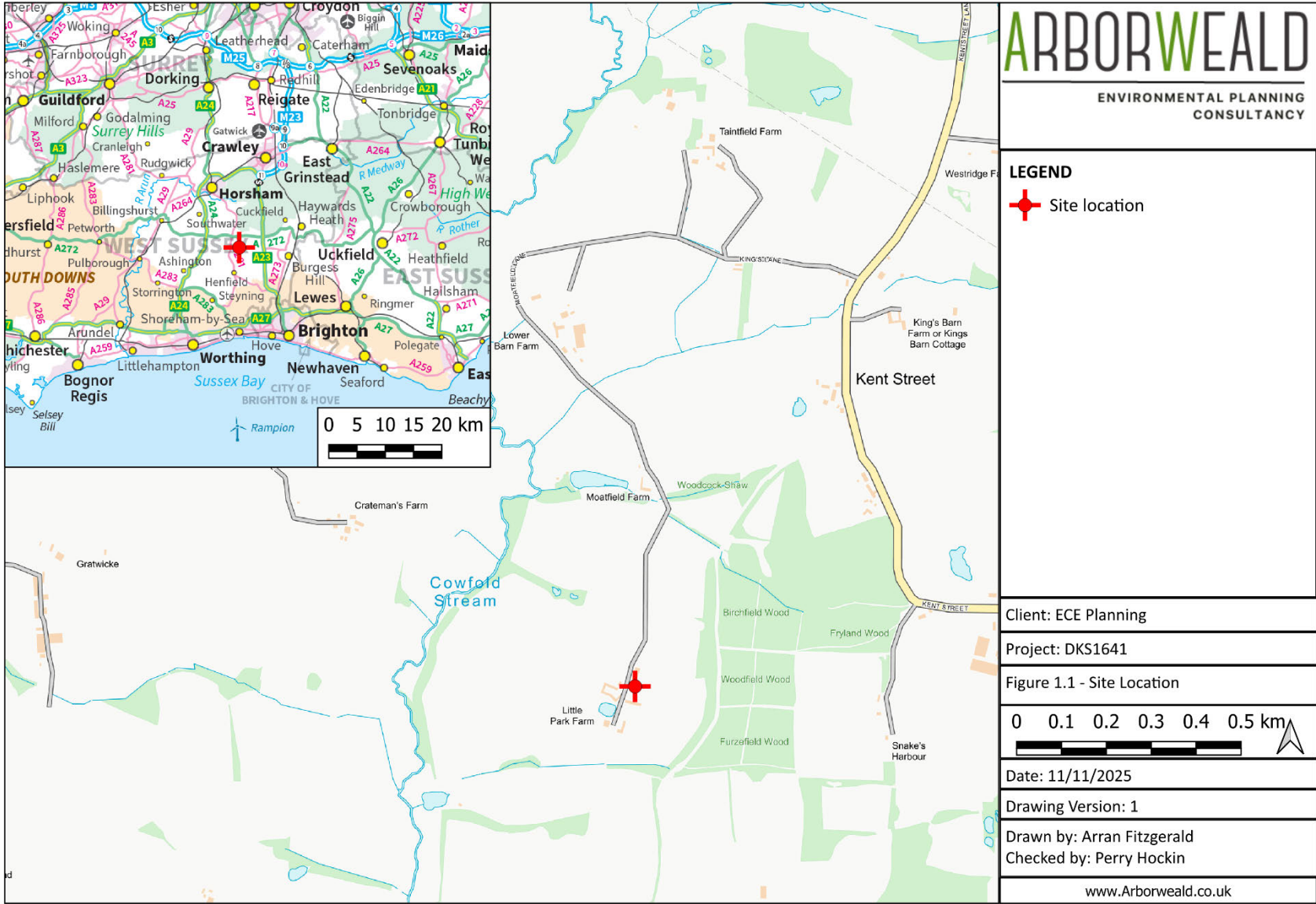
Figure 3.3 Preliminary Ecological Appraisal results

