



**Lyndhurst Cottage,
Hanham Mills, Bristol**

Preliminary Ecological Appraisal

January 2024

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Document Verification Table

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Revision	Date	Prepared by	Checked by	Verified by
1.0	08 January 2024	Anita-May Connors Assistant Ecologist  Daisy Cadet Assistant Ecologist 	Daisy Smith Ecologist 	Paul Hudson MCIEEM Principal Ecologist

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Summary

Brief and Site Location	Acer Ecology Ltd. were commissioned by Neale Coles to conduct a preliminary ecological appraisal of land at Lyndhurst Cottage, Hanham Mills, Bristol, BS15 3NU, within the boundary of South Gloucestershire Council (Ordnance Survey Grid Reference centred at: ST 6473 7008).
Development Proposals	The proposed development works comprise the construction of a three-bedroom house adjacent to the existing dwelling, and demolition of the shed. A planning application has not been submitted at the time of writing. Precise details of the proposed development are also unavailable at the time of writing.
Impacts to Key Receptors	<p>The proposed development is not considered to have any adverse impacts to statutory or non-statutory nature conservation sites.</p> <p>The proposed development will involve the demolition of the shed which has been assessed as having low suitability and clearance may impact bats as potential roosting sites are lost. Recommendations have been made in Section 4 to mitigate any impacts. The felling of two ash trees may also impact nesting birds. No additional impacts are anticipated for other protected species.</p> <p>No habitats on site are likely to be greater than site value. Whilst the loss of the on-site habitats would be unlikely to have a significant impact outside of the context of the site, it would nevertheless be desirable that the impacts be either minimised or appropriately mitigated where possible.</p> <p>Provided appropriate precautionary and mitigation measures detailed in Section 4 are implemented, the development is not anticipated to result in adverse impacts to any protected sites, habitats and species.</p>
Invasive Species	The development may result in the spread of buddleia, an invasive plant species. Measures to prevent this are set out in Section 4.
Recommendations	<p>The following provisional recommendations have been developed based on the development proposals available at the time of writing. They may be subject to change upon receipt of the final design:</p> <ul style="list-style-type: none">• Further Survey:<ul style="list-style-type: none">• CEMP – Due to the proximity of the site to the River Avon. This can be secured by a planning condition after planning consent has been granted.• Precautionary measures – Site induction and toolbox talk; Ecological on-site supervision of works/soft strip; Timing restrictions for birds; Good construction practises for mammals; Invasive species mitigation and management.• Mitigation measures – Sensitive lighting strategy.
Conclusions	<p>The full extent of ecological impacts and potential constraints of the proposed development cannot be fully determined in the absence of finalised architectural plans.</p> <p>At this stage, the site's ecological value is not considered to represent a fundamental in-principle constraint to the proposed development.</p> <p>If development works do not begin within eighteen months to two years of the date of this report of this report, an update survey is likely to be required in accordance with guidance from Natural England, (CIEEM, 2019) and BS 42020:2013, to determine if conditions have changed since those described in this report.</p>

1. Introduction

1.1. Brief and Site Location

Acer Ecology Ltd. were commissioned by Neale Coles to conduct a preliminary ecological appraisal of land at Lyndhurst Cottage, Hanham Mills, Bristol, BS15 3NU, within the boundary of South Gloucestershire Council (Ordnance Survey Grid Reference centred at: ST 6473 7008)¹. The assessment documents the baseline ecological condition of the survey area (shown in Plan 1), designated sites, habitats, protected and notable species of conservation interest that could be affected by the proposed works are identified, and subsequent recommendations provided.

This assessment will provide initial recommendations based on the development proposals available at the time of writing. They should be revised upon finalisation of the design.

1.2. Site Description

The site proposed for development measures approximately 0.019ha, and mainly comprises bare ground and a shed to the north-west. A main dwelling is found adjacent to the west of the site boundary. The site is situated in the suburb of Hanham, 6.2km south-east of Bristol City Centre. The site is surrounded by broadleaf woodland to the east and north-east, with Bickley Wood SSSI located directly north of the site. Residential housing is found adjacent to the site to the west, parallel to Ferry Road which runs along the south of the site. The River Avon is adjacent to the road, 0.1km south of the site. The site has a flat topography, surrounded by sandstone rock faces on its northern boundary and woodland to the north and north-east. It sits approximately 17 m above sea level.

1.3. Proposed Works

The proposed development works comprise the construction of a three-bedroom house adjacent to the main dwelling and demolition of the shed. Two ash (*Fraxinus excelsior*) trees with ash dieback found adjacent to the site are planned for felling. A planning application has not been submitted at the time of writing. Precise details of the proposed development are also unavailable at the time of writing.

1.4. Scope of the Study

The study comprised the following:

- A desk study to identify existing information on statutory and non-statutory sites of nature conservation interest, and records of notable or protected habitats or species within the site and its surrounding area;
- A Phase 1 Habitat Survey of the site, extended to search for evidence of, and potential for, protected fauna; and

¹ Latitude and Longitude: 51.428619 , -2.5087039 / what3words: lands.cheat.moment

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- Identification of potential ecological constraints to the proposed works at the site and assessments of impacts including appropriate mitigation measures where necessary.

1.5. Reporting

This report aims to:

- Outline the methodology used during the survey;
- Present the baseline ecological information;
- Provide an ecological evaluation of on-site habitats, including an assessment of the potential for protected species;
- Assess the potential impacts of the development proposals on ecological receptors;
- Assess the potential ecological constraints to the proposals; and
- Provide recommendations for further survey, avoidance, mitigation and enhancement where appropriate.

2. Methods

2.1. Scope of Assessment

This assessment has been undertaken following the approach detailed in the Chartered Institute of Ecology and Environmental Management's 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2018). The assessment has focussed on 'Important Ecological Features' that are present within the 'Zone of Influence' of the project. Important Ecological Features, as detailed in Box 14 of the CIEEM's Guidelines comprise:

- Habitats and Species of Principal Importance for the Conservation of Biodiversity in England;
- Legally protected species; and
- Red Listed or rare species (based on Red Data Book lists, Birds of Conservation Concern and species considered to be nationally rare/scarce).

The Zone of Influence (ZoI) is the area over which the development proposal could have an influence on ecological features. The ZoI will vary for different features, although the ZoI for this development proposal is considered to comprise the land within the red line boundary as well as immediately adjacent habitat features.

2.2. Desk Study

2.2.1. Protected Sites, Habitats and Species

Existing information on designated sites and protected species was obtained from the sources detailed in Table 1.

Table 1: Sources of Data

Source	Data	Radius of Search
Natural England (NE) Geographical Information Systems (GIS) Layers	Statutory and non-statutory nature conservation designated sites	Ramsar/Special Area of Conservation (SACs)/Special Area of Protection (SPAs)/Site of Special Scientific Interest (SSSIs) National Nature Reserves (NNRs), Local Nature Reserves (/LNRs), Ancient Semi-Natural Woodland, (ASNW), Restored Ancient Woodland Sites (RAWS) and Plantation on Ancient Woodland Sites (PAWS) - 2km ² SACs (designated for bats) - 10km
Bristol Regional Environmental Record Centre (BRERC)	Protected species records (BRERC unique reference: 1909) Site of Nature Conservation Importance (SNCI)	1km. 1km.
Multi-agency Geographic Information for the	European Protected Species Licences Granted	1km.

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Countryside (Magic) website		
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All available records of bat roosts, badger, dormouse, amphibians and reptiles were considered. For other species, only records collected within the last 10 years were considered relevant.

2.2.2. Ancient Woodland

Although ancient woodland is not a designated site as such, it is often listed as a designated site due to its ecological significance and associated protection. Ancient woodland has therefore been included within the non-statutory designated site section of this report.

2.2.3. Planning Authority

The South Gloucester Council Planning Portal² was consulted to determine if any previous survey information was available for the site, or immediate surroundings.

2.3. Field Study

2.3.1. Personnel

The field survey was undertaken in good weather on the 29th of November 2023 by Anita-May Connors³ and Daisy Cadet⁴.

2.3.2. Vegetation and Habitats

The vegetation and habitat types present within the survey area were categorised and mapped in accordance with the standard⁵ Phase 1 Habitat assessment methodology (Joint Nature Conservation Committee, 2010), dominant and conspicuous plant species were recorded for each habitat. Target notes were used to record information on features of ecological interest, such as evidence of, or habitats with potential to support protected species or where any features of interest too small to map were recorded. Following the completion of the survey, a colour-coded habitat plan was digitised using QGIS to show the extent and distribution of the different habitat types present within the site (see Plan 5).

Section 41 habitats Natural Environment and Rural Communities (NERC) Act, 2006), Priority Habitats were identified and assessed to determine if the site meets the non-statutory designated site criteria (SNCI).

Invasive plant species listed on Schedule 9⁶ of the Wildlife and Countryside Act 1981 (as amended), such as Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Fallopia japonica*) were also noted during the survey if present.

² <https://beta.southglos.gov.uk/search-planning-applications/>

³ Anita graduated with a degree in International Wildlife Biology from the University of South Wales and is now working as an Assistant Ecologist and receiving training from Acer Ecology Ltd.

⁴ Daisy graduated with a first-class degree in Natural History from the University of South Wales and is now working as an Assistant Ecologist and receiving training from Acer Ecology Ltd.

⁵ Some additional categories were also used if applicable e.g. hard standing and Japanese knotweed.

⁶ Schedule 9 species of plants and animals are ones that do not naturally occur in Great Britain but have become established in the wild and represent a threat to the natural fauna and flora.

2.3.3. Protected and Notable Species

Evidence of, and habitats with, potential to support protected or notable species were noted, especially species meeting any of the following criteria:

- Listed under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) [‘CHSAEU’] Regulations 2019;
- Listed under The Natural Environment and Rural Communities (NERC) Act 2006 Section 41 Habitats or Species of Principle Importance for Conservation of Biological Diversity in England;
- Listed as a local priority for conservation, for example in the relevant Local Biodiversity Action Plan (LBAP);
- Red Listed using International Union for the Conservation of Nature (IUCN) criteria (e.g. in one of the UK Species Status Project⁷ reviews, in the Species of Conservation Concern Red, Amber or Near Threatened List⁸, or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book);
- Listed as a Nationally Rare or Nationally Scarce species (e.g. in one of the Species Status Project reviews) or listed as a Nationally Notable species where a more recent assessment of the taxonomic group has not yet been undertaken; and/or
- Endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place).

Only those species with potential to be present on-site are mentioned within this report. The methodologies used were as follows:

Birds

Any birds observed during the field survey were recorded, in addition to features capable of supporting nesting birds (e.g. trees, hedgerows, buildings, bramble, ruderal vegetation and rough grassland etc.). The site was also assessed for its actual and potential suitability to support Wildlife and Countryside Act 1981 (as amended) Schedule 1 species.

A comprehensive bird survey, such as a breeding bird survey, was not undertaken as this was beyond the scope of the assessment.

⁷ The Species Status project is the successor to the JNCC’s Species Status Assessment project, providing up-to-date assessments of the threat status of various taxa using the internationally accepted Red List guidelines (<http://jncc.defra.gov.uk/page-1773>).

⁸ Eaton *et al.* (2015) Birds of conservation concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* 108: 708-746.

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Bats

Preliminary Ground-level Roost Assessment

A preliminary ground-level roost assessment of the trees within the boundary of the survey area was undertaken, looking for features that bats could use for roosting (Potential Roost Features⁹ (PRF)) and evidence of bats (i.e. droppings in, around or below a PRF; odour emanating from a PRF; audible squeaking at dusk or during warm weather; or staining below the PRF). A systematic inspection was carried out around all accessible aspects of the tree, from both close to the trunk and further away. A high-powered torch (Clulite), binoculars and a ladder were used as appropriate during the survey. The location of the trees is shown on Plan 5.

The trees were assessed for their suitability to support roosting and hibernating bats in accordance with Table 4.2 of the Bat Conservation Trusts Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2023) whereby trees were categorised into the following categories:

- None – Either no PRFs in the tree or highly unlikely to be any;
- FAR – Further assessment required to establish if PRFs are present in the tree; or
- PRF – A tree with at least one PRF present.

PRFs were further categorised as detailed below:

- PRF – I - PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats;
- PRF – M PRF is suitable for multiple bats and may therefore be used by a maternity colony; and
- PRF – U Unknown if PRF could only be used by individuals or could be used by multiple bats and therefore used as a maternity roost.

The trees were also assessed for their suitability to support roosting and hibernating bats in accordance with Table 4.1 of the Bat Conservation Trusts Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2023).

Daytime External Building Inspection and Assessment

A systematic search of the exterior of the shed located at the north-west of the site was undertaken, looking for features that bats could use for entry/exit and roosting¹⁰ and to search for the presence of bats or evidence of bat use, such as droppings, feeding remains, urine staining, scratch marks, and the remains of dead bats. The survey was undertaken on the 29th of November by Anita-May Connors¹¹. A high-powered

⁹ Potential Roost Features that bats may use identified by Andrews include: woodpecker-holes; squirrel-holes; knot-holes; pruning-cuts; tear-outs; wounds; cankers; compression-forks; butt-rots; lightning strikes; hazard-beams; subsidence-cracks; shearing cracks; transverse cracks; welds; lifting bark; frost-cracks; fluting and ivy.

¹⁰ Bats may utilise gaps as small as 8mm by 20mm (Bat Conservation Trust, Cluster flies leaflet)

¹¹ Anita graduated from the University of South Wales with a degree in International Wildlife Biology, she is currently in her first season of bat surveying and is considered a competent surveyor.

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torch (Clulite), binoculars and a ladder were used as appropriate during the survey. The internal parts of the shed were inaccessible at the time of survey. The location of the shed is shown on Plan 5.

Terrestrial Habitat Assessment

A preliminary assessment of the value of the site for bats (and any potential roost sites therein) was made in accordance with Table 4.1 of the Bat Surveys for Professional Ecologists (Collins, 2023) (see Appendix 5). The assessment was based on the relative abundance and quality of habitat features within the site, and surrounding landscape, suitable for roosting, foraging and commuting bats.

Dormice

The hedgerows, woodland and scrub surrounding the site boundary were assessed for their suitability to support dormice (*Muscardinus avellanarius*). The structure and composition of these habitats within the site were assessed with respect to the presence of flower, fruit or nut-bearing food-plants such as hazel (*Corylus avellana*) (a favoured food-plant of dormice), oak (*Quercus* sp.), honeysuckle (*Lonicera periclymenum*), bramble (*Rubus fruticosus* agg.) and sycamore (*Acer pseudoplatanus*), as well as other trees and shrubs listed in the Dormouse Conservation Handbook (Bright, Morris & Mitchell-Jones, 2006) as being of value to dormice. In addition, connectivity to other areas of suitable habitat in the wider landscape, such as hedgerows and woodland, was assessed.

No hazel was present on site and therefore it was not possible to undertake a search for hazelnut shells to determine if they had been opened by dormice.

A full nest tube/box/footprint tunnel survey was not undertaken as this was beyond the scope of the assessment.

Great Crested Newts

The survey area was appraised for its suitability to support great crested newts (*Triturus cristatus*) (GCN). The assessment was based on guidance outlined in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003) and the Great Crested Newt Conservation Handbook (Langton, Beckett & Foster, 2001).

Ordnance Survey maps and aerial images of the land surrounding the site were consulted to determine if any waterbodies or watercourses were present within the site or within 0.5km of it.

The River Avon lies within 0.5km of the study area. However, fast flowing water is considered to act as a barrier to GCN migration (English Nature, 2001). This water body was therefore deemed unsuitable for supporting GCN.

A total of eight waterbodies were identified within 500m of the development area. Pond 1 is separated from the proposed development site by the River Avon, while ponds 2-5 to the north are separated by Abbot Road. Ponds 6-8 are located north, with no barriers separating them from the proposed development site.

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Major highways and major rivers are considered to act as barriers to GCN migration (English Nature, 2001) and therefore, the likelihood of GCN migrating onto the proposed development site from the pond to the south of the site is considered to be very low due to the lack of suitable waterbodies within the proposed development site and wholly unsuitable habitat.

Considered in addition to the absence of records of GCN within 1km of the site, the likelihood of GCN being present on site is considered to be unlikely. Due to the nature of the site, adverse impacts to GCN are considered unlikely, however cannot be ruled out completely.

A full GCN survey was not undertaken, as this was beyond the scope of this assessment.

Otters

A preliminary assessment for signs of otter (*Lutra lutra*) was undertaken following the advice provided by Strachan & Jefferies (1996) and Chanin (2003). Where access was available, the banks of the River Avon were searched for evidence of otter activity within 10m of the bank. Field signs of otter were recorded if present including spraints (faeces showing food remains), footprints, feeding remains and couches (above ground resting sites normally in thick vegetation cover), as well as potential or actual breeding sites and resting places (i.e. holts or natal dens) which are usually found under roots of bank side trees or in rock piles.

A full otter survey was not undertaken as this was beyond the scope of the assessment.

Water Voles

Suitability of water bodies to support water voles (*Arvicola amphibius*) is assessed following methods set out in the Water Vole Conservation Handbook (Strachan & Moorhouse, 2006), in addition to a search for evidence of activity, including droppings, latrines, burrows, footprints and feeding lawns, of any areas considered suitable.

There is negligible potential for water voles to be present within the site or affected by the development due to the lack of records, unsuitability of on-site habitats, and isolation of the site from the fast-flowing River Avon by a road. They are therefore not mentioned further in the report.

White-Clawed Crayfish

White-clawed crayfish (WCC) are typically found in watercourses of 0.75m to 1.25m deep, although they may occur in very shallow streams (around 5cm) and in deeper, slow-flowing rivers (up to 2.5m) (Holdich, 2003). The stretch of the River Avon adjacent to the site comprises a fast-flowing section of river with an estimated depth of approximately 0.80m. Therefore, in addition to the lack of records, the likelihood of WCC being present within this water body is considered negligible and they are not mentioned further in this report.

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Badgers

Earth embankments, wooded copses, hedgerows and dense bramble beds are habitat features that often contain evidence of badgers (*Meles meles*). Where present on-site these and other suitable habitat features were searched for such evidence. Where present, the location of badger signs such as setts, runs, dung pits or latrines, prints, hair and foraging snuffle holes were recorded.

Reptiles

An assessment of the suitability of on-site habitats to support reptiles was made. Reptiles require a diverse range of habitats to meet their needs such as hedgerows, scrub, rough grassland, woodpiles, rubble, banks and compost heaps. The potential of the site to provide hibernation opportunities and spring/summer/autumn habitat was also assessed, with reference to guidance provided in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003), the Reptile Management Handbook (Edgar, Foster & Baker, 2011) and the Reptile Mitigation Guidelines Technical Note TIN 102 (Natural England, 2013). The following factors were considered: vegetation type and structure; insolation (sun exposure); slope aspect; topography; surface geology; habitat connectivity; habitat size; prey abundance; refuge opportunity; hibernation opportunity; egg-laying potential for grass snake (*Natrix helvetica*); public pressure; percentage of shade; levels of disturbance and management regime.

A targeted presence/likely absence reptile survey was not undertaken as it was beyond the scope of this assessment.

Hedgehogs

The sites potential to support hedgehog was assessed using guidance on habitats of importance in Hedgehogs and Development (Peoples Trust for Endangered Species, 2022)¹² with the following habitats particularly favoured: dense scrub to build hibernation nests in during the winter; short grass to forage in for invertebrate prey; longer grass to forage in and to make nests in during the summer; areas of leaf litter to collect and use for hibernation nests; log piles and decaying vegetation to forage in and hibernate in; and hedgerows and boundary vegetation that are important corridors for travel and nesting sites.

Other Species

General habitat suitability and incidental sightings of other animal species were also noted.

2.3.4. Assessment of Ecological Value

The value of the habitats and features of the site have been provisionally evaluated and graded in accordance with a geographical frame of reference as detailed in Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important,

¹² <https://www.hedgehogstreet.org/wp-content/uploads/2022/08/PTES-BHPS-Hedgehogs-and-development-guide-2022.pdf>

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then national, regional, county, district, local and, lastly, within the immediate zone of influence of the site only. Brief descriptions of how Acer Ecology interprets these categories are set out in Appendix 4.

Potential impacts on Important Ecological features are identified and assessed. Mitigation measures have been devised following the mitigation hierarchy; appropriate mechanisms for securing mitigation measures have been identified.

2.3.5. Limitations

General Temporal Limitations

Any ecological survey can only identify what was present on-site at the time the survey was conducted and habitat usage by species can change over time.

Seasonality of Survey

The present survey was undertaken outside of the optimal survey period for certain species of flora and fauna, with many species having died back or having become inconspicuous at the time of the survey. The survey can be considered as providing a reasonable, though not exhaustive or full, plant list. The survey noted the habitat types present on site and the dominant vegetation at the time of the survey, which is likely to be constant and a fair reflection of the habitat quality present.

3. Baseline Ecological Conditions, Evaluation and Development Impacts

The baseline conditions and evaluation of the *in-situ* habitats and the actual/ potential presence of protected species are discussed in this section. Potential impacts on protected sites, *in-situ* habitats and protected or notable species arising from the proposed development are identified, including both direct and indirect impacts, and those associated with construction and operational stages.

A summary of relevant legislation and planning policies relating to protected sites, habitats and species is provided in Appendices 1 and 2.

3.1. Statutory Nature Conservation Designated Sites

Statutory Sites (SACs or SSSIs) Designated for Bats within 10km of Site

No SACs or SSSIs specially designated for bats lie within 10km of the site.

SSSIs and LNRs within 2km of Site

The proposed development site lies within 2km of the following statutory sites:

Table 2: Statutory Sites Designated Within 2km

Site Name and Designation	Description	Distance and Direction from Development Site	Development Impacts
Bickley Wood SSSI ¹³	An important site for understanding the geological development of southern Britain during the late Carboniferous.	Located directly north of the development site.	The small scale of the development proposals mean that works are not anticipated to adversely affect the character of the woodland. It is, therefore, not mentioned any further in this report. However, consideration will need to be given to the overriding character, building detail and associated lighting of the proposed development.
Cleeve Wood, Hanham SSSI ¹⁴	Cleeve Wood is situated on the steep south facing slopes of the River Avon valley near to the City of Bristol. Although	0.5km north-east of the development site.	

¹³ <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000535.pdf>

¹⁴ <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1002574.pdf>

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	much of the wood has been planted with non-native species it contains a very large population of an uncommon plant, the bath asparagus (<i>Ornithogalum pyrenaicum</i>).		Considering the distance between the site and the SSSI and LNRs, and the small scale of the development, no direct impacts are anticipated.
Avon Valley Woodland LNR ¹⁵	The maturing broadleaved woodlands are home to a variety of wildlife. Habitats including oak (<i>Quercus sp.</i>) woodland, willow scrub and pasture.	0.5km to the west of the development site.	
Stockwood Open Space LNR ¹⁶	Most of the reserve is old grassland and unploughed meadows on lime-rich clay soils. Cowslip (<i>Primula veris</i>), dyer's greenweed (<i>Genista tinctoria</i>) and bird's-foot trefoil (<i>Lotus corniculatus</i>) provide splashes of yellow here in summer, and numerous butterflies include meadow brown (<i>Maniola jurtinia</i>), marbled white (<i>Melanargia galathea</i>) and large skipper (<i>Ochlodes sylvanus</i>).	1.7km to the south-west of the development site.	
Willsbridge Valley LNR ¹⁷	The valley contains many habitats. The woodlands are at their best in spring, full of bluebells (<i>Hyacinthoides non-scripta</i>), red campion (<i>Silene dioica</i>) and the sounds of birdsong. The ponds are important homes for frogs, toads and dragonflies, and dippers (<i>Cinclus sp.</i>) and kingfishers (<i>Alcedinidae</i>) may be seen on the stream. Foxes (<i>Vulpes vulpes</i>) and badgers (<i>Meles meles</i>) also live in the valley and noctule (<i>Nyctalus noctula</i>) and greater horseshoe bats (<i>Rhinolophus ferrumequinum</i>) feed on the many insects in the valley. You can learn about the history of the valley by following the heritage sculpture trail.	1.8km to the north-east of the development site.	

3.2. Non-statutory Nature Conservation Designated Sites

SNCIs

The proposed development site lies within 2km of the following non-statutory sites:

¹⁵<https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1084806&SiteName=avon%20valley%20woodland&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>

¹⁶<https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1009170&SiteName=stockwood%20open%20space&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>

¹⁷<https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1083171&SiteName=willsbridge%20valley&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>

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Table 3: Non-Statutory Sites Designated Within 2km

Site Name	Description	Distance and Direction from Development Site	Development Impacts
Avon Valley, Bickley Wood	Diverse Ancient Woodland (UKBAP) on acid soils with ground flora. Ancient Woodland on acid soils. Sessile oak (<i>Quercus petraea</i>), broom (<i>Cytisus scoparius</i>), bluebells (<i>Hyacinthoides non-scripta</i>), saw-wort (<i>Serratula tinctoria</i>), yellow archangel (<i>Lamium galeobdolon</i>), betony (<i>Betonica officinalis</i>), wood spurge (<i>Euphorbia amygdaloides</i>), wood sorrel (<i>Oxalis sp.</i>), southern wood ant (<i>Formica rufa</i>).	Directly north of the site.	The small scale of the development proposals mean that works are not anticipated to adversely affect the character of the woodland. It is, therefore, not mentioned any further in this report. However, consideration will need to be given to the overriding character, building detail and associated lighting of the proposed development.
River Avon (BANES)	Running water river and associated habitats. Otter (<i>Lutra lutra</i>), greater dodder (<i>Cuscuta europaea</i>), loddon pondweed (<i>Potamogeton nodosus</i>) and perfoliate pondweed (<i>Potamogeton perfoliatus</i>).	Directly south of the site.	The development could potentially result in pollution of the River Avon. A Construction and Environmental Management Plan (CEMP) has been recommended and precautionary measures outlined in Section 4 to avoid such impacts.
River Avon, South Gloucestershire	Flowing open-water with bankside vegetation. Loddon pondweed, arrowhead (<i>Sagittae spiculum</i>), kingfisher (<i>Alcedinidae</i>), cormorant (<i>Phalacrocoracidae</i>) and heron (<i>Ardeidae</i>).	Directly south of the site.	
River Avon, Bristol	The River Avon traverses the City from east to west, flowing through the Avon Gorge, and is largely surrounded by urban areas.	0.1km to the south-west of the site.	
Avon Valley, Hanham Fields	Ancient Woodland, Orchard, Semi-improved Calcareous Grassland, Flowing Open Water and Bankside Vegetation. Knotted clover (<i>Trifolium striatum</i>), woolly thistle (<i>Cirsium eriophorum</i>), white-legged damselfly (<i>Platycnemis pennipes</i>) and bath asparagus (<i>Ornithogalum pyrenaicum</i>).	0.2km to the east of the site.	No adverse impacts are anticipated due to the small-scale nature of the development and distance from the site.
Avon Valley, Cleeve Wood Extension	Elm (<i>Ulmus sp.</i>), bath asparagus, bluebells, yellow archangel and woolly thistle.	0.3km to the east of the site.	
East Wood and Keynsham	Ancient Woodland, Planted broadleaved Woodland, Semi-	0.4km to the south-west of the site.	

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Humpy Tumps complex	improved Neutral Grassland. Tumps: Many notable species: prickly sedge (<i>Carex muricata</i>), wavy hairgrass (<i>Deschampsia flexuosa</i>), green winged orchid (<i>Anacamptis morio</i>), and upright chickweed (<i>Moenchia erecta</i>).		
Great Haynes Field	Un-improved and semi-improved neutral grassland. Known to be home to sneezewort (<i>Achillea ptarmica</i>).	0.5km to the north of the site.	
Avon Valley, Cleeve Wood	Protected fauna and ancient woodland. Hosts flowing open water and bankside vegetation. Large population of bath asparagus, bluebells, yellow archangel and a badger (<i>Meles meles</i>) sett.	0.5km to the east of the site.	
Avon Valley, Water Meadows	Flowing open water, bankside vegetation and calcareous grassland. White-legged damselfly, upright brome (<i>Bromopsis erecta</i>), agrimony (<i>Agrimonia</i>), salad burnet (<i>Sanguisorba minor</i>), and hoary plantain (<i>Plantago media</i>).	0.5km to the east of the site.	
Charlton Bottom and Queen Charlton Watercourse	Stream with associated marginal habitats, semi-natural broadleaved woodland and scrub.	0.5km to the south of the site.	
Avon Valley, Hencliff Wood	Ancient woodland, flowing open water and bankside vegetation. Small-leaved lime (<i>Tillia cordata</i>), wild service (<i>Cervisia</i>), hornbeam (<i>Carpinus sp.</i>), great wood-rush (<i>Luzulasylvatica</i>) and hard fern (<i>Struthiopteris spicant</i>).	0.8km to the west of the site.	
Hanham Hills Fields	Calcareous grassland, wetland and woodland. Tor grass (<i>Brachypodium pinnatum</i>), quaking-grass (<i>Briza media</i>), and field scabious (<i>Knautia arvensis</i>).	0.8km to the north of the site.	

Ancient Woodland Sites

The following table shows the ancient woodland sites within 2km of the site:

Table 4: Ancient Woodland Sites Within 2km

Ancient Woodland Site	Number within 2km of Site
Ancient Semi-Natural Woodland (ASNW) ¹⁸	Three
Nearest Area of Ancient Woodland	Bickley Wood ASNW located 0.1km west of the site.

¹⁸ Ancient Semi-Natural Woodland (ASNW) – broadleaf woodlands comprising mainly native tree and shrub species which are believed to have been in existence for over 400 years.

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Development Impacts	No impacts are anticipated due to the small scale of the proposed development. They are therefore not mentioned further in this report.
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3.3. Habitats and Vegetation

The results of the general survey of habitats and vegetation are shown on Plan 5. A botanical species list is provided in Appendix 3.