Figure 6.1 Proposals

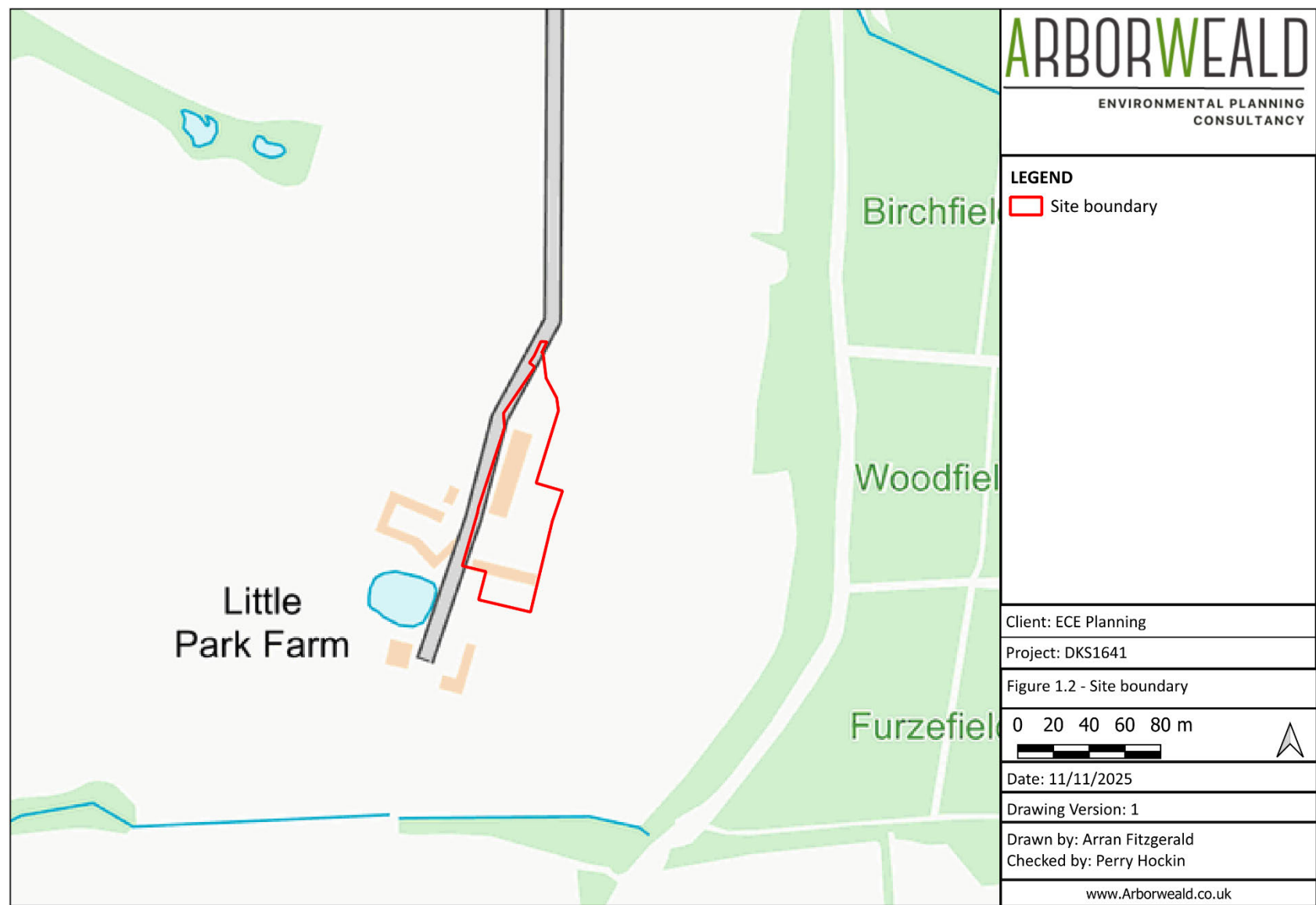
Figure A.1 Waterbodies within 1km of site boundary

*For the purposes of the proposals drawing, habitats from any landscape plans have been assigned their category of best fit as per Stace et al.

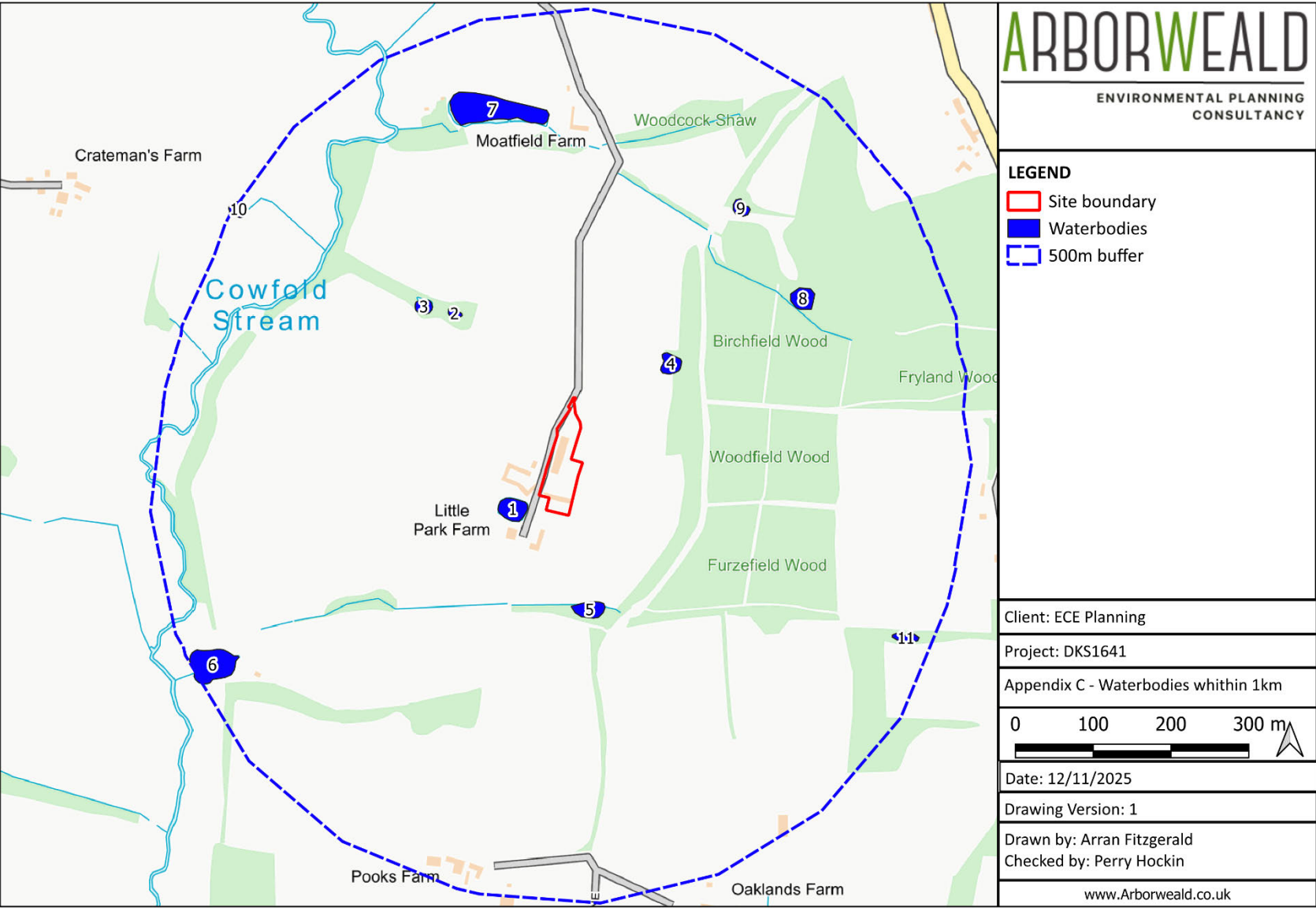
In the absence of full and finalised development plans, the author will have to make assumptions. As such, habitats displayed are suggestions and comprise habitats that the author feels would best fit the proposed landscape without compromising the usage of the site. These habitats will have been used to undertake the Biodiversity Metric Assessment (BMA), and as such adjustment to the calculation may be required should plans change. – this may come at cost to the client.