The site consists of following elements which are described in detail below. These comprise:

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Table 5: Habitat Descriptions

Phase 1 Habitat	UK Habs Habitat	Description	Habitat Condition Assessment	Ecological Value	Development Impacts
Broadleaved Semi-Natural Woodland (A1.1.1)	W1f7 Other Lowland mixed deciduous woodland	<p>Broadleaved semi-natural woodland (photo 5) surrounds the site on its north-east and eastern boundaries, separated from the site in the north-east by sandstone rock faces of which the woodland grows on top. The trees surrounding the site include frequent semi-mature pedunculate oak (<i>Quercus robur</i>) and ash of different maturities (from young to mature), one of which (located in the far north-eastern corner) is planned for felling due to it being diseased with ash dieback (photo 6). There is also occasional young field maple (<i>Acer campestre</i>).</p> <p>The ground layer of the woodland is dominated by bramble (<i>Rubus fruticosus</i>) and ivy (<i>Hedera helix</i>), with frequent hart's-tongue fern (<i>Asplenium scolopendrium</i>) and wood avens (<i>Geum urbanum</i>). Honeysuckle (<i>Lonicera periclymenum</i>) and common nettle (<i>Urtica dioica</i>) are also present in the east, but rare.</p>	<p>The woodland has been assessed to be of moderate condition. The assessment has only been applied to the woodland that is immediately surrounding the site (and not the entire woodland) due to the anticipated impacts not extending beyond this point.</p> <p>This habitat scored "good" for six criteria (no significant browsing damage; no invasive species present; >80% of canopy and shrubs are native; 10 – 20% of woodland has open space; tree mortality is less than 10%; and no nutrient enrichment). It scored "moderate" for six criterion (two age-classes present; three to four native tree or shrub species; one or two age classes present; recognisable woodland NVC plant community present; two storeys; and between deadwood is between 25 and 50%). It scored "poor" for one criterion (no veteran trees present).</p>	<p>Local value.</p> <p>UK Habs high distinctiveness.</p>	<p>Two ash trees are planned for felling during works due to them being diseased with ash dieback (<i>Hymenoscyphus fraxineus</i>). During felling, injury or death may occur to any present species such as roosting bats or nesting birds, and other species present in the area. Recommendations to avoid, mitigate and compensate any impacts to species are outlined in Section 4.</p>
Ephemeral and Short Perennial Vegetation (J1.3)	U1f Sparsely vegetated urban land	A small area of ephemeral and short perennial vegetation (photo 1) is found adjacent to the southern boundary of the site.	This habitat has been assessed to be of poor condition. It failed two condition criteria (it is not a good representation of the sparsely vegetated habitat	<p>Site value.</p> <p>UK Habs low distinctiveness.</p>	Clearance of this area to facilitate the new development will result in the permanent loss of this habitat. Due to the low

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		The area appears to be a derelict flowerbed, with a stone wall supporting the eastern side. It contains frequent large bindweed (<i>Calystegia sylvatica</i>), purpletop vervain (<i>Verberna bonariensis</i>) and red valerian. White dead-nettle (<i>Lamium album</i>) and greater plantain are also occasional here. There is also a small buddleia (<i>Buddleja davidii</i>) shrub growing from this area (TN3).	type and there are invasive non-native plant species present) and passed two condition criteria (cover of bracken <i>Pteridium aquilinum</i> , scrub and trees is less than 25%, and cover is between 5 and 50%).		species diversity, small size of the habitat, and common status of the species present, the loss of this habitat will not have a significant adverse impact on the biodiversity of the wider site. There are also no anticipated impacts to protected species.
Wall (J2.5)	Urban – built linear features (u1e)	Two stone walls (1.3m tall) are located on site, one stone wall is located on the north-western boundary of the site, and the other bordering the area of ephemeral and short perennial vegetation in the south. Both walls appear in good condition, without large cracks or gaps.	A condition assessment is not required.	Negligible value. UK Habs very low distinctiveness.	Will largely be retained as part of the development.
Fence (J3.4)	Urban – built linear features (u1e)	Wooden fencing (1.5m tall) is found on the south-eastern boundary of the site. Ivy (<i>Hedera helix</i>) is occasionally found growing at the base of the fencing.	A condition assessment is not required.	Negligible value. UK Hab Low Distinctiveness	It is unknown if this feature will be retained or permanently cleared. No adverse impacts are currently anticipated.
Buildings (J.3.6)	Urban - Developed land; sealed surface (u1b)	The site contains one wooden shed (B1), located in the north-west corner of the site. On the northern and western sides of the shed are rubble piles (Photos 2 and 3) (TN1). A detailed building description is provided in Section 3.5.3 below.	A condition assessment is not required.	Site value. UK Habs very low distinctiveness.	Building 1 will be permanently cleared. Recommendations to mitigate and compensate any impacts to bats are outlined in Section 4.

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<p>Bare Ground (J.4)</p>	<p>Urban – Vacant/derelict land/ bare ground (73 – secondary habitat)</p>	<p>Bare ground (Photo 4) in the form of flint gravel covers the majority of the site. Some species of herbaceous plants are found growing here but are very sparse (covering <5% of the site) and in low abundance. These include herb-occasional robert (<i>Geranium robertianum</i>), red valerian (<i>Centranthus ruber</i>), cleavers (<i>Galium aparine</i>), annual meadow-grass (<i>Poa annua</i>), prickly sow-thistle (<i>Sonchus asper</i>), dandelion (<i>Taraxacum officinale</i> agg.) and wood sage (<i>Teucrium scorodonia</i>). Ivy-leaved toadflax (<i>Cymbalaria muralis</i>), teasel (<i>Dipsacus fullonum</i>), petty spurge (<i>Euphorbia peplus</i>), and greater plantain (<i>Plantago major</i>) are also present, but rare.</p> <p>Some vegetation from the surrounding woodland was observed colonising and entering the edges of site, including species such as ivy, honeysuckle and bramble.</p> <p>Two small (<10cm height) buddleia saplings are present in this habitat (TN2).</p>	<p>A condition assessment is not required.</p>	<p>Negligible value.</p> <p>UK Habs very low distinctiveness.</p>	<p>This area is likely to be lost in its entirety to the development. Although there are herbaceous plants in this area, due to their low abundance and being common species, the loss of this habitat will not have a significant adverse impact on the biodiversity of the wider site. There are also no anticipated impacts to protected species.</p>
<p>Hard Standing¹³</p>	<p>Urban - Developed land; sealed surface (u1b)</p>	<p>A small area of hard standing used as a driveway and car parking is located in the southernmost corner of the site. It consists of paved</p>	<p>A condition assessment is not required.</p>	<p>Negligible value.</p>	<p>This area is likely to be lost in its entirety to the development.</p>

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		cobbles, with no vegetation or cracks present.		UK Habs very low distinctiveness.	
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Adverse impacts to the adjacent River Avon may be anticipated due to run-off and/or pollution from the proposed development entering the watercourse. No other significant adverse impacts to the habitats off-site are anticipated .

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Photo 1: Area of ephemeral and short perennial vegetation.



Photo 2: Rubble pile on the western side of the shed.



Photo 3: Rubble pile on the northern side of the shed.



Photo 4: Area of bare ground (gravel) covering the majority of the site.



Photo 5: Semi-broadleaf woodland surrounding the site on the northern and north-eastern boundary.



Photo 6: Diseased ash trees planned for felling (circled).



Invasive Plant Species

Details of the invasive species on site are described in detail below:

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Table 6: Invasive Plant Species

Species	Occurrence on Site	Legislation	Assessment of Potential Development Impacts
Buddleia	One small buddleia shrub (TN3) located within the area of ephemeral vegetation in the south-west and two saplings found growing amongst the gravel in the east were found on site.	Whilst this species is not listed as a Schedule 9 invasive species, it is a non-native species that poses a conservation threat to native biodiversity and habitats, such that further releases should be regulated. This species has a negative effect on the biodiversity of the site.	The proposed development could potentially result in the spread of buddleia, an invasive ornamental species. Current guidelines from the Non-Native Species Secretariat should be followed when removing this plant, as outlined in Section 4.

3.4. Protected and Notable Species

3.4.1. Notable Plant Species

Data Trawl Results

BRERC returned records of 76 rare and/ or 'notable' plants (including species regarded as 'Locally Important', LBAP species and UK Red Data Book-listed species). These include: green-winged orchid (*Anacamptis morio*), pyramidal orchid (*Anacamptis pyramidalis*), small thyme-leaved sandwort (*Arenaria serpyllifolia subsp. leptoclados*), viper's bugloss (plant) (*Echium vulgare*), bluebell (*Hyacinthoides non-scripta*), bee orchid (*Ophrys apifera*), hawkweed oxtongue (*Picris hieracioides*), knotted clover (*Trifolium striatum*), green field-speedwell (*Veronica agrestis*), arrowhead (*Sagittaria sagittifolia*), japanese knotweed (*Fallopia japonica*), himalayan balsam (*Impatiens glandulifera*), annual knawel (*Scleranthus annuus*), chives (*Allium schoenoprasum*), meadow brome (*Bromus commutatus*), loddon pondweed (*Potamogeton nodosus*), lesser sea-spurrey (*Spergularia marina*), grass vetchling (*Lathyrus nissolia*), bramble (*Rubus wirralensis*), bramble (*Rubus imbricatus*), bramble (*Rubus echinatus*), bramble (*Rubus lindleianus*), a hawkweed (*Hieracium maculatum*), a prickly sedge (*Carex muricata subsp. pairae*), almond willow (*Salix triandra*), an annual knawel (*Scleranthus annuus subsp. annuus*), an annual pearlwort (*Sagina apetala subsp. apetala*), bath asparagus (*Ornithogalum pyrenaicum*), bird's-foot (*Ornithopus perpusillus*), black spleenwort (*Asplenium adiantum-nigrum*), blinks (*Montia fontana*), blue fleabane (*Erigeron acris*), bur parsley (*Anthriscus caucalis*), butterbur (*Petasites hybridus*), changing forget-me-not (*Myosotis discolor*), common club-rush (*Schoenoplectus lacustris*), common cornsalad (*Valerianella locusta*), common cow-wheat (*Melampyrum pratense*), common stork's-bill (*Erodium cicutarium*), creeping soft-grass (*Holcus mollis*), crosswort (*Cruciata laevipes*), danish scurvygrass (*Cochlearia danica*), early hair-grass (*Aira praecox*), fennel (*Foeniculum vulgare*), fiddle dock (*Rumex pulcher*), goldenrod (*Solidago virgaurea*), grape-hyacinth (*Muscari neglectum*), great wood-rush (*Luzula sylvatica*), greater dodder (*Cuscuta europaea*), hairy wood-rush (*Luzula pilosa*), heath bedstraw (*Galium saxatile*), heath groundsel (*Senecio sylvaticus*), lesser chickweed (*Stellaria pallida*), moth mullein (*Verbascum blattaria*), perfoliate alexanders (*Smyrniium perfoliatum*), reflexed saltmarsh-grass (*Puccinellia distans*), rue-leaved saxifrage (*Saxifraga*

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tridactylites), sand spurrey (*Spergularia rubra*), saw-wort (*Serratula tinctoria*), sharp-flowered rush (*Juncus acutiflorus*), sickle medick (*Medicago sativa subsp. falcata*), silver hair-grass (*Aira caryophyllea*), skullcap (*Scutellaria galericulata*), slender parsley-piert (*Aphanes australis*), slender st. john's-wort (*Hypericum pulchrum*), slender trefoil (*Trifolium micranthum*), small teasel (*Dipsacus pilosus*), squirrel-tail fescue (*Vulpia bromoides*), subterranean clover (*Trifolium subterraneum*), trailing st. john's-wort (*Hypericum humifusum*), upright chickweed (*Moenchia erecta*), water dock (*Rumex hydrolapathum*), water-pepper (*Persicaria hydropiper*), wavy hair-grass (*Deschampsia flexuosa*), wych elm (*Ulmus glabra*), and yellow water-lily (*Nuphar lutea*).

Field Survey Results

No plant species, which individually are considered to be of either of national, regional or local significance were recorded on the site.

3.4.2. Birds

Desk Study Results

The following table shows nesting birds and wintering birds of note recorded within 1km of the site, that are also associated with the habitats present on-site and their conservation status:

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Table 7: Birds of Note Recorded within 1km of the Site

Species		Schedule 1	NERC S41 - (English Sites, species of principal importance)	UK BAP	Red list ¹⁹	Amber list ²⁰
Blue Tit	<i>Cyanistes caeruleus</i>					
Buzzard	<i>Buteo buteo</i>					
Canada Goose	<i>Branta canadensis</i>					
Chiff Chaff	<i>Phylloscopus collybita</i>					
Coal tit	<i>Periparus ater</i>					
Common Redstart	<i>Phoenicurus phoenicurus</i>					
Common Sandpiper	<i>Actitis hypoleucos</i>					Yes
Cormorant	<i>Phalacrocoracidae</i>					
Garden Warbler	<i>Sylvia borin</i>					
Goldcrest	<i>Regulus regulus</i>					
Goldfinch	<i>Carduelis carduelis</i>					
Goosander	<i>Mergus merganser</i>					
Great tit	<i>Parus major</i>					
Greenfinch	<i>Chloris chloris</i>				Yes	
Grey Heron	<i>Ardea cinerea</i>					
Grey Wagtail	<i>Motacilla cinerea</i>					Yes
House sparrow	<i>Passer domesticus</i>		Yes	Yes	Yes	
Kingfisher	<i>Alcedo atthis</i>	Yes				
Little Grebe	<i>Tachybaptus ruficollis</i>					
Mallard	<i>Anas platyrhynchos</i>					Yes

¹⁹ Bird species of high conservation concern, such as those whose population or range is rapidly declining, recently or historically, and those of global conservation concern.

²⁰ Bird species of medium conservation concern, such as those whose population is in moderate decline, rare breeders, internationally important and localised species, and those of unfavourable conservation status in Europe.

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Marsh tit	<i>Poecile palustris</i>		Yes		Yes	
Mistle thrush	<i>Turdus viscivorus</i>					Yes
Mute swan	<i>Cygnus olor</i>					Yes
Robin	<i>Turdus migratorius</i>					
Song thrush	<i>Turdus philomelos</i>		Yes	Yes	Yes	
Sparrowhawk	<i>Accipter nisus</i>					Yes
Spotted flycatcher	<i>Muscicapa striata</i>		Yes	Yes	Yes	
Swallow	<i>Hirundo rustica</i>					
Treecreeper	<i>Certhiidae</i>					
Tree pipit	<i>Anthus trivialis</i>		Yes	Yes	Yes	
Treecreeper	<i>Certhiidae</i>					
Willow warbler	<i>Phylloscopus trochilus</i>					Yes

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Field Survey Results

A low number of birds were recorded on site, including blue tit (*Parus caeruleus*), collared dove (*Streptopelia decaocto*), house sparrow (*Passer domesticus*), jay (*Garrulus glandarius*) and wood pigeon (*Columba palumbus*). All of the bird activity was recorded in the broadleaved woodland.

Nesting and activity

A single defunct corvid nest was found within an ash tree located to the east of the site boundary.

Photos of Defunct Nest

Photo 7: Defunct corvid nest in ash tree to the east of site.



Photo 8: Defunct corvid nest in ash tree to the east of site (zoomed in).



Evaluation of Ecological Value of Site for Birds

Overall, the site has low value for nesting birds. The site comprises mainly bare ground, however there is broadleaved woodland surrounding and overhanging the site which is highly suitable for birds to utilise. The surrounding broadleaved woodland provides nesting opportunities for many species of birds, and the River Avon is situated directly 100m south of the site, providing foraging opportunities.

Impact Assessment of Proposed Development on Birds

The felling of the two ash trees will result in the loss of potential nesting sites that could be utilised during the breeding season (March to August inclusive), and the death, injury or disturbance to birds present at the time of work.

These impacts can be avoided either by timing the works so that they fall outside of the nesting season, or by inspecting the vegetation immediately prior to clearance works (see Section 4). In addition, due to the loss of nesting habitat, compensatory nesting provision is required.

3.4.3. Bats

Desk Study Results

BRERC returned no bat records 1km of the site.

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The following European Protected Species Mitigation Licences (EPSMLs) were granted within a 2km radius of the site:

Table 8: Granted Bat EPSMLs within 2km of the Site

Case Reference of Granted Application	Approx. Distance from Site	Species Affected	Licence Start Date	Licence End Date	Impacts Allowed by Licence
2015-10985-EPS-MIT	1.2km to the south of the site	Brown long-eared (<i>Plecotus auritus</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>), lesser horseshoe (<i>Rhinolophus hipposideros</i>), serotine (<i>Eptesicus serotinus</i>), soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) and whiskered bats (<i>Myotis mystacinus</i>).	08/01/2015	07/10/2020	Destruction of a resting place
2020-49941-EPS-MIT	0.2km to the north of the site	Brown long-eared, common pipistrelle and lesser horseshoe	26/11/2020	31/12/2024	Destruction of a resting place and damage of a breeding site
EPSM2011-3260	1.5km to the north-east of the site	Common pipistrelle, serotine and brown long-eared	23/02/2012	30/09/2013	Destruction of a resting place
EPSM20113-5995	1.5km to the north-west of the site	Serotine	11/07/2013	31/08/2016	Destruction of a resting place

Field Survey Results and Evaluation of Ecological Value of Site for Bats

Trees

All of the trees within the survey area were assessed for their suitability to support roosting bats.