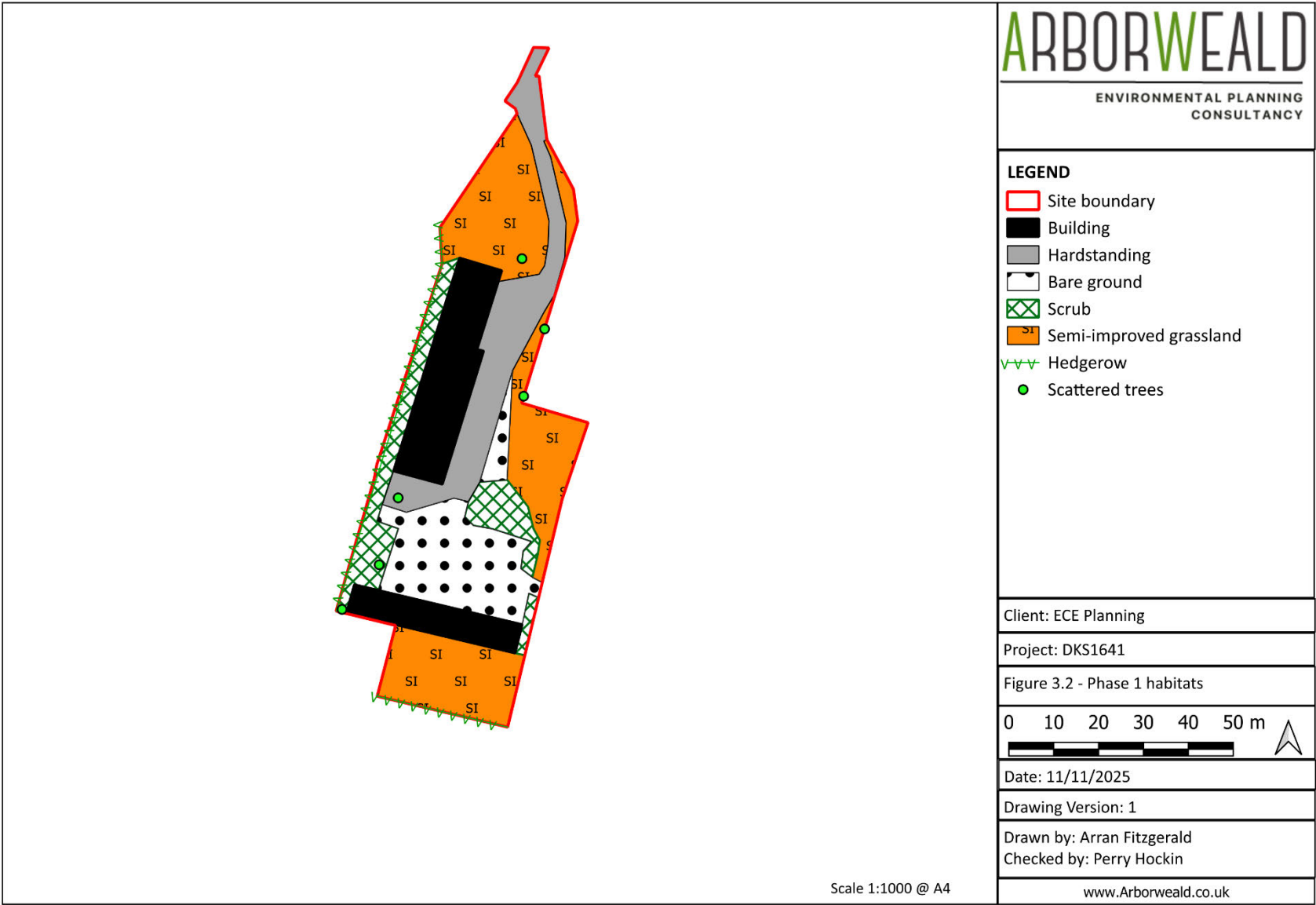
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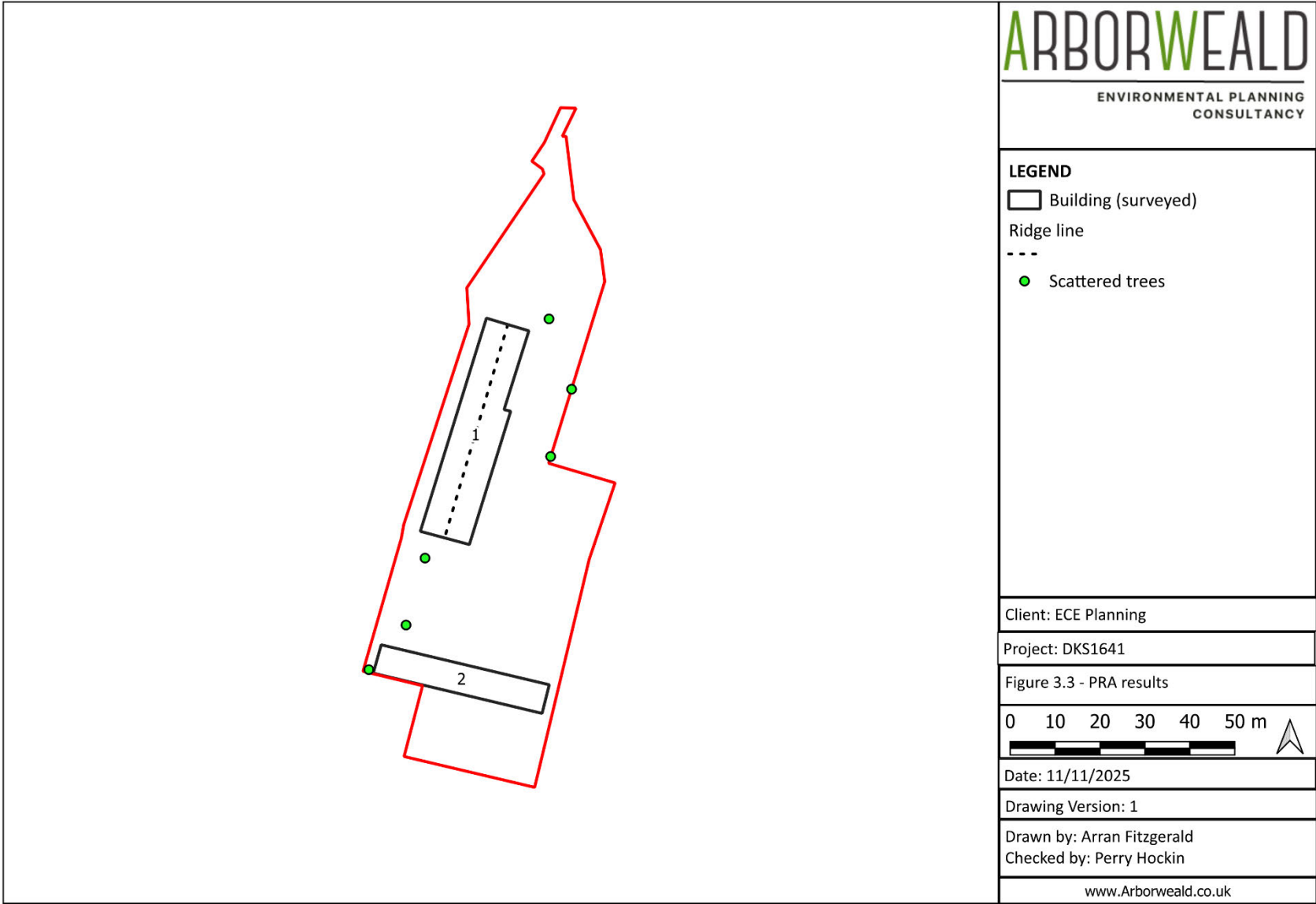
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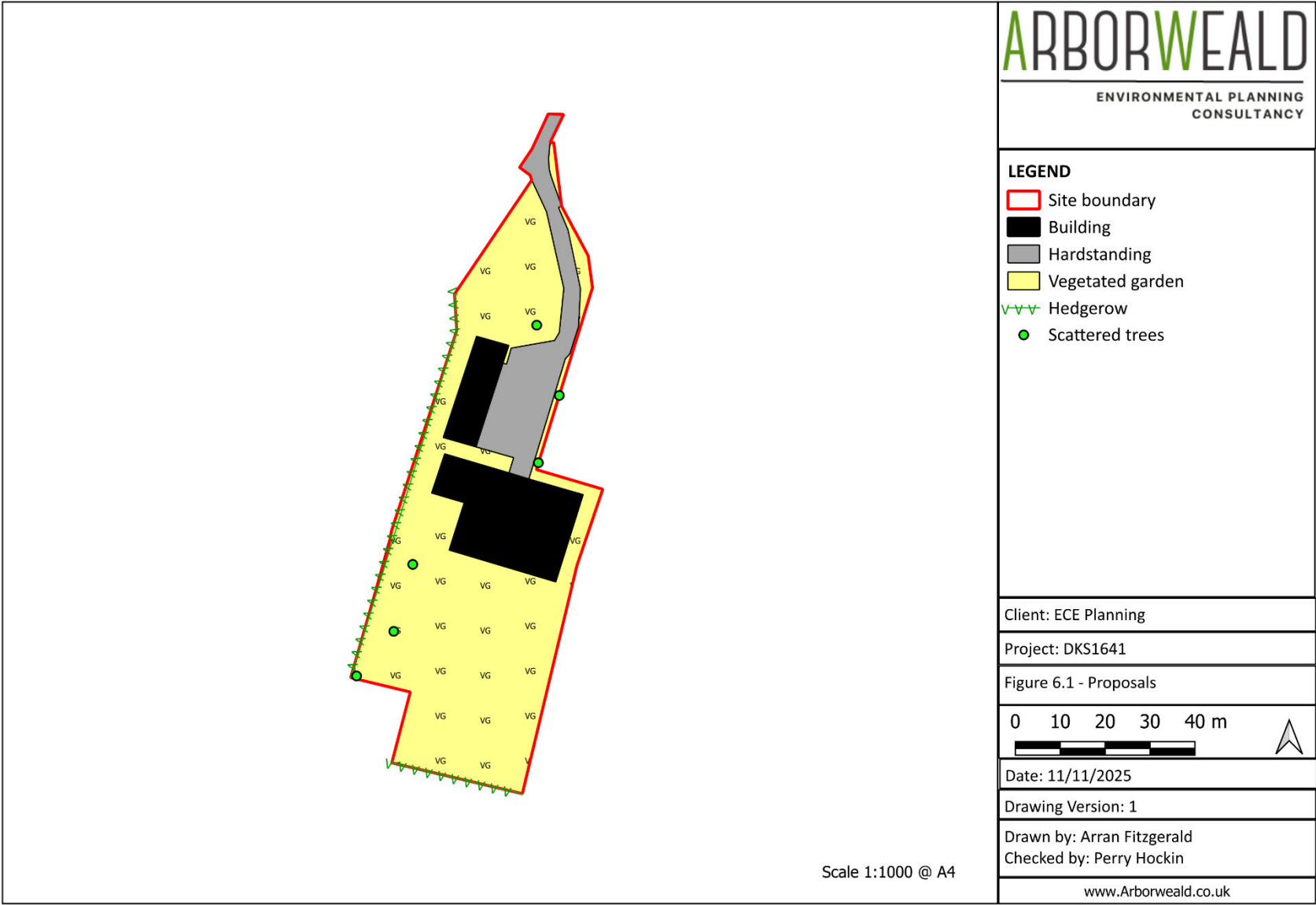
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APPENDIX A Wildlife Legislation