The majority of the trees surrounding the site are young in age, with Diameters at Breast height (DBH) ranging from 20-35cm, with no PRFs. They were therefore assessed as having negligible bat roost potential and were scoped out of the assessment. They are therefore not mentioned further in this context in the report.

Buildings and Other Structures

The shed on site was assessed externally for its suitability to support roosting bats, as set out in the table overleaf:

Table 9: Buildings Assessed for Bat Suitability

Building Name	Description and PRF	Evidence of Bats	Roosting Suitability	Hibernation Potential
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Shed (B1)	The shed is constructed from timber (see Photos 9, 10 and 11) and the roof is constructed using MDF boards and bitumen felt (see Photos 13 and 14). All external walls are in good condition and have no gaps that provide access to the interior. The shed has double doors that sit flush to their frames to the south-eastern front, the doors have no potential access points for bats to enter the interior (see Photo 9). Under the eaves and fascia there are layers of bitumen felt that are raised and provide potential roosting features for bats (see Photos 15 and 16), but do not provide access to the interior of the shed.	None	Low	Low
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Photos of Shed (B1):

Photo 9: South-Eastern Front of the Shed



Photo 10: North-Eastern Side of the Shed



Photo 11: South-Western Side of the Shed



Photo 12: North-Western Rear of the Shed



Photo 13: Roof of the Shed on South-western Side



Photo 14: Roof of the Shed from North-Eastern Side



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Photo 15: Raised Bitumen Felt on North-western Rear of the Shed



Photo 16: Gaps in Bitumen Felt along Fascia on the South-western Side



Potential Building Roosts

The shed has been assessed as having low potential to support roosting bats.

Potential Foraging and Commuting Habitat

The site is collectively considered to provide high quality foraging and commuting habitat for bats due to the close proximity to areas of protected woodland such as Bickley Wood. The River Avon is found directly 100m south of the development site. These habitats form a continuous habitat corridor and connect the site to the wider landscape while also provides foraging and commuting opportunities.

Impact Assessment of Proposed Development on Bats

The following direct impacts to bats may occur as a result of the development:

- The demolition of the shed may result in the potential loss of roosting sites for bats. The shed has been assessed as having low potential for bats and hence any works therefore may result in the death, injury or disturbance to any bats present at the time of works, or the loss of the roost. Further work has been recommended as detailed in section 4.

The following indirect impacts to bats may occur as a result of the development:

- Due to the change of use of the site, increases in artificial lighting levels may be significant, both during the construction phase and the operational phase of the development. If this lighting envelops the retained vegetation and trees of the site, it could adversely affect foraging and commuting bats.

3.4.4. Dormice

Desk Study Results

BRERC did not return any published records of dormice from 1km of the site.

Field Survey Results and Evaluation of Site for Dormice

No evidence of dormouse was found on site during the survey.

The majority of the site lacks vegetation to provide dormice with protective cover or foraging opportunities and is considered to be wholly unsuitable for dormice. The area of semi-natural broadleaved woodland located to the north and east of the site does not constitute optimal habitat for dormice, as it is structurally open and contains a high number of ornamental species, although there are food-plants present (field maple, holly, and bramble). Dormice are under-recorded in many areas (Eden and Eden, 1999). On other sites dormice have been recorded within stands of bramble and bracken (Chanin and Woods, 2003). There is dense bramble scrub within the understorey of the woodland surrounding the site, linking to areas of scrub, bracken, and woodland in the wider area. The presence of dormice cannot, therefore, be ruled out in the habitats surrounding the proposed development site.

Impact Assessment of Proposed Development on Dormice

The majority of the site is considered to be wholly unsuitable for dormice. However, the area of broad-leaved woodland that encloses the site has greater potential.

Under current development proposals, the woodland is proposed for retention, with exception of two ash trees being felled due to ash dieback. This clearance could have an adverse impact on any resident dormice, either through direct killing, injury or disturbance, or through habitat loss and fragmentation. In order to prevent such an occurrence, recommendations have been outlined in section 4.

The following direct impacts to dormice may occur as a result of the development:

- E.g. Death or injury during vegetation clearance; and
- Habitat loss/ direct disturbance;

The following indirect impacts to dormice may occur as a result of the development:

- E.g. Habitat fragmentation;
- Habitat degradation;
- Disturbance during construction – main impacts are noise, accidental damage etc.;
- Lighting, either during construction or operational phase;
- Human disturbance during operational phase; and
- Introduction of cats.

3.4.5. Great Crested Newt

Desk Study Results

BRERC did not return any records of GCN within 1km of the site. There are records of other amphibians, comprising one record of common frog (*Rana temporaria*).

Great Crested Newt eDNA Records

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The Natural England GCN eDNA dataset showed that the closest confirmed GCN record is 2.3km to the south-west.

Great Crested Newt District Licensing

The site lies outside the currently available areas for district licence impact risk mapping (see Appendix 2), and so habitat suitability and likelihood of GCN could not be assessed using this metric.

Ponds Within 500m of Site

There are eight ponds within 500m of the development site. The nearest pond (pond 6) is found 0.3km to the north-east of the site and is not separated by any hard-barriers making terrestrial GCN migration possible. Ponds 7 and 8 are also not separated by any hard-barriers.

Due to access constraints a HSI was not undertaken.

Field Survey Results

No direct observation or evidence of GCN was recorded on site although a targeted survey was not undertaken for this species. In addition, the current survey was undertaken outside of the active season for great crested newt.

Aquatic Habitat

No ponds or other areas of standing water were recorded during the survey. The site, therefore, does not contain suitable habitat for supporting great crested newt during the aquatic stage of their lifecycle.

Terrestrial Habitats

During the terrestrial stage of their lifecycle, great crested newt can make use of a range of habitats including woodland hedgerows, scrub and rough grassland for foraging, shelter and hibernation. The terrestrial habitats within the development footprint lack such habitats.

The woodland understorey surrounding the site could be utilised for foraging and hibernating individuals. However, the bare ground habitat provides little physical protection for this species and is considered wholly unsuitable.

Evaluation of Ecological Value of Site for Great Crested Newt

The habitat between the ponds to the north of the site and the proposed development site is suitable for great crested newts, providing a mosaic of well-connected habitat types with ample cover from predation and hibernation opportunities in the varied vegetation. Terrestrial habitat in the vicinity of ponds is important for great crested newts during the terrestrial stage of their lifecycle. Optimal terrestrial habitats include rough grassland, scrub, hedgerows, and woodland as well as hiding spaces in the form of stones, logs and dead wood. All of these are near to the survey area bordering the site boundary and are likely to form important habitats for great crested newt (if present). Deciduous woodland is the favoured habitat type for overwintering (Duff 1989, Latham et al 1996). Abbots road to the north of the site is highly unlikely to present a barrier to great crested newt dispersal due to its small size.

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However, as a general rule, suitable habitats within 250m of a breeding pond are likely to be used most frequently by GCN (English Nature 2001), and the development area lies outside of the 250m buffer. When considered in addition to the lack of published records of this species within the study area and the development site being of low-suitability the likelihood of GCN migrating on to the proposed development site is considered unlikely, though it cannot be ruled out completely.

Impact Assessment of Proposed Development on Great Crested Newt

The presence of GCN within the development site cannot be ruled out completely. Even if we assume that GCN are breeding within the off-site ponds (which could not be accessed during the survey), Natural England's GCN guidelines state that 'Small scale losses of terrestrial habitat, especially over 250m from the breeding pond, will probably have little effect on populations but some mitigation may be required' (English Nature 2001). The proposals involve the felling of two ash trees adjacent to the site, which is considered to represent a very small-scale loss of habitat. This habitat loss will occur >250m from the ponds and therefore the likelihood of encountering GCN is considered to be low; and the risk of affecting the local GCN population negligible.

3.4.6. Otter

Desk Study Results

BRERC returned a total of one otter records within 1km of the site. The nearest record was made in 2022, approximately 0.1km away towards the west of the site along the River Avon.

Field Survey Results and Evaluation of Ecological Value of Site for Otters

No evidence of otter was recorded during the survey. However, significant amounts of rain over several days may have washed away field signs. Similarly, the amount of water in the river at the time of the survey was relatively high. Given the nearby local record and suitable and well-connected habitat, it remains likely that otters may commute along this watercourse, at least periodically. The wooded corridor along the riverbanks has good vegetation cover and some exposed tree roots which could potentially be used by otters for holting and/or resting.

The watercourse adjacent to the site is considered to be of moderate value to otters, due to the abundance of suitable habitat features. The site itself is largely unsuitable for otters due to lack of suitable habitat, limited cover and foraging opportunities.

Impact Assessment of Proposed Development on Otter

The presence of otters along the watercourse adjacent to the site cannot be ruled out. Otters are very sensitive to disturbance and the proposed works may result in negative impacts through noise, accidental damage, human disturbance and lighting. Furthermore, any works which may cause increased sedimentation and/or water inputs into the river may indirectly affect otters and other aquatic animals,

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including otter prey such as eels. Disturbance and loss of holts, couches and foraging grounds may result in isolation of populations on either side of a possible development.

Recommendations to mitigate adverse impacts on otters are detailed in Section 4.

3.4.7. Badgers

Desk Study Results

BRERC returned two badger records within 1km of the site. The nearest record was made approximately 0.6km away towards the south-east of the site recorded in 2021.

Field Survey Results and Evaluation of Ecological Value of Site for Badgers

No setts or other signs of badgers were recorded on site.

Although no evidence of badgers was recorded on site, there is considered to be some limited potential for them to venture onto the site from the surrounding landscape to forage sporadically.

Impact Assessment of Proposed Development on Badgers

The presence of badgers foraging or commuting across the site cannot be ruled out completely. As badgers are nocturnal it is considered unlikely that any foraging or commuting badgers will be encountered on site during works. Considered in addition to absence of any obvious signs of badger presence the likelihood of badgers being present on site is low. Good construction practices are recommended in Section 4 to ensure that no badgers moving through the site are injured or entrapped during the construction phase of development.

3.4.8. Reptiles

Desk Study Results

BRERC returned one record of reptiles within 1km of the site - one adder (*Vipera berus*).

Field Survey Results

No direct evidence of reptiles was recorded on site. However, the field survey was undertaken in November at a time when reptiles would be expected to be inactive and hibernating.

Evaluation of Ecological Value of Site for Reptiles

The site comprises mainly bare ground, which is wholly unsuitable for reptiles as it provides no shelter. While the presence of reptiles on the site cannot be ruled out entirely, it is considered unlikely that the woodland and scrub under-storey surrounding the site would contain a significant population due to the

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dense nature of the scrub and limited opportunities for basking²¹. However, the site did contain gabion baskets to the northern boundary that could be utilised by reptiles as hibernacula.

Impact Assessment of Proposed Development on Reptiles

The presence of reptiles on site cannot be ruled out completely. The proposed work carries a low risk of inadvertently killing, injuring or disturbing reptiles. Considering the low likelihood of impacts, further survey is not recommended, however recommendations have been detailed in Section 4.

3.4.9. Other Mammals

Desk Study Results

BRERC returned three records of other mammals within 1km of the site, comprising: one common hedgehog (*Erinaceus europaeus*), one brown hare (*Lepus europaeus*), and one weasel (*Mustella nivalis*).

Field Survey Results and Assessment of Ecological Value of Site for Other Mammals

No incidental sightings or field signs of other mammals were recorded on site. However, it is likely that a range of common small mammals are present on site, including hedgehogs (*Erinaceus europaeus*), shrews (*Sorex* sp.), voles (*Microtus/Myodes* sp.), mice (*Apodemus* sp.), fox (*Vulpes vulpes*) and mole (*Talpa europaea*) etc., occurring either as resident species or whilst foraging and/or commuting due to the broadleaved woodland surrounding the development site.

Impact Assessment of Proposed Development on Other Mammals

The presence of other mammals cannot be ruled out completely. The proposed development will be carried out within the bare ground of the site, with only the two ash trees to the east of the site being felled due to ash dieback. Therefore, no direct impacts are anticipated, however, good construction practises are outlined in Section 4 to ensure that no adverse impacts do occur.

3.4.10. Invertebrates

Desk Study Results

BRERC returned a 51 of notable invertebrate records from within the study area, comprising: grey dagger (*Acronicta psi*), knot grass (moth) (*Acronicta rumicis*), beaded chestnut (*Agrochola lychnidis*), mouse moth (*Amphipyra tragopoginis*), centre-barred sallow (*Atethmia centrigo*), beautiful demoiselle (*Calopteryx virgo*), small heath (*Coenonympha pamphilus*), small square-spot (*Diarsia rubi*), rustic (*Hoplodrina blanda*), rosy rustic (*Hydraecia micacea*), wall (*Lasiommata megera*), dot moth (*Melanchra persicariae*), powdered quaker (*Orthosia gracilis*), white ermine (*Spilosoma lubricipeda*), buff ermine (*Spilosoma lutea*), blood-vein (*Timandra comae*), cinnabar (*Tyria jacobaeae*), sallow (moth) (*Cirrhia icteritia*), small phoenix (*Ecliptopera silaceata*), august thorn (*Ennomos quercinaria*), red-eyed damselfly (*Erythromma najas*), small emerald

²¹ It should be noted that slow worms are also more shade tolerant than other reptiles.

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(*Hemistola chrysoprasaria*), brindled beauty (*Lycia hirtaria*), pretty chalk carpet (*Melanthia procellata*), shaded broad-bar (*Scotopteryx chenopodiata*), andrena solitary bee (*Andrena*), pyralid moth (*Catoptria pinella*), beautiful china-mark (*Nymphula nitidulata*), brick (*Agrochola circumcellaris*), brown hawker (*Aeshna grandis*), bulrush wainscot (*Nonagria typhae*), coronet (*Craniophora ligustri*), dark chestnut (*Conistra ligula*), engrailed (*Ectropis crepuscularia*), feathered ranunculus (*Polymixis lichenea lichenea*), hornet hoverfly (*Volucella zonaria*), large yellow-faced bee (*Hylaeus signatus*), least black arches (*Nola confusalis*), maiden's blush (*Cyclophora punctaria*), oak nycteoline (*Nycteola revayana*), old lady (*Mormo maura*), orange underwing (*Archiearis parthenias*), pale brindled beauty (*Phigalia pilosaria*), pine beauty (*Panolis flammea*), poplar kitten (*Furcula bifida*), scarce chaser (*Libellula fulva*), small scallop (*Idaea emarginata*), sycamore (moth) (*Acrionicta aceris*), vine's rustic (*Hoplodrina ambigua*), white-legged damselfly (*Platycnemis pennipes*), and white-spotted pug (*Eupithecia tripunctaria*).

Field Survey Results and Evaluation of Ecological Value of Site for Invertebrates

No incidental observations of invertebrates were recorded during the survey.

Due to the habitats present it is assumed the site will support an assemblage of invertebrates but is unlikely to support notable or rare species.

Impact Assessment of Proposed Development on Invertebrates

The site comprises bare ground which is considered to be of low suitability for most invertebrate species. The peripheral habitat comprises woodland trees and scrub, which is suitable for a wide range of invertebrates. However, the majority of the peripheral habitat is to be retained (with the exception of two ash trees), and therefore no adverse impacts are anticipated to occur.

4. Required Actions and Conclusions

The following recommendations are likely to be secured through planning conditions. They have been developed based on the development proposals available at the time of writing. It should be noted that they may be subject to change upon receipt of the final design. The implementation of these recommendations will ensure compliance with the National Planning Policy Framework (2021)²², the Conservation of Habitats and Species Regulations 2017 which has been updated by the Conservation of Habitats and Species (Amendment) (EU Exit) [‘CHSAEU’] Regulations 2019 and Bristol City Council (2011) Local Development Plan.

The recommendations aim to avoid or minimise adverse impacts on the environment and protected species, mitigate and compensate for losses where damage is unavoidable and promote opportunities to enhance biodiversity. There is a requirement that developments must provide net benefit for biodiversity.

4.1. Stepwise Approach to Maintaining Biodiversity

As part of the National Planning Policy Framework, planning authorities must follow a stepwise approach to maintain and enhance biodiversity and resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible. The first priority for planning authorities is to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or gain have been fully considered. This policy is mirrored within the Local Development Plan.

Avoidance – Avoidance of tree felling is not possible due to ash dieback, however other areas of the woodland is to be carried out during works.

Mitigation/Restoration – A comprehensive set of mitigation measures are provided below.

Compensation on-site– Robust and comprehensive compensation measures are provided below.

4.2. Further Work

4.2.1. CEMP

A CEMP will be produced as due to the proximity of the River Avon to the development works, there is a chance for impacts to the watercourse, and potentially to protected species via mediums such as pollution, either during the construction or operational phases. This can be secured by planning condition after planning consent has been granted.

²² Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions ... and in so doing promote the resilience of ecosystems. Development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity.

It is advisable that this is detailed within a CEMP, conditioned as part of the planning consent. The CEMP will identify the responsibilities of various organisations and people to comply with legislation and ensure that mitigation measures are implemented as proposed.

The CEMP should include:

- General Site Management: details of the construction programme including timetable, details of site clearance;
- Details of site construction drainage, containments areas, appropriately sized buffer zones between storage areas (of spoil, oils, fuels, concrete mixing and washing areas) and any watercourse or surface drain;
- Resource Management: details of fuel and chemical storage and containment; details of waste generation and its management;
- Pollution Prevention: demonstrate how relevant Guidelines for Pollution Prevention and best practice will be implemented, including details of emergency spill procedures and incident response plan;
- Details of the persons and bodies responsible for activities associated with the CEMP and emergency contact details; and
- Landscape/ecological clerk of works to ensure construction compliance with approved plans and environmental regulations.

4.2.2. Biodiversity Net Gain

A Biodiversity Net Gain Assessment is likely to be required. Submission to the Local Authority may require some or all of the following:

- Original Defra Metric spreadsheet to be submitted²³;
- Justification of target condition in habitat descriptions (this has been included within this report);
- A baseline pre-development plan correlating with the Metric;
- A post-development landscaping plan correlating with the Metric; and
- Justification for how the on-site habitat enhancements will be achieved and maintained over a 30-year period to be provided with reference to the Defra Metric Technical Supplement.

4.3. Precautionary Measures

Full details of precautionary measures will be devised after the finalisation of development proposals.

4.3.1. Bats

No further survey work is considered necessary as the area of proposed works is therefore designated as 'low' suitability. However, a precautionary approach (as outlined below) will need to be adhered to, reducing

²³ <http://publications.naturalengland.org.uk/publication/6049804846366720>

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the risk of disturbing, or damaging any potential bat roosts. This approach should be discussed with the County Ecologist. A protected species licence will therefore not be required.

Site Induction and Toolbox Talk

A suitably qualified bat ecologist will give a 'tool-box talk' to all contractors involved in the demolition works. This will take place prior to the commencement of works. All site workers will be briefed on the legal status of bats, the likely places to find them, the working practices required to minimise and avoid harming or disturbing bats (e.g. the procedure required for removing tiles etc.), and the action to be taken if bats are encountered during the works.

If bats are encountered, the bat will be carefully covered over again. Appropriate advice will be obtained from a suitably qualified bat consultant or Natural England and, if necessary, a bat development licence obtained before work can resume.

Ecological On-Site Supervision of Works/Soft Strip

A licensed bat worker will supervise the 'soft strip' of the shed whereby all features with bat roosting potential will be exposed and removed. This will minimise the chance of bats being killed/injured.

Any removal work will be undertaken using hand tools, (i.e. picks, crowbars, slate rippers, bow saws etc.). The features will be carefully removed by hand and contractors will check for the possible presence of bats on the undersides of these features before they are lifted off, prior to discarding or storing them. During the soft strip process, any cracks or crevices that have the potential to be used by bats will be inspected by a licensed bat worker using a high-powered torch to ensure they are not in use. A decision will be made on site at the time by the site ecologist about the extent of areas that need to be supervised.

The removal of such features will be observed and supervised at close quarters by a licensed bat handler from an appropriate viewing position to be provided by the demolition contractor (e.g. scaffolding or lifting platform).

If work takes place during the winter period, works will avoid encountering torpid bats by only working during periods when temperatures have not dropped below 10°C on four consecutive days and nights. However, if any torpid bats are discovered, they will be taken temporarily into care and fed until such time when conditions become suitable for release. The bat would then be released at dusk near the building.

Bat Discovery Action Plan

If bats are encountered during supervised works, the works will stop, the situation managed so the bat is not harmed e.g. roof material being placed back over the bat and a licence sought from NRW before works can recommence.

4.3.2. Birds

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Timing Restrictions for Birds

The timing of the felling of the ash trees should be undertaken from September to February outside the bird breeding season (March to August inclusive). Alternatively, any works undertaken from March to August will be subject to a check for nesting birds by a suitably qualified ecologist immediately prior to the works. If any active nests are found these will be protected, along with an appropriate buffer zone of approximately 5m, until the nesting is complete, and the young have fledged²⁴.

4.3.3. Good Construction Practices for Mammals

Any open trenches, steep sided holes and excavations associated with the development will either be closed and covered at night, or a means of escape provided (e.g. plank or reinforced plywood board over 60cm wide at no greater angle than 30° or gently graded site wall of the same angle or equivalent) to prevent any badgers, hedgehogs or other animals falling in and becoming trapped. Any exposed pipes and trenches must be checked for trapped wildlife each morning before starting construction activities.

4.3.4. Invasive Species Mitigation and Management

If the buddleia present on site is subject to removal, to avoid their spread any topsoil or turf necessary for the development cannot be stored directly next to this invasive species. Contractors are required to ensure that any tools and machinery brought onto the site are thoroughly cleaned of soil and plant matter to prevent cross-contamination. The same cleaning process will be applied for machinery leaving the site.

4.3.5. Protective fencing

To prevent accidental damage, the retained broadleaved trees will be securely fenced-off with appropriate temporary fencing (e.g. Herra's fencing) (see Appendix 13), and treated in accordance with British Standard BS5837 (2012) Trees in Relation to Design, Demolition and Construction – Recommendations.

Fences will be erected prior to the commencement of works and will be left in place until development completion. Where possible, any future developments will avoid felling of trees and clearance or breaching of the hedgerows. This will help to maintain the ecological connectivity of the site, maintain its biodiversity value and reduce the potential requirements for further protected species surveys.

4.4. Mitigation Measures

4.4.1. Sensitive Lighting Strategy

It is currently unknown what external lighting is to be provided post-development. However, a sensitive lighting strategy is recommended throughout the construction and operational phases. This will mitigate against any light disturbance to species such as commuting/foraging bats using the woodland the north and east of the site. Any unnecessary lighting of these habitats which could be used by commuting/foraging

²⁴ Some bird species, especially raptors and owls remain dependent upon the nesting site after fledging and so depending upon the species the nest site may need to be protected for a period of time after fledging.

bats will be avoided, thus creating a 'dark corridor' (see Plan 6 – proposed dark zone) to avoid causing disturbance. In addition, no works will be undertaken at night.

The lighting design for the site will be of a 'bat-friendly' specification, complying with the Institute for Lighting Professional's and Bat Conservation Trust's guidance (2023) and kept to the minimum level which meets the needs of security and health and safety.

External lighting will be minimised and installed at low-level only (i.e., no higher than eaves level and lower than 2.4m) and directed downward (i.e., below the horizontal plane with no upward tilt). Fully shielded lights with front and side hoods/shields or cowls will be installed to prevent upwards and horizontal light spill. The lighting source will not be visible. Any security lights used will operate on a passive infrared (PIR) motion sensor sensitive to large objects only, to avoid constant triggers by bat passes and with timers set on a short duration (i.e., a maximum 'on' time of one minute) to reduce the amount of 'lit time'.

The lights will either have an integrated LED light source or use LED bulbs. They will be low intensity (i.e., circa 11 watts) and have a warm white colour temperature of 3000K or less (ideally 2700K if commercially available). White, blue, and green lighting sources including mercury or metal halide, CPO and CDO (ceramic discharge metal-halide) bulbs which have a significant effect on bats will be avoided. Examples of suitable light fittings are provided within Appendix 7 and 8.

4.5. Enhancement Measures and Biodiversity Net Gain

4.4.1. Bird and Bat Boxes

As one defunct nest was observed on-site within one of the ash trees planned for felling and B1 is planned to be demolished, bird nesting and bat roosting opportunities should be compensated by erecting two artificial nest boxes, one open nest box (Appendix 10) one small nest box (Appendix 11) and two bat boxes (Appendix 12) on suitable features at the perimeter of the site. A variety of durable, woodstone bat and bird boxes, including maintenance free boxes suitable for trees, are available from NHBS²⁵ (see Appendix 9).

The bat boxes will be placed within linear features to allow bats undisrupted dispersal to local foraging habitat, and in positions where the entrance is not artificially illuminated at night (enabled by the provision of the 'dark corridor' outlined in section 5.1.1). Boxes will be positioned a minimum of 3m from the ground.

The bird boxes will also be located in secluded positions, ideally within dense cover and at a minimum height of 3 metres from ground level.

Specialised boxes that cater for specific bird species:

- Open fronted – Open fronted nest boxes cater for a range of bird species, including robin, dunnock, wren, pied wagtail, redstart and flycatcher. Due to the more exposed nature of these nest boxes,

²⁵ <https://www.nhbs.com/>

it is especially important to ensure that they are located in dense cover in order to avoid the attention of potential predators. Suitable locations could be within ivy coverage on the external building walls, or within the areas of broadleaved woodland; or

- Standard nest boxes – An entrance hole of 32mm will attract species such as great, blue and coal tits, along with nuthatch, flycatchers and sparrows. These nest boxes can be sited in a wide range of locations throughout the site. Typical places would be on trees within the areas of broadleaved woodland. Alternatively, boxes could be placed externally on building walls.

4.6. Longevity of Report

If development works do not begin within eighteen months to two years of the date of this report of this report, an update survey is likely to be required in accordance with guidance from NE, (CIEEM, 2019) and BS 42020:2013²⁶, to determine if conditions have changed since those described in this report.

4.7. Conclusions

The measures outlined in Section 4 will need to be revised upon receipt of the finalised development plans, but currently the site's ecological value is not considered to represent a fundamental in-principal constraint to the proposed development, although the measures outlined above will be required.

Provided the measures detailed in Section 4 are implemented, the development is not anticipated to result in adverse impacts to any protected sites, habitats, or species.

²⁶ As set out in Section 6.2.1, point 7 which states that ecological information should not normally be more than two/three years old, or as stipulated in good practice guidance).

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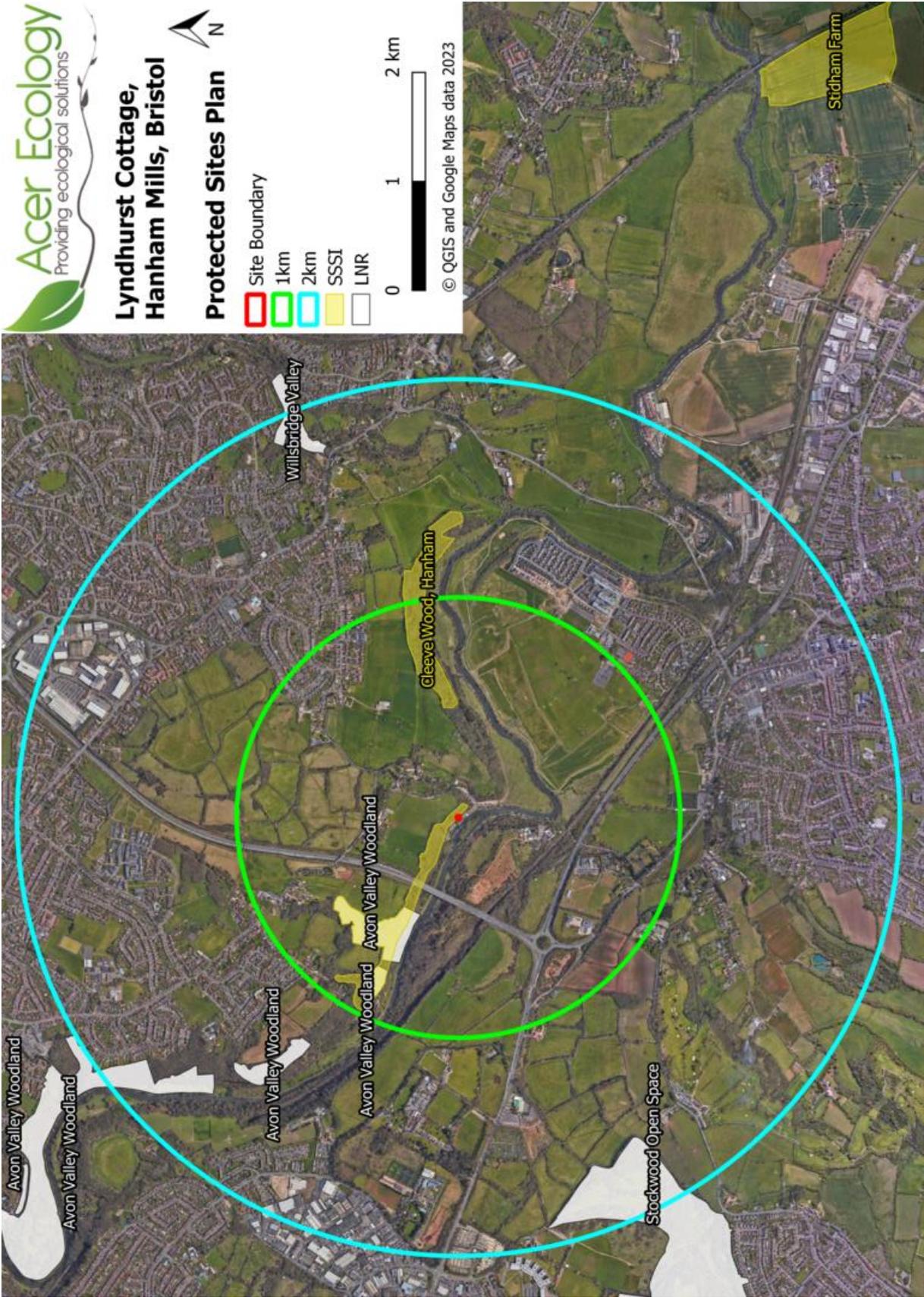
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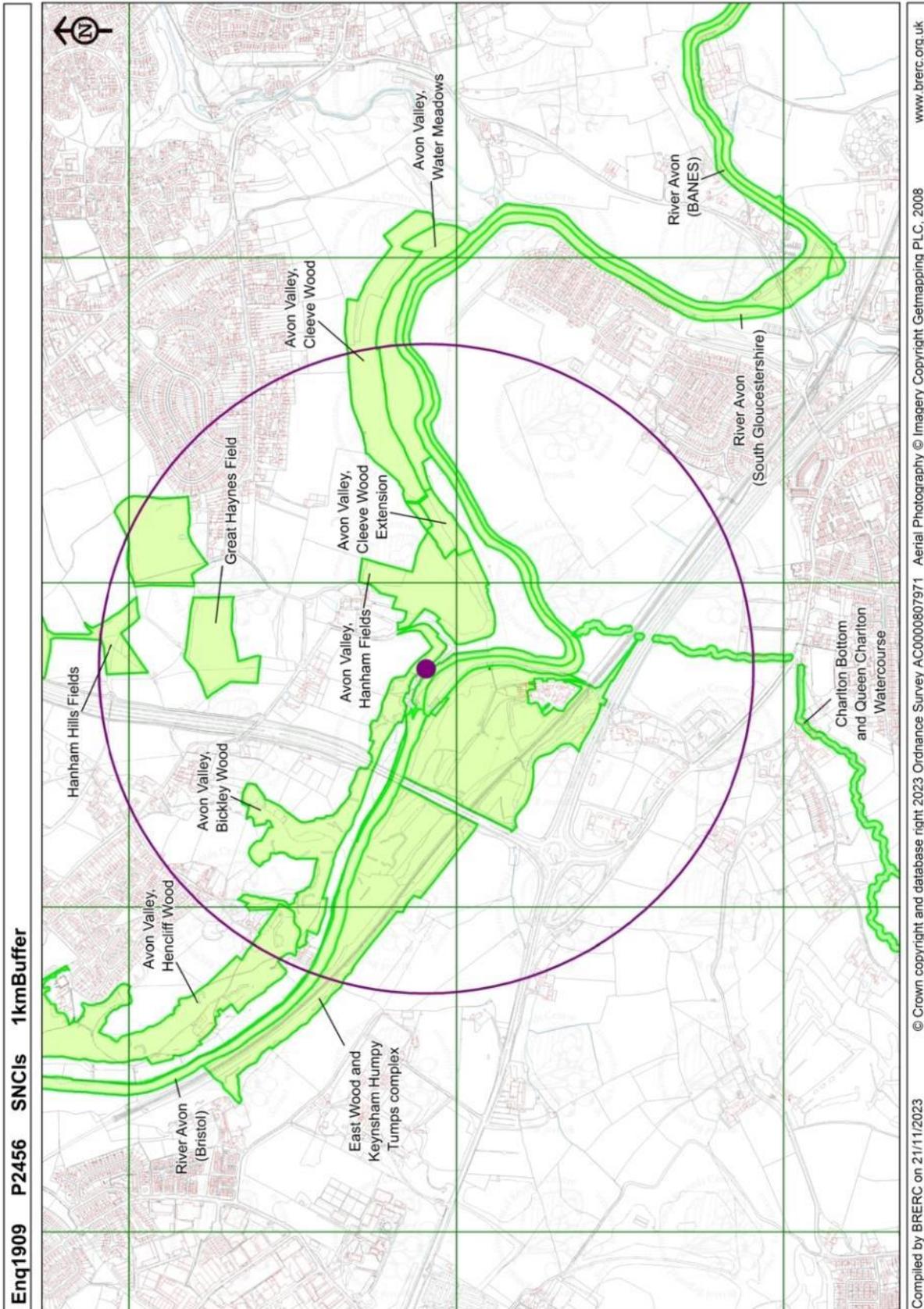
Plan 1: Site Location