Strict Liability vs Mens Rea

Wildlife offences are classified in one of two ways;

Some are *strict liability*, meaning that a person can be found guilty regardless of intent or knowledge. In strict liability cases, the defendant cannot argue lack of knowledge as a defence (e.g., not knowing a bird was protected). However, statutory defences may apply (e.g., under Section 4 for acts done for humane reasons).

Other offences require intention, recklessness, or knowledge, and are governed under *Mens-rea* law whereby the offence must be proven to have been committed intentionally, through recklessness (such as not seeking prior knowledge), or when already in possession of that knowledge e.g. *having had a toolbox talk prior to undertaking works*.

The following table outlines which wildlife offences are Strict Liability, and which are Mens-rea.

Species	Primary protection legislation	Liability
Bats	<i>Wildlife and Countryside Act 1981 (WCA 1981) – Schedule 5</i> <i>Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)</i>	Strict liability - WCA 1981 – Section 9(1): Prohibits killing, injuring, or taking bats. - Habitats Regulations – Regulation 43(1): Prohibits deliberate capture, killing, or disturbance of bats.
		Mens-rea - WCA 1981 – Section 9(4): Prohibits damage to or destruction of a bat's place of shelter but requires intent or recklessness. - Habitats Regulations – Regulation 43(2): Prohibits damage to or destruction of breeding sites or resting places, requiring intent or recklessness.
Birds	<i>Wildlife and Countryside Act 1981 – Section 1</i>	Strict liability - Section 1(1): Prohibits killing, injuring, or taking any wild bird. - Section 1(2): Prohibits taking, damaging, or destroying an active nest. - Section 1(3): Prohibits taking or destroying eggs.
		Mens-rea Section 1(5): Prohibits disturbing birds at nest sites (for Schedule 1 birds), requiring intent or recklessness.
Badgers	Protection of Badgers Act 1992	Mens-rea - Section 1: Prohibits wilfully killing, injuring, or taking a badger (requires intent). - Section 3: Prohibits interfering with a badger sett (requires intent or recklessness).
Dormice	<i>Wildlife and Countryside Act 1981 (WCA 1981) – Schedule 5</i> <i>Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)</i>	Strict liability - WCA 1981 – Section 9(1): Prohibits killing, injuring, or taking a dormouse. - Habitats Regulations – Regulation 43(1): Prohibits deliberate capture, killing, or disturbance.
		Mens-rea - WCA 1981 – Section 9(4): Prohibits damaging or destroying a place of shelter (intent or recklessness required). - Habitats Regulations – Regulation 43(2): Prohibits destruction of breeding/resting sites (intent or recklessness required).
Great-crested newts	<i>Wildlife and Countryside Act 1981 (WCA 1981) – Schedule 5</i> <i>Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)</i>	Strict liability - WCA 1981 – Section 9(1): Prohibits killing, injuring, or taking a dormouse. - Habitats Regulations – Regulation 43(1): Prohibits deliberate capture, killing, or disturbance.
		Mens-rea - WCA 1981 – Section 9(4): Prohibits damaging or destroying a place of shelter (intent or recklessness required). - Habitats Regulations – Regulation 43(2): Prohibits destruction of breeding/resting sites (intent or recklessness required).
Reptiles	<i>Wildlife and Countryside Act 1981 – Schedule 5</i>	Strict liability WCA 1981 – Section 9(1): Prohibits killing, injuring, or taking a protected reptile (e.g., sand lizard, smooth snake).
		Mens-rea WCA 1981 – Section 9(4): Prohibits damaging or destroying a place of shelter (intent or recklessness required).
Invasive species	<i>Wildlife and Countryside Act 1981 (WCA 1981) – Section 14, Schedule 9</i>	Strict liability WCA 1981 – Section 14: Prohibits the release or escape of invasive non-native species (e.g., Japanese knotweed, grey squirrel)
		Mens-rea WCA 1981 – Section 14: Prohibits causing the spread of invasive non-native species (e.g., Japanese knotweed, grey squirrel)
Other species	<i>Wildlife and Countryside Act 1981 (WCA 1981) – Schedule 5</i> <i>Conservation of Habitats and Species Regulations 2017 (Habitats Regulations)</i>	Also covered under Section 9 of the WCA 1981 are otter, water vole, red squirrel, pine marten, sturgeon, lamprey, and certain invertebrates. For all these species, they are protected as follows: Strict liability - WCA 1981 – Section 9(1): Prohibits killing, injuring, or taking a protected reptile (e.g., sand lizard, smooth snake). Mens-rea - WCA 1981 – Section 9(4): Prohibits damaging or destroying a place of shelter (intent or recklessness required).