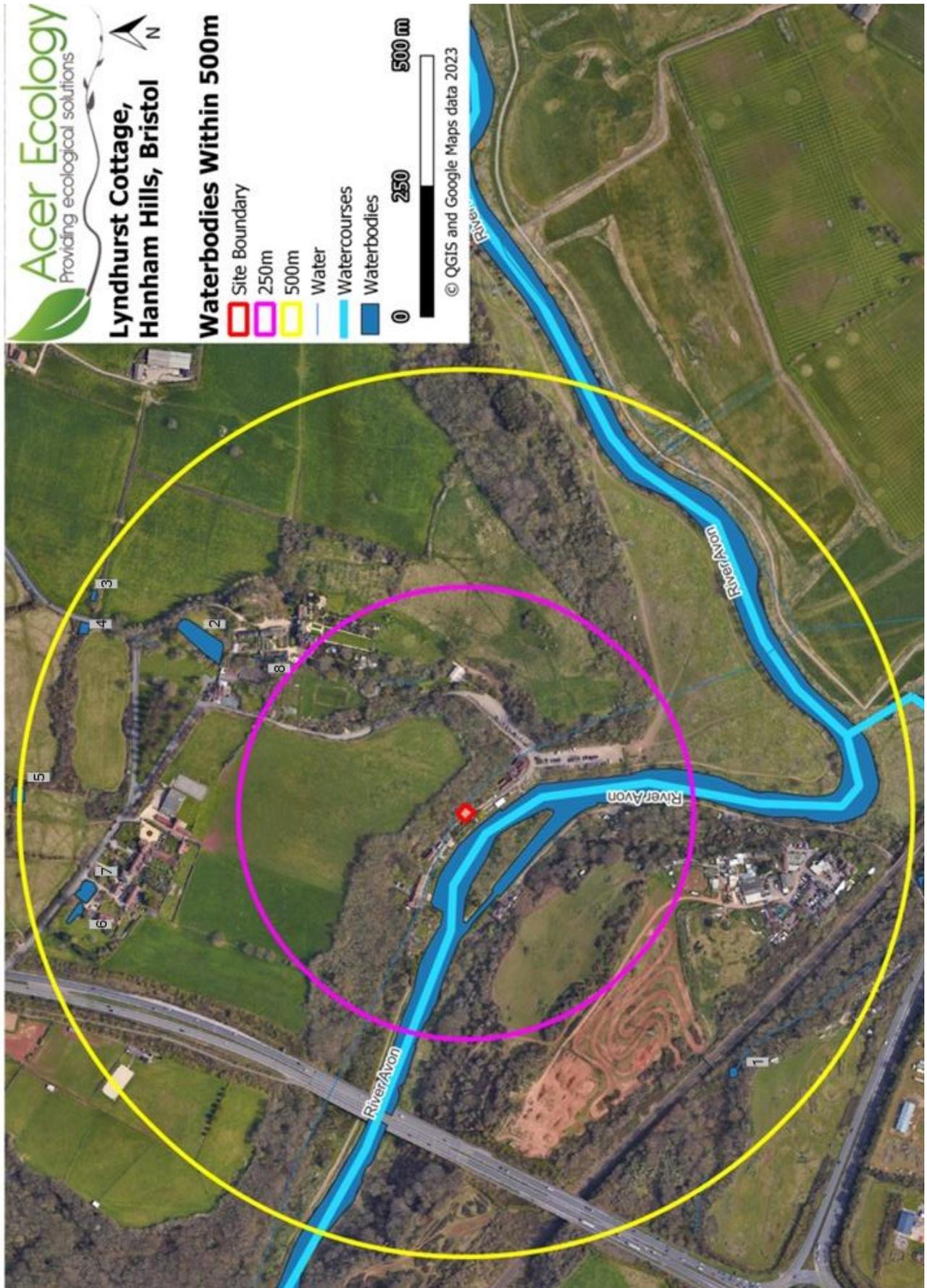
Plan 2: Site Location and Protected Sites Within 2km



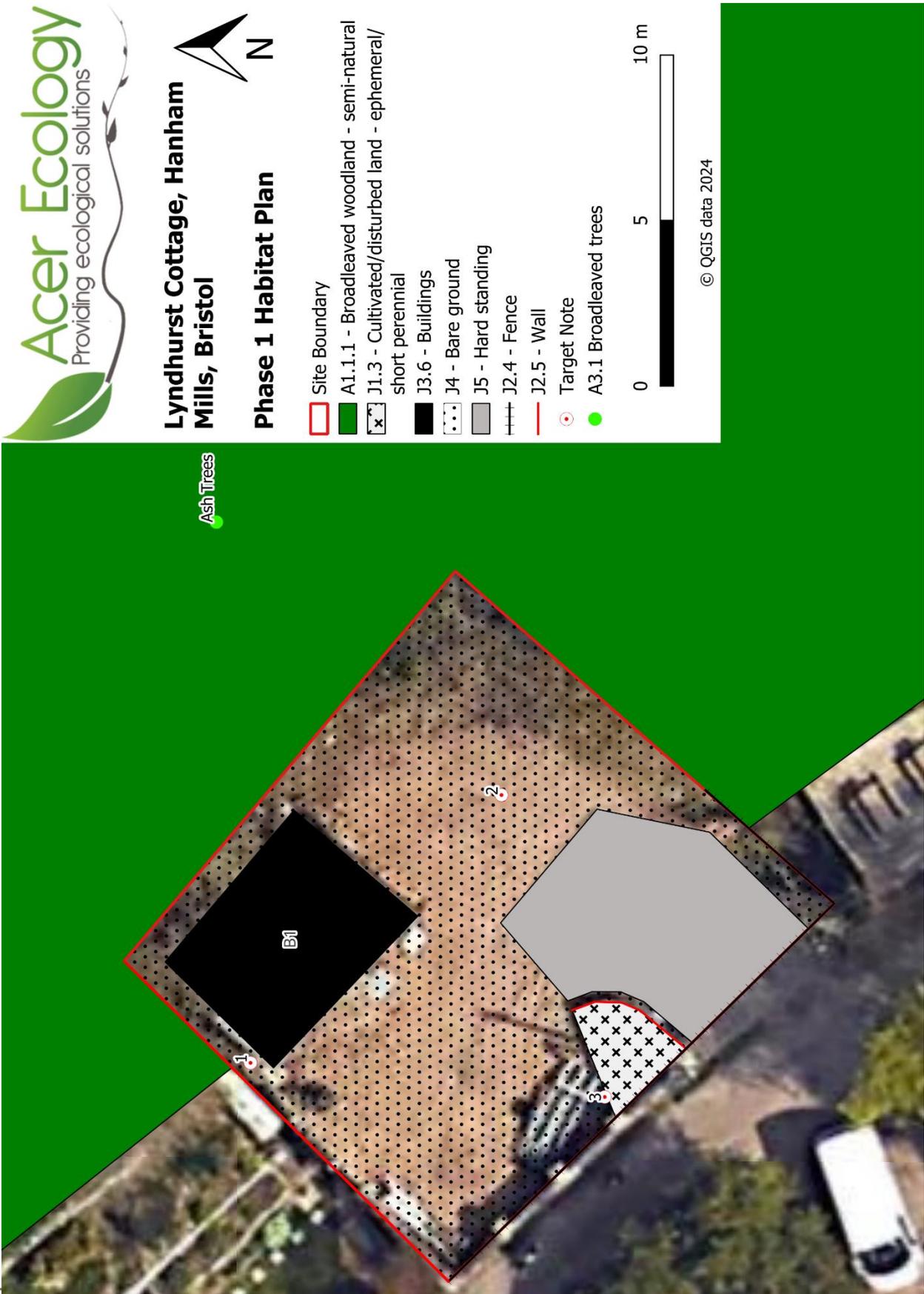
Plan 3: Site Location and SINCS



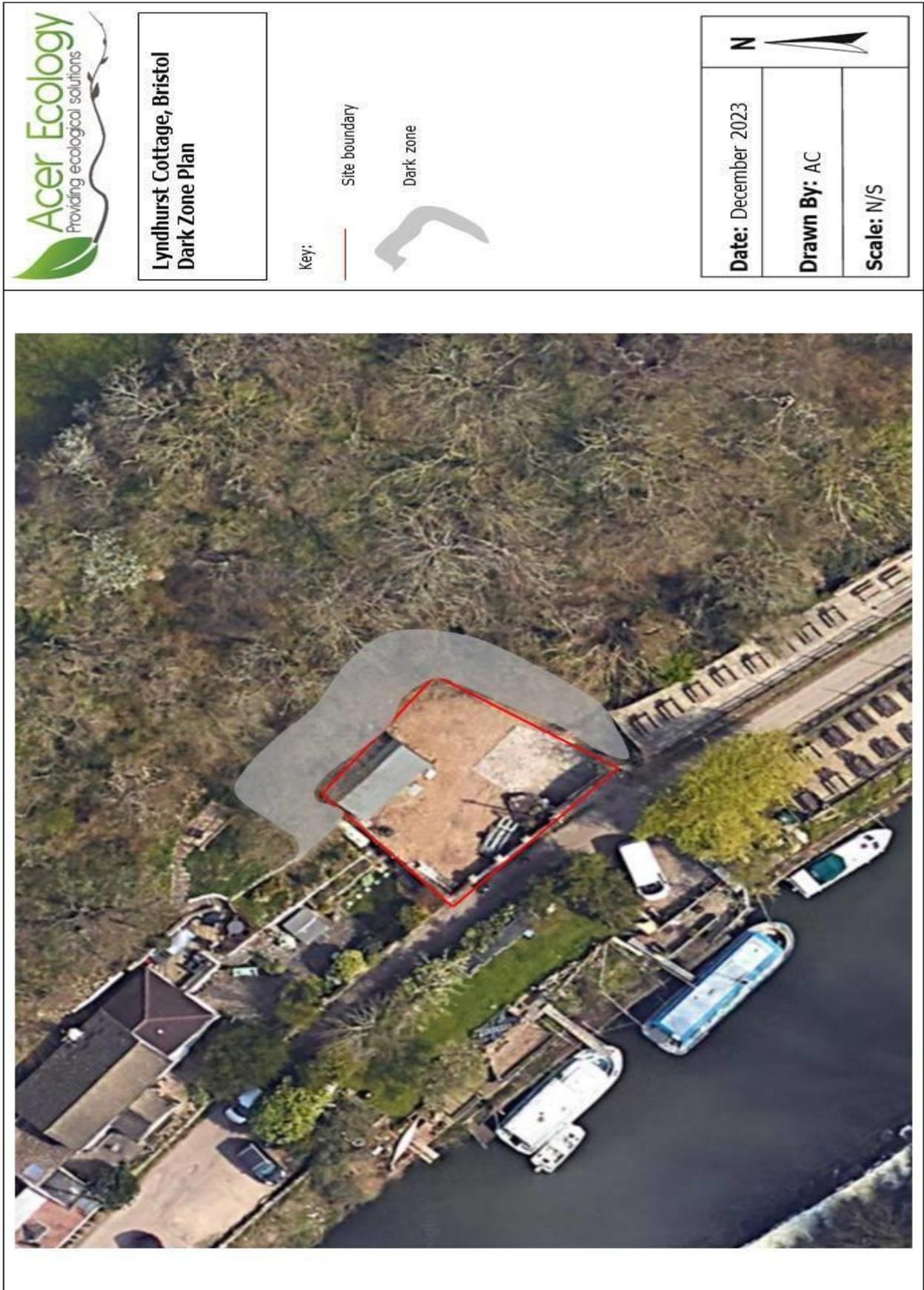
Plan 4: Location of Water Bodies within 0.5km of Site



Plan 5: Habitats and Vegetation



Plan 6: Proposed Dark Zone



Appendix 1: Legislation and Policy Relating to Statutory and Non-Statutory Designated Sites and Planning Policy Relevant to Site

SSSIs

SSSIs are important as they support habitats and/or species of national importance. SSSIs are legally protected under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006, and are of national (second tier) biodiversity significance and form the essential building blocks of the United Kingdom's protected areas for nature conservation. Many are also designated as Natura sites i.e. internationally (first tier) designated sites. It is an offence for any person to intentionally or recklessly damage the protected natural features of a SSSI.

LNRs

Under the National Parks and Access to the Countryside Act 1949, LNRs may be declared by local authorities after consultation with the relevant statutory nature conservation agency. LNRs are declared and managed for nature conservation, and provide opportunities for research and education, or simply enjoying and having contact with nature. LNRs must be controlled by the local authority through ownership, lease or agreement with the owner.