Schedule 8

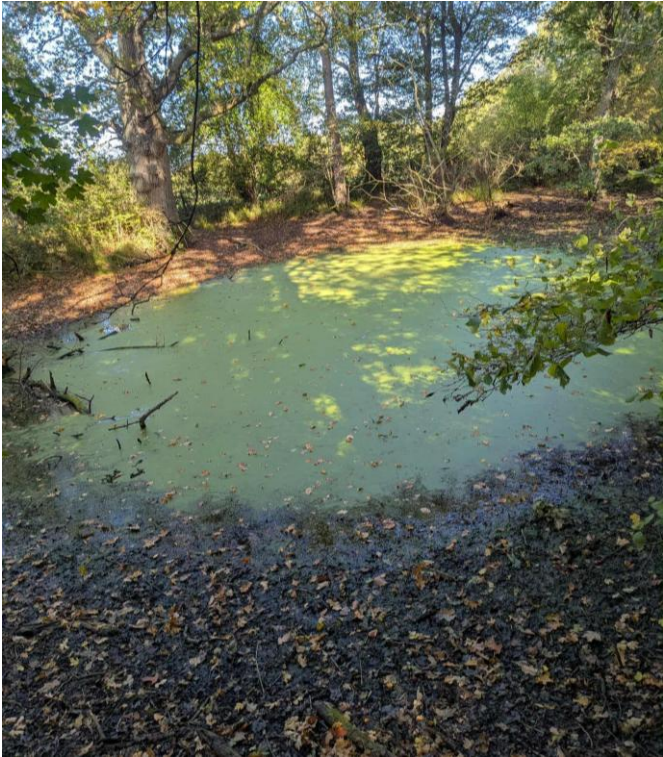
Specific species of plants listed in Schedule 8 are protected. It is an offence: to intentionally pick, uproot or destroy a wild plant listed in Schedule 8.

Schedule 9

Invasive non-native species are listed under Schedule 9. It is an offence:

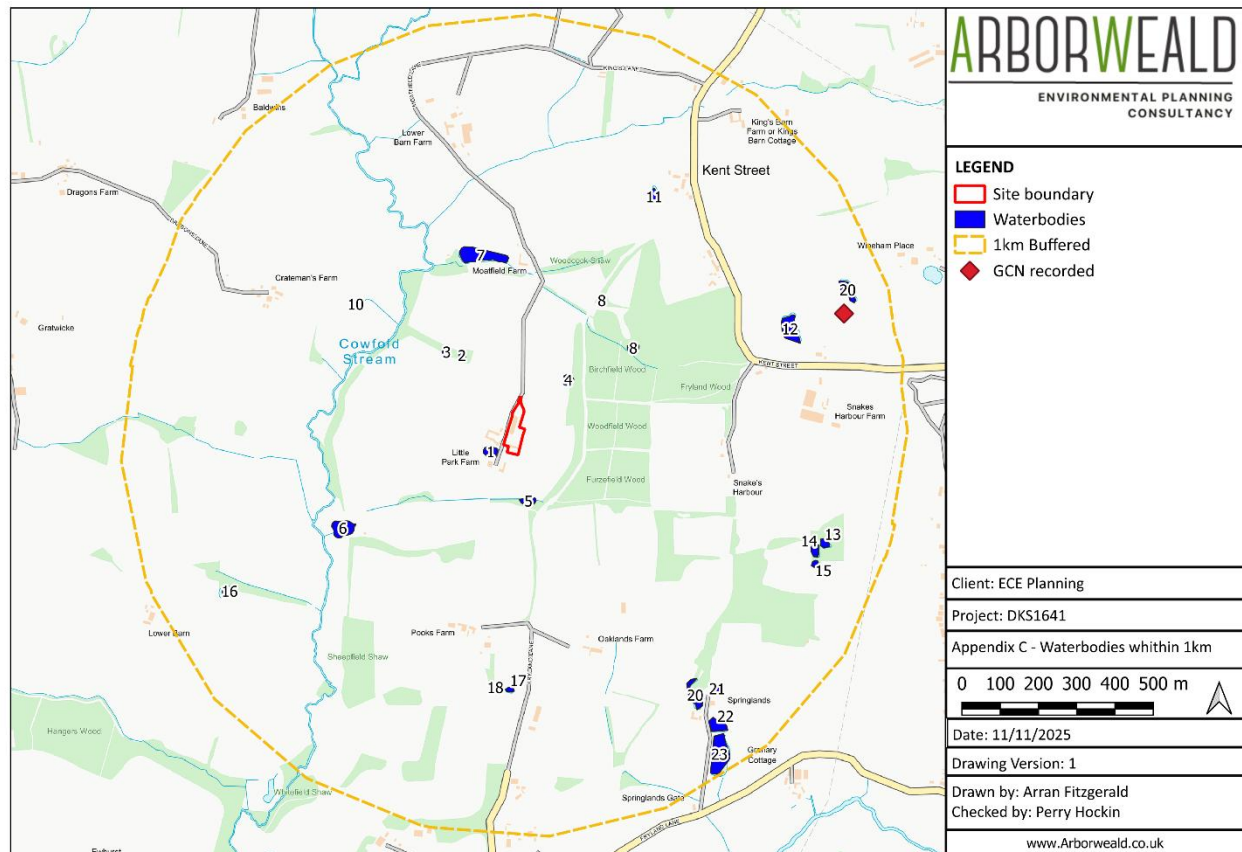
- to plant or otherwise cause to grow in the wild.
- If soils are contaminated by invasive non-native plant species it becomes classified as '*controlled waste*' under the Environmental Protection Act 1990 (England, Wales & Scotland), and must be disposed of accordingly.

APPENDIX B Site photographs

			
Figure B1	Building 1: Exposed negligible roosting	Figure B2	Building 2: Oak and hedgerow encroachment
			
Figure B3	Entrance view from north, west site	Figure B4	View looking north, east site
			
Figure B5	Waterbody 5 scoring "Good" on HSI	Figure B6	Waterbody 4 scoring "Average" on HSI

APPENDIX C Species habitat suitability criteria

For the purposes of this report, Arborweald have developed habitat suitability criteria for protected species where specific categorisation methodology is not provided by the generally accepted literature (such as for bats or great crested newts).



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Figure A1: Showing waterbodies in 1km radius

HSI Scores

SI ₁	SI ₂	SI ₃	SI ₄	SI ₅	SI ₆	SI ₇	SI ₈	SI ₉	SI ₁₀	Product	HSI	Suitability
Location	Pond Area	Pond Drying	Water Quality	Shade	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes			
Zone A	1 500-700m2	1 Never Dries	0.9 Moderate	0.67 0-60%	1 Major	0.01 Possible	0.7 >12	1 Poor	0.33 1-5%	0.35 0.00047	0.4644	Poor

Waterbody 1

SI ₁	SI ₂	SI ₃	SI ₄	SI ₅	SI ₆	SI ₇	SI ₈	SI ₉	SI ₁₀	Product	HSI	Suitability
Location	Pond Area	Pond Drying	Water Quality	Shade	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes			
Zone A	1 500-700m2	1 Sometimes Dries	0.5 Poor	0.33 76-80%	0.6 Minor	0.67 Absent	1 >12	1 Moderate	0.67 <1%	0.3 0.01333	0.6494	Average

Waterbody 4

SI ₁	SI ₂	SI ₃	SI ₄	SI ₅	SI ₆	SI ₇	SI ₈	SI ₉	SI ₁₀	Product	HSI	Suitability
Location	Pond Area	Pond Drying	Water Quality	Shade	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes			
Zone A	1 900m2	0.97 Never Dries	0.9 Moderate	0.67 66-70%	0.6 Minor	0.67 Possible	0.7 >12	1 Moderate	0.67 6-10%	0.4 0.05629	0.75	Good

Waterbody 5

SI ₁	SI ₂	SI ₃	SI ₄	SI ₅	SI ₆	SI ₇	SI ₈	SI ₉	SI ₁₀	Product	HSI	Suitability
Location	Pond Area	Pond Drying	Water Quality	Shade	Fowl	Fish	Ponds	Terrestrial Habitat	Macrophytes			
Zone A	1 >2000m2	0.8 Never Dries	0.9 Good	1 0-60%	1 Major	0.01 Minor	0.5 >12	1 Poor	0.33 6-10%	0.4 0.00031	0.4463	Poor

Waterbody 7

Reptiles

Suitable reptile habitats include the following habitat types:

Heathland;	Sand dune;
Moorland;	Hard and soft cliffs;
Grasslands;	Vegetated shingle;
Scrub;	Open mosaic habitats; and
Woodland;	Coastal lagoon.
Wetlands;	

These habitats can be found within a broad range of land use types, including:

Farmland;	Churchyards;
Brownfield sites;	Mineral sites;
Gardens and allotments;	Road and rail embankments; and
Parks and grounds;	River and sea walls.

Other habitat and land use types may be utilised by reptiles, if their basic ecological requirements (foraging, shelter, protection, basking, breeding and/or hibernation) are met by the habitat. It is therefore imperative that all sites / habitats are assessed based on their ecological functionality for reptiles, rather than making hard and fast judgements based on broad habitat and/or land use type.

The below suitability criteria have been devised to provide a structured way of assessing ecological functionality for reptiles, which can be applied by suitably experienced ecologists.

Reptiles require large areas, or closely spaced patches, of suitable habitat to support viable population in the long term. Therefore, habitat connectivity is important on a landscape level but also within a site.

The below has been adapted from the *Reptile Habitat Management Handbook* and details the habitat requirements of reptiles (Edgar, Foster and Baker, 2010).

The factors cited in the first table (C1.1) have been used to develop the suitability criteria that are set out in the second table (C1.2).

Requirement	Description
Insolation (exposure to sun)	Reptiles bask openly in direct sunlight or seek warm sites under cover (in vegetation or under object) or partially exposed amidst dense vegetation (mosaic basking). Varied topography (south-facing slopes are particularly favoured by reptiles) and a mosaic of open, sunny areas and dense cover provide the best range of basking opportunities.
Shelter from the elements (heat, dry weather and wind), predators	Reptiles need vegetation cover and open areas in close proximity to each other. The best habitats are structurally diverse habitats, or mosaics of vegetation of differing heights, ages or types. Thorny or prickly plants such as gorse and

	bramble can provide particularly good refuge from predators and may be used as sheltered basking sites.
Hibernation opportunities (shelter during the winter)	Hibernation sites must be climatically stable, frost-free, humid (but not wet) and safe from flooding and predators. Typical hibernation sites include mammal burrows, rotted tree stumps and root holes, fissures in soil / substrate, large grass tussocks, anthills, old walls and building foundations, piles of rubble and other debris and under large logs and fallen trees. Sand lizard, grass snake, smooth snake and adder usually make seasonal movements to hibernation sites. Slow worm and common lizard may also make shorter distance migrations to hibernation features, but the location of hibernation features normally corresponds with the areas used during the active season.
Food	Legged lizard (common lizard and sand lizard): Main prey items are insects and other invertebrates such as spiders. Legless lizard (slow worm): Main prey items are soft-bodied invertebrates such as slugs and worms. Smooth snake: Main prey items are reptiles and small mammals. Grass snake: Main prey items are amphibians and fish. Adder: Main prey items are small mammals and occasionally lizards.
Breeding habitat	Breeding sites are more likely to be found where structurally diverse habitats encourage high population densities. Reptiles require secluded areas close to, or under, secure cover for courting and mating. Grass snakes need access to decomposing material to lay their eggs. Typical egg-laying sites include manure heaps, compost heaps, piles of grass clippings, sawdust, cut reed and, in coastal areas, seaweed heaps. Sand lizards require areas of exposed sand (or similar loose substrate) with good sun exposure in which to lay their eggs.