SNCIs

SNCIs are a class of nature conservation designations collectively referred to as 'Wildlife Sites'. Wildlife Sites are so-called 'third tier' sites, generally ranked below sites which are of international (first tier) or national (second tier) biodiversity significance, but which are considered to have '*substantive nature conservation value*' at the regional or district level. They are usually designated at the county or county borough level by the relevant local planning authority, and are recognised as a planning constraint in the relevant statutory development plan.

The framework for the identification and designation of 'Wildlife Sites' is set out in various Government documents, and is referred to in Planning Policy Statement Guidance Note Nine: Biodiversity and Geological Conservation. Defra published *Local Sites: Guidance on their identification, selection and management in 2006*²⁷.

Natural Environment and Rural Communities (NERC) Act 2006

Under Section 41 of the Natural Environment and Rural Communities Act (2006), Local authorities have a duty to have regard to the conservation of biodiversity in exercising their functions. The duty affects all

²⁷

<https://webarchive.nationalarchives.gov.uk/ukgwa/20111108175609/http://archive.defra.gov.uk/rural/documents/protected/localsites.pdf>

public authorities and aims to raise the profile and visibility of biodiversity, to clarify existing commitments regarding biodiversity, and to make it a natural and integral part of policy and decision making.

National Planning Policy Framework (2021)

The National Planning Policy Framework (2021)²⁸ outlines the Government's commitment to protect and enhance sites of biodiversity value, and minimise impacts on and provide net gains for biodiversity, including the principle of refusing planning permission if significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for. The most relevant parts are paragraphs 174-182 Conserving and Enhancing the Natural Environment, Habitats and Biodiversity.

Biodiversity and Geological Conservation Circular 06/2005

The Biodiversity and Geological Conservation—Statutory Obligations and Their Impact within the Planning System Circular (06/2005) state that the presence (or otherwise) of a protected species is a material planning consideration (Paragraph 98) and presence of protected species and the extent that they may be affected by the proposed development must be established before planning permission is granted (Paragraph 99).

Bristol Local Development Plan

Bristol Development Framework Core Strategy

The Bristol Development Framework Core Strategy, Bristol Local Plan was adopted in June 2011. –Draft Policies and Development Allocations refer to habitat enhancement, restoration and creation, although they do not yet state what percentage net gain is required. Also of relevance are Bristol Wildlife Network Sites (BWNS), non-statutory designations identifying areas of importance and connecting wildlife corridors.

Relevant ecological policies include:

- BCS9 Green Infrastructure; and
- BCS22 Conservation and the Historic Environment.

Biodiversity Net Gain

'*Identifying and pursuing opportunities*' for biodiversity net gain is a requirement within the National Planning Policy Framework 2021 as detailed in paragraphs 174d, 179b and 180d. In addition, the Environment Act²⁹ contains provisions for the protection and improvement of the environment, including a statutory requirement to provide a 10% biodiversity net gain ("BNG") .e.g. hedgerows, rivers) and non-linear habitats (e.g. grassland, woodland) and requires the use of a 'metric' to calculate the required biodiversity units. However, Section 147(3)(s) states that Part 6 of the Environment Act 2021 only comes into force '*on such day as the Secretary of State may by regulations appoint*'. Thus, Part 6 of the

²⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

²⁹ https://www.legislation.gov.uk/ukpga/2021/30/pdfs/ukpga_20210030_en.pdf?fbclid=IwAR1ewIrheP0DAOKtiopUmM80Nkt5NoRw9FUZ2GT4SRTD6rffpZTdIMK47aU

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Environment Act (which details the 10% net gain requirement) will not apply until further secondary legislation is made by the Secretary of State which is proposed on October 2023.

The biodiversity metric version 4 is a document for measuring, for the purposes of this Environment Act, the biodiversity value or relative biodiversity value of habitat or habitat enhancement. The DEFRA Biodiversity Metric is a habitat-based approach used to assess an area's biodiversity value - The Biodiversity Net Gain or Loss is then calculated using the difference between the pre-development and post development habitat data.

Buying statutory biodiversity credits can be used as a last resort option for developers if it is not possible to use on-site or off-site units to deliver biodiversity net gain (BNG). Indicative prices for buying statutory biodiversity credits using a credit sales service is available at <https://www.gov.uk/guidance/statutory-biodiversity-credit-prices>

Consultation with the local authority ecologist is recommended in order to progress the project and to agree the scope of further work.

Some authorities are requesting the use of the metric on applications though there is no current policy on BNG for South Gloucester Council.. Principals of Delivery Habitats of high 'distinctiveness' should be targeted for retention such as hedgerows as these would result in the greatest biodiversity losses. More biodiversity units are available when habitats are retained and protected during construction, and then 'enhanced' through management.

To achieve net gains, new habitats of high distinctiveness could be created, these include species-rich grassland, woodland, orchard, species-rich hedgerows and wetlands/ponds.

A detailed assessment may is not deemed to be required.

Appendix 2: Protected and Invasive Species Legislation Relevant to Site

Birds

All wild British birds (while nesting, building nests and sitting on eggs), their nests and eggs (with certain limited exceptions) are protected by law under Section 1 of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. Included in this protection are all nests (at whatever stage of construction or use) and all dependent young until the nest is abandoned and the young have fledged and become independent. Particularly rare species such as barn owl (*Tyto alba*) are listed on Schedule 1 which gives them additional protection from disturbance whilst nest building, whilst near a nest with eggs or young, or from disturbing the dependent young.

Section 10.8 of the Conservation of Habitats and Species Regulations 2017 state that Local authorities must use all reasonable endeavours to avoid any deterioration of habitats of wild birds.

Bats

All species of bats and their roosting sites are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 which continues to apply in UK law through the Conservation of Habitats and Species (Amendment) (EU Exit) [‘CHSAEU’] Regulations 2019.

All species of UK bats are designated as ‘European protected species’. Seven species of bat (soprano pipistrelle (*Pipistrellus pygmaeus*), barbastelle (*Barbastella barbastellus*), Bechstein’s (*Myotis bechsteini*), noctule (*Nyctalus noctula*), brown long-eared (*Plecotus auritus*), lesser horseshoe (*Rhinolophus hipposideros*) and greater horseshoe bats (*Rhinolophus ferrumequinum*)) are listed under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England.

Great Crested Newt

GCN is a ‘European protected species’ afforded full protection under UK legislation. This protection extends to the habitats which support GCN and it is generally assumed that the species might be present in terrestrial habitats up to 0.5km³⁰ of a breeding pond, depending on habitat quality, connectivity and population size. The GCN newt is a priority species under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England.

Regulation 55(2) of the Conservation of Habitats and Species Regulations 2017 defines the circumstances where derogation is allowed for an affected EPS and a licence could be issued by Natural England. All three test are to be met by the proposals prior to planning permission being allowed which include:

³⁰ Great Crested Newts have been recorded travelling long distances: 1.3km within a 7-week period by an immature individual GCN (Kupfer 1998, detailed in Jehle et al 2011); 250m in a study by Beebee and Griffiths (2000) and 120-360m in a study by Arntzen and Tenuis (1993). In addition, a study by Duff (1989) found that over half of a population overwintered in an area more than 120m away from the main breeding pond. However, long-distance movement of GCN is rare and most studies indicate that much shorter distances are typical (Jehle et al 2011). As a general rule, suitable habitats within 250m of a breeding pond are likely to be used most frequently (English Nature 2001).

1. The first test set out in Regulation 55(2)(e) deems that the need for the development should be in the interests of public health, public safety and an imperative reason of overriding public interest, which includes beneficial consequences of primary importance for the environment;
2. The second test set out in Regulation 55(9)(a) deems that there should be and 'no satisfactory alternative';
3. The third test set out in Regulation 55(9)(b) deems that the development should have no detrimental effect on the favourable conservation status of an EPS.

The GCN district licensing scheme can be used instead of making a GCN licence development application to Natural England.

Dormice

Dormice are a 'European protected species' and afforded full protection under UK legislation. Dormice are listed under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England. Since 2000, the UK population has declined by over a half (51%), decreasing on average by 3.8% per year (PTES, 2019).

Otters

Otters are a 'European Protected Species'. Their breeding sites or resting places³¹ are fully protected under UK legislation. Otter is listed under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England.

Works affecting otter are subject to licensing procedures by Natural England (NE).

Water Voles

Water voles are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which prohibits the deliberate killing or injury of individuals, damaging, destroying or blocking access to their places of protection (either intentionally or through ignorance), disturbing them in a place of shelter, or possessing them. The habitats of common water voles are not specifically protected. Water voles are listed as a priority species under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England.

White-clawed Crayfish

White-clawed crayfish are listed in the Habitat's and Species Directive (Annex 2 non-priority species) and are listed in England under Schedule 5 of the Wildlife and Countryside Act (1981). They are also listed as priority species under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England.

³¹ Resting places are defined as 'areas that are essential to sustain an animal or group of animals when they are not active' (Anon 2007).

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Badgers

Badgers are protected under the Protection of Badgers Act 1992. Protection applies both to the animal itself and to its nesting burrows (setts), and current interpretation of the Act also confers some protection to key foraging areas.

Reptiles

With the exception of smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) (which are afforded greater protection), common reptiles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are given so-called 'partial protection', which prohibits the deliberate killing or injury of individuals. The habitats of common reptiles are not specifically protected. These species are listed as being of principal importance for maintaining and enhancing biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006.

Hedgehogs

Hedgehogs are listed as a Red List mammal species in Britain and are protected under Schedule 6 of the Wildlife and Countryside Act (1981). They are "protected from being killed or taken by certain methods under Section 11(1) of the Wildlife and Countryside Act 1981. The methods listed are: self-locking snares, bows, crossbows, explosives (other than ammunition for a firearm), or live decoys. The species listed are also protected from the following activities: trap, snare or net, electrical device for killing or stunning, poisonous, poisoned or stupefying substances or any other gas or smoke, automatic or semi-automatic weapon, device for illuminating a target or sighting device for night shooting, artificial light, mirror or other dazzling device, sound recording, and mechanically propelled vehicle in immediate pursuit. They are also listed as priority species under the Natural Environment and Rural Communities (NERC) Act 2006 as being of principal importance for maintaining and enhancing biodiversity in England.

The legislation afforded to hedgehogs in the Countryside and Rights of Way (CRoW) Act 2000 and National Planning Policy Framework (2019) means that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity³². In effect, 'conserving biodiversity' includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.

³² Biodiversity conservation in respect to hedgehogs is interpreted as a commitment to restoring or enhancing their population.

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Appendix 3: Species Recorded

All species recorded by Acer Ecology, 2023

Taxonomic Name	Common Name	W	LM	CG	LDA	PMG	PIL	TF	Status
Trees and Shrubs									
<i>Buddleja davidii</i>	Buddleia								
<i>Lonicera periclymenum</i>	Honeysuckle								
<i>Rubus fruticosus agg.</i>	Bramble								Alien
Herbaceous Plants									
<i>Calystegia silvatica</i>	Large bindweed								
<i>Centranthus ruber</i>	Red valerian								
<i>Cymbalaria muralis</i>	Ivy-leaved toadflax								
<i>Dipsacus fullonum</i>	Teasel						PIL		
<i>Epilobium hirsutum</i>	Great willowherb								
<i>Euphorbia peplus</i>	Petty spurge								
<i>Galium aparine</i>	Cleavers								
<i>Geranium robertianum</i>	Herb-robert								
<i>Hedera helix</i>	Ivy								
<i>Lamium album</i>	White dead-nettle								
<i>Plantago major</i>	Greater plantain								
<i>Poa annua</i>	Annual meadow-grass								
<i>Sonchus asper</i>	Prickly sow-thistle								
<i>Taraxacum officinale agg.</i>	Dandelion								
<i>Teucrium scorodonia</i>	Wood sage						PIL		
<i>Urtica dioica</i>	Common nettle								

Habitat Indicator Species' Totals (Wales Biodiversity Partnership 2008³³)	0	0	0	0	0	0	2	0	
	W	LM	CG	LDA	PMR	PIL	TF		

³³ Wales Biodiversity Partnership (2008) Wildlife Sites Guidance Wales: A Guide to Develop Local Wildlife Systems in Wales. Wales Biodiversity Partnership/Welsh Assembly Government.

Appendix 4: Definitions of Site Value

International Value

Internationally designated or proposed sites such as Ramsar Sites, Special Protection Areas, Biosphere Reserves and Special Areas of Conservation, or non-designated sites meeting criteria for international designation. Sites supporting populations of internationally important species or habitats.

National Value

Nationally designated sites such as Sites of Special Scientific Interest (SSSIs), or non-designated sites meeting SSSI selection criteria (NCC 1989), National Nature Reserves (NNRs) or Nature Conservancy Review (NCR) Grade 1 sites, viable areas of key habitats within the UK Biodiversity Action Plan. Sites supporting viable breeding populations of Red Data Book (RDB) species (excluding scarce species), or supplying critical elements of their habitat requirements.

Regional Value

Sites containing viable areas of threatened habitats listed in a regional Biodiversity Action Plan, comfortably exceeding Site of Nature Conservation Importance (SNCI) criteria, but not meeting SSSI selection criteria. Sites supporting regionally significant areas of BAP habitats or large and viable populations Nationally Scarce species, or those included in the Regional Biodiversity Action Plan on account of their rarity, or supplying critical elements of their habitat requirements.

County Value/District Value

Site identified as a Site of Importance to Nature Conservation (SINC) at the district level; meeting the Department for the Environment, Food and Rural Affairs (DEFRA) 2006 published guidance on the identification, selection and management of local sites, but falling short of SSSI designation criteria, whether designated as a SINC or not. Ancient woodlands and sites supporting regionally significant areas of UK BAP habitat. Large scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/ LBAP or threatened species (other than badger).

High Local

Habitats which just fail to meet Regional value criteria, but which appreciably enrich the ecological resource of the locality. Sites supporting species which are notable or uncommon in the county; or species which are uncommon, local or habitat-restricted nationally, and which might not otherwise be present in the area. Moderate scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species.

Local Value

Old hedges, woodlands, ponds, significant areas of species-rich grassland, small scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species.

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Undesignated sites or features which appreciably enrich the habitat resource in the context of their immediate surroundings, parish or neighbourhood (e.g. a species-rich hedgerow). Rare or uncommon species may occur but are not restricted to the site or critically dependent upon it for their survival in the area.

Site Value (within the immediate zone of influence)

Low-grade and widespread habitats. Woodland plantations, structured planting, small areas of species-rich grassland and other species-rich habitats not included in the UK or Local BAP.

Negligible

No apparent nature conservation value.

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Appendix 5: Guidelines for Assessing Potential Suitability of Proposed Development Site for Bats

Suitability	Commuting and Foraging Habitat
Negligible	Negligible habitat features on-site likely to be used by commuting and foraging bats.
Low	<p><u>Commuting Habitat</u> Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.</p> <p><u>Foraging Habitat</u> Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</p>
Moderate	<p><u>Commuting Habitat</u> Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p><u>Foraging Habitat</u> Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	<p><u>Commuting Habitat</u> Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p><u>Foraging Habitat</u> High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.</p> <p><u>Proximity to Known Bat Roosts</u> Site is close to and connected to known roosts.</p>

Suitability	Description of Roosting Habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions ³⁴ and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity) or hibernation ³⁵ .
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status ³⁶ (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

³⁴ For example, in terms of temperature, humidity, height above ground levels, light levels or levels of disturbance.