The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of reptiles (as described in C1).

Habitat suitability category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category*
High	Provides significant opportunities for foraging; shelter / protection; basking; breeding; and hibernation.	Heterogenous habitat (e.g. grassland, scrub, woodland edges). Structurally diverse habitats, mosaics of vegetation of differing heights, ages or types (e.g. tussocky grassland, dense scrub/islands). Extensive landscape connectivity to suitable off-site reptile habitat.
Moderate	Provides significant opportunities for two or three of the above key	Homogenous / slightly heterogenous habitat (one to two dominant habitats

	ecological functions.	e.g. grassland and scrub). Habitat structure is diverse, but habitat type is uniform (e.g. tussocky grassland only). Sub-optimal landscape connectivity to suitable off-site reptile habitat.
Low	Provides significant opportunities for one of the above key ecological functions or some limited (minimal) opportunities for two or more of these functions.	Uniform habitat composition (e.g. grassland). Limited vegetative structure (e.g. closely mown or grazed grassland). Possess limited landscape connectivity to suitable offsite habitat.
Negligible	Negligible Does not provide any opportunities for reptiles.	Unvegetated areas, such as bare ground and buildings.
*Note that the characteristics given in Column 3 of this Table are typical characteristics of high, medium, low and negligible suitability habitats, and are provided for illustrative purposes to aid the assignment of a habitat suitability category. They are not absolute criteria or universal rules that will always dictate the suitability category that the habitat within a given survey site must fall within.		

Hazel dormouse

The content of the below Table has been taken from the Hazel Dormouse Conservation Handbook and details trees and shrubs of value to dormice (Bright et al., 2006). The presence and percentage cover of tree and shrub species listed in this Table informs the suitability criteria that are set out within the following 'Hazel Dormouse Habitat Suitability Criteria' Table.

Species	Description
Hazel	Where present, this is the principal source of food (nuts) for fattening up prior to hibernation. Hazel also supports many insects, including caterpillars, which are potential dormouse food. Hazel forms a continuous understorey of sprawling poles, easy for arboreal activity and is a very valuable (but not essential) species for the dormouse.
Oak	An important source of insect food (including caterpillars). Dormice also eat oak flowers, but acorns are of little value
Honeysuckle	The plant's finely shredded bark is the preferred nesting material used by dormice. Honeysuckle flowers also provide food at a time when few other things are available, with berries later. The climbing strands also offer convenient routes into the trees and provide dense shelter in which to nest.
Bramble	Its flowers and fruits are very important dormouse foods and tend to be available for a long period (especially where the site has slopes which vary the amounts of sunlight on the shrubs) and the thorns provide good protection for nests. Bramble often flowers late, when many other species are over, and dormice also eat the berries and seeds in autumn. Dormice seem to thrive where blackberries are abundant, even in the absence of hazel.

	Bramble is best if scattered among hazels and trees.
Sycamore	A valuable source of insect food and pollen. A useful tree: dormice can survive in habitats with many sycamores. However, sycamores cast a dense shade which reduces the understorey. Thus sycamores should be kept few and scattered, perhaps coppiced to prevent seeding and to reduce the extent of shading.
Ash	Ripening seeds ('keys') are eaten whilst they are still on the tree, but ash supports few food insects. The canopy does not cast a dense shade, but generally ash woodlands are not good habitat.
Wayfaring tree	Fruits in late summer when little else may be available. Dormice eat the seeds and probably also the flowers. Yew The fruits are a favoured food and dormice will make special excursions to reach them, but the seeds are not eaten.
Hornbeam	Seeds are small and hard, but dormice eat them. The advantage is that they are too small to be attractive to squirrels, so they may form an alternative food where squirrels have taken most of the hazel nuts. Fruiting is erratic.
Broom	Flowers are eaten in early summer.
Sallow	Unripe seeds are eaten from the flowers in early summer. Sallow also supports many insects
Species	Description
Birch	The catkins are over too early in the year to be much use to dormice, but they can eat the seeds. These are too small to attract squirrels and may provide support where squirrels compete for hazel nuts.
Sweet chestnut	Chestnuts are an excellent food source and dormice may also eat the flowers.
Blackthorn	Fruits (kernels) are eaten but the flowers come too early in the year. Dense blackthorn thickets tend to be avoided where alternative shrubs are available.
Hawthorn	Flowers are an important food in the spring. The fruits are eaten occasionally.
Conifers	Little is known about the use made of these trees by dormice, but they often support many aphids and caterpillars – potential dormouse food. The trees may also provide shelter from the wind and rain in exposed sites.
Other species such as cherry, crab apple, holly, ivy.	Little is known about the value of these trees to dormice, but it is likely that they will eat the pollen (stamens) and perhaps fruits. Ivy is a useful source of food insects and its evergreen tangles among tree branches are often used for summer nesting sites.

The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of the hazel dormice.

Suitability Category	Ecological Functionality for hazel dormice	Typical Characteristics of habitats within this Category
High	Provides significant opportunities for: - - foraging; - shelter / protection; - breeding; and - hibernation.	5 or more native tree and/or shrub species of value to dormice present (as per list provided in Table 8). Dense canopy, understorey and/or shrub layer (as present) with good aerial connectivity.
Medium	Provides opportunities for two or three of the above ecological functions.	Between 2 and 4 native tree and/or shrub species of value to dormice present. Sub-optimal aerial connectivity (non-continuous / 'gappy' canopy, understorey and/or shrub layer (as present)).
Low	Provides opportunities for one of the above ecological functions.	0 or 1 native tree or shrub species of value to dormice present. Canopy, understorey and/or shrub layer (as present) are 'sparse,' with poor / infrequent aerial connectivity.
Negligible	Does not provide any opportunities for hazel dormouse.	Un-vegetated areas, includes bare ground and buildings



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