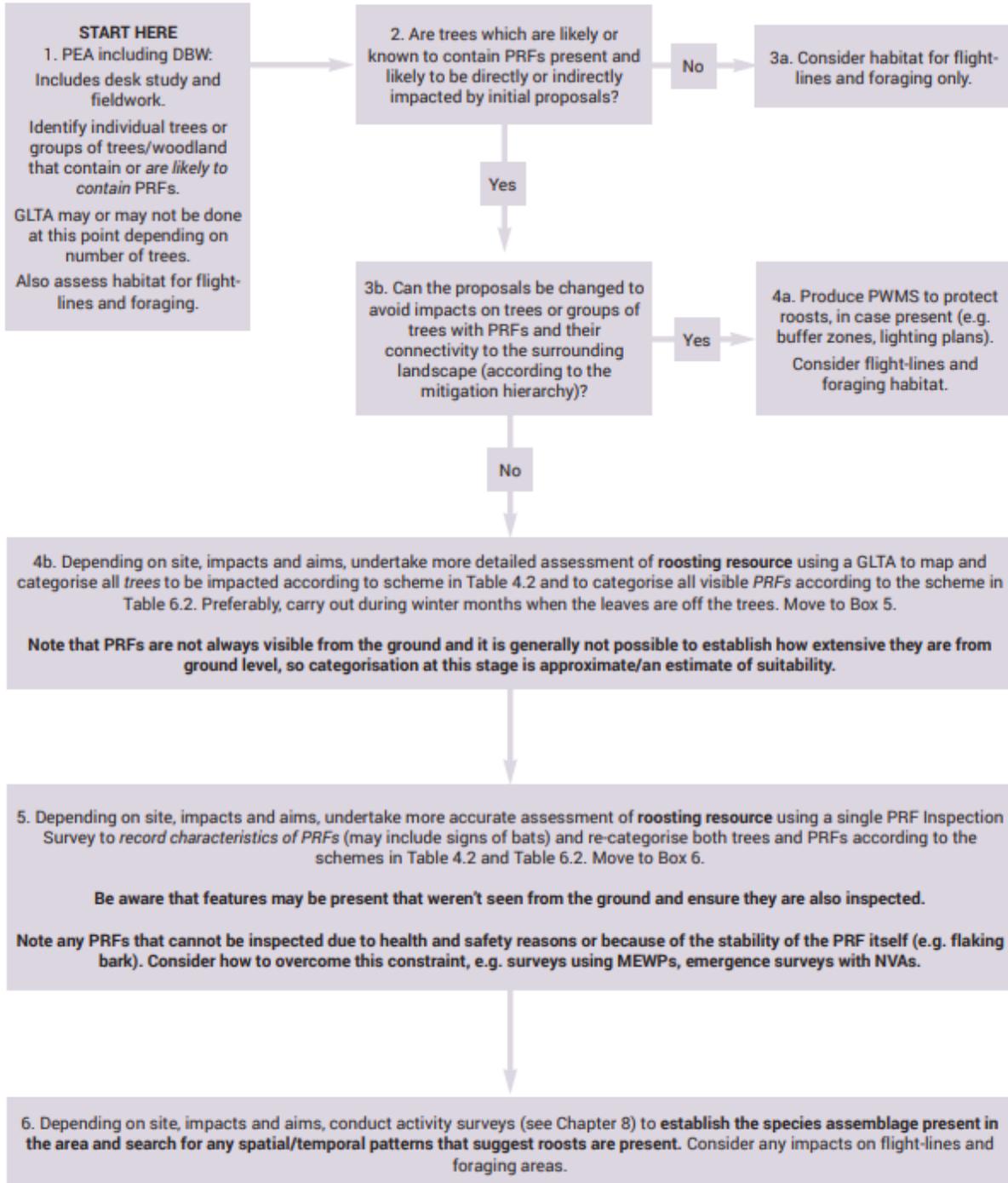
³⁵ Evidence from the Netherlands, shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for large numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

³⁶ 'High roost status' is not defined within Collins, 2016. Acer Ecology Ltd. interpret maternity, hibernation, swarming sites, mating sites, and satellite roosts as being of 'high roost status' and exclude day roosts, night roosts, feeding roosts, transitional/occasional roosts from this definition.

Appendix 6: Tree Assessment Flowchart

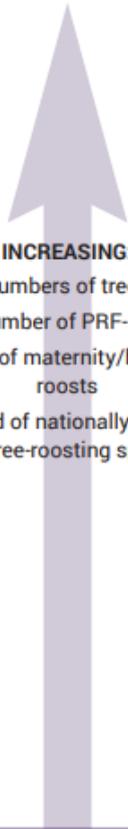
Figure 6.1. Flow chart illustrating decision-making process and recommended baseline surveys of trees/site.

Note that for larger-scale projects that extend over a number of years, survey design will need adjustment, see Table 6.5. For these types of projects, bespoke approaches are normally drawn up between ecologists and the relevant SNCB. Consultation is essential.



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Table 6.3. Showing types of survey approaches that are relevant to tree surveys following steps taken in Figure 6.1.

Scenario	Types of approaches after considering impact avoidance as first step in mitigation hierarchy.
Known bat roosts	Roost characterisation surveys (see Section 7.3) followed by EPS licensing (for loss) or PWMS (for e.g. disturbance impacts where buffers are required).
 <p>INCREASING: numbers of trees number of PRF-Ms likelihood of maternity/hibernation roosts likelihood of nationally or locally rare tree-roosting species</p>	<p style="text-align: center;">ALBST</p> <p>Consider trapping, tagging and radio-tracking to find roosts of high conservation significance (see Chapter 9).</p> <p>This method is likely to be appropriate on (a) nationally significant infrastructure projects, (b) projects that impact sites designated for tree roosting bats, and/or (c) areas of woodland with high suitability for bats or ancient woodlands. See Box 6.1. CONSULTATION WITH RELEVANT SNCB IS ESSENTIAL, A BESPOKE APPROACH MAY BE REQUIRED⁷⁹.</p> <p style="text-align: center;">FURTHER SURVEYS APPROACH (but consider cost-effectiveness when compared to ALBST)</p> <p>PRF inspection surveys for PRF-M features in summer (see Table 6.4. and Section 6.8). Where features inaccessible or too extensive for PRF inspection, carry out emergence surveys in summer with NVAs (see Table 6.4. and Section 7.2).</p> <p style="text-align: center;">Consider winter roosting potential. MAY NEED TO CONSULT WITH RELEVANT SNCB.</p> <p style="text-align: center;">ROOST RESOURCE APPROACH (if only PRF-Is^a)</p> <p style="text-align: center;">No further surveys.</p> <p>Provide appropriate compensation for all PRF-Is in advance of impacts and a PWMS for works (see Reason & Wray, 2023).</p>
<p>a If there are larger numbers of trees with features categorised as PRF-I then this increases the likelihood of a roost being present. Conversely, if there are very few trees in the landscape then PRF-I features may have increased importance. Context should always be understood and considered.</p>	

Note: PWMS – Precautionary Working Method Statement

Appendix 7: Example of Suitable Wall Light Fittings

	Description
	Light fitting sourced from http://www.energylightbulbs.co.uk/products/single-outdoor-wall-with-pir-movement-sensor-stainless-steel?gclid=CLuf2c63hM4CFYVAGwod0sYPvg
	Light fitting sourced from https://www.screwfix.com/p/lap-bronx-outdoor-wall-light-black/7323r
	Lighting sourced from https://energylightbulbs.co.uk/outdoor-lighting/single-wall-lights/black-single-wall-lights/single-outdoor-wall-light-black-stainless-shhttps://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Bronze-Outdoor-LED-Wall-Lantern-Sconce/p/50117847/category=12541418 teal-ip65-zlc076b
	Light fitting sourced from https://energylightbulbs.co.uk/outdoor-lighting/single-wall-lights/black-single-wall-lights/cone-shape-outdoor-wall-light-stainless-steel-black-finish-exterior-single-downlight-zlc068b
	Lighting sourced from https://www.dunelm.com/product/houston-outdoor-wall-light-1000189390?defaultSkuId=30730458
	Lighting sourced from https://www.lights.co.uk/lindby-jarte-led-outdoor-wall-light-23-9-cm-down.html?gclid=Cj0KCOiAys2MBhDOARIsAFf1D1cN-g6FdvDbjkJcq57t5Ym6RuP5BjinsVPsMI465W2D8SILoTRmA5kaAkHZEALw_wcB&gclid=aw.ds
	No longer available from previous stockist
	No longer available from previous stockist
	Lighting sourced from http://www.theopenboxshop.com/hampton-bay-lexington-collection-outdoor-rustic-bronze-led-medium-wall-lantern/ Note: bulb is in unit above glass casing.
A tool for finding 'bat-friendly' lighting is available at https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/ although the majority of suppliers are based in America	

Appendix 8: Examples of Suitable Bollard Lighting

	Manufacturer	Model	Description
	DW Windsor	Pharola DS	<p>Specifically designed as a 'dark sky compliant' light, this bollard produces zero light above the horizontal plane, and is available with 3000K warm white lighting.</p> <p>For more details, visit: https://www.dwwindsor.com/products/pharola/pharola-ds/</p>
	GHM-Eclatec	Trek	<p>Lighting head and module in die-cast aluminium; polyester powder coating, any colour available. Available in 3000k.</p> <p>For more details, visit: https://www.ghm-eclatec.com/products/lighting/bollards/trek-bollard</p>
	GHM-Eclatec	Taiga	<p>Lighting head and module in die-cast aluminium; polyester powder coating, any colour available. Available in 3000k.</p> <p>For more details, visit: https://www.ghm-eclatec.com/products/lighting/bollards/taiga-led-bollard</p>
	BEGA	77237	<p>Cast aluminium, LED 300k, directs beam downwards.</p> <p>For more details, visit: https://www.bega.com/en/products/led-garden-and-pathway-luminaires-for-the-private-sector-77237/</p>
<p>A tool for finding 'bat-friendly' lighting is available at https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/ although the majority of suppliers are based in America</p>			

Appendix 9: Vivara Barcelona WoodStone Open Nest Box

These attractive nestboxes are manufactured from WoodStone which is a mix of concrete and FSC certified wood fibres. Unlike a traditional wooden nest box, these boxes will not rot away or deteriorate and are guaranteed for 10 years. This robust material safeguards against attacks from predators such as woodpeckers, cats and squirrels, whilst also providing a well-insulated interior with a more consistent internal temperature than an ordinary wooden box. This is especially important during the breeding season and ensures that young birds have a greater chance of survival. Nesting sites have become rare for cavity nesting birds due to changes in woodland management practices, so you can provide much-needed space for rearing chicks and birds that are roosting overwinter with these durable, long-lasting nest boxes.

These open nest boxes are suitable for wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds, and they are available in brown, green or grey to complement both natural woodland and garden settings.

The best height for your nest box is between 1.5m and 3m high, and open nest boxes should be sited in undergrowth such as ivy to provide cover for the nest.

These nest boxes have a removable front panel for easy cleaning. Although birds will clean their own nest boxes before each breeding season, cleaning the boxes out at the end of each breeding season may encourage them to be used again in future years, as it reduces parasites. The nesting time of birds varies from species to species so we suggest you wait until October when the last of the birds will have left before cleaning. The nest may come out easily but if there are any deposits scrape them out. We recommend using hot water rather than chemicals to remove any parasites that remain.

Specification

- * Width: 19cm
- * Height: 24cm
- * Length: 17.5cm
- * Entrance hole: Open



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

Appendix 10: Schwegler 1B General Small Bird Box, 26mm Entrance Hole

The Schwegler 1B Woodcrete nest box is available with different entrance hole sizes to attract a wide range of species and prevent competition between birds. The nest box can be attached to the tree or wall using an aluminium nail or by hanging over a branch. The nest box has removable front panel to aid inspection and cleaning.

Entrance hole sizes:

Entrance hole sizes:

32mm entrance hole will attract great, blue, marsh, coal and crested tit, redstart, nuthatch, collared and pied flycatcher, wryneck, tree and house sparrow and bats.

26mm entrance hole suits blue, marsh, coal and crested tit and possibly wren. All other species are prevented from using the nest box due to the smaller entrance hole.

Oval entrance hole (29 x 55mm) suits redstarts because more light enters the brood chamber. It is also suitable for all other species which nest in the 32mm boxes



The Schwegler 1B general small bird box will be preferably mounted on a stable tree trunk, rather than on branches which will sway. The mounting location will not be heavily shaded. Boxes should be mounted vertically on the tree.

Boxes will be mounted a minimum of 2m, and preferably 3m, above the ground, and as far as possible placed on the SE- or SW-facing surfaces of the tree trunks.

Appendix 11: Specifications of Vivara Pro WoodStone Bat Box



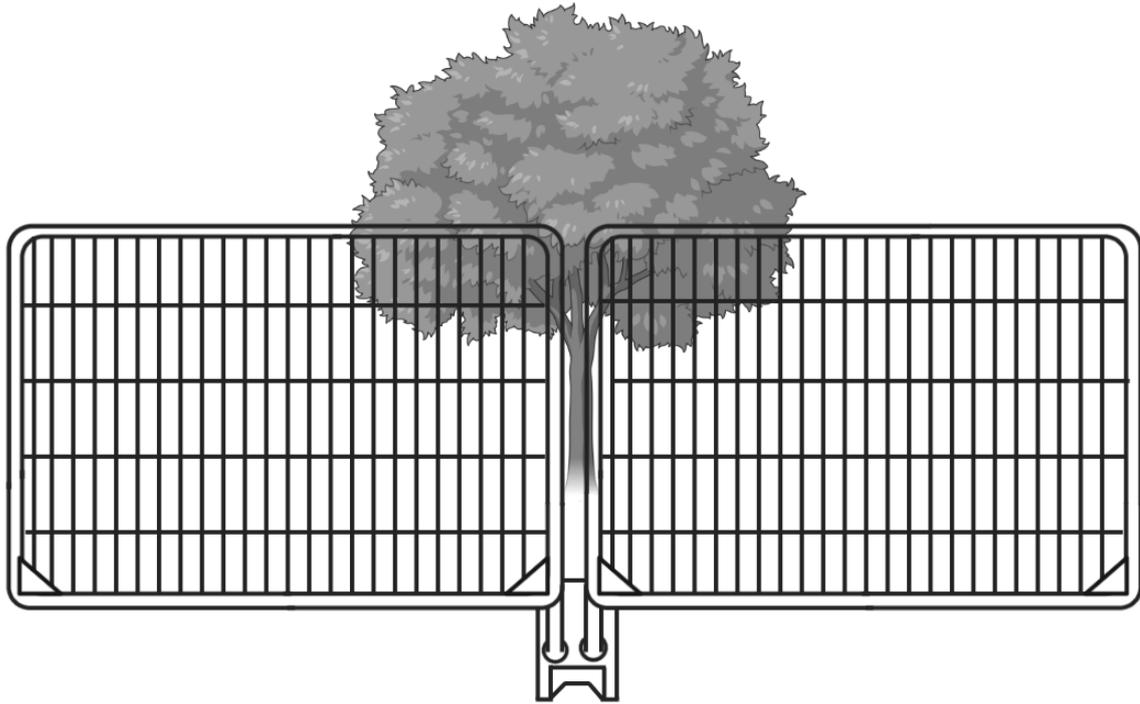
The Vivara Pro WoodStone® Bat Box is an attractive, hardwearing bat box that will provide much needed summer roosting space for bats in both urban and rural areas. Due to changes in building construction and woodland management practices natural cavities for bat roosts are very rare, so providing a bat box can really help the bats in your area. This box is made from WoodStone®, a mixture of wood fibres from fully certified FSC wood sources and concrete, and it is designed to last for years. It is breathable so there will be no problems with condensation and WoodStone® maintains a consistent temperature inside, providing excellent insulation for roosting bats. WoodStone® also provides a rough surface which the bats can easily cling to and move around the box. The Vivara Pro WoodStone® Bat Box is black with a grey front panel. Siting - The box can be attached to either a wall or a tree and should be sited at a height of at least 3 m from the ground. Bats prefer to change roosts to benefit from varying ambient temperatures, so bat boxes should ideally be clustered in small groups.

Dimensions - (H) 250 x (W) 190 x (D) 165 mm, weight: 4.5 kg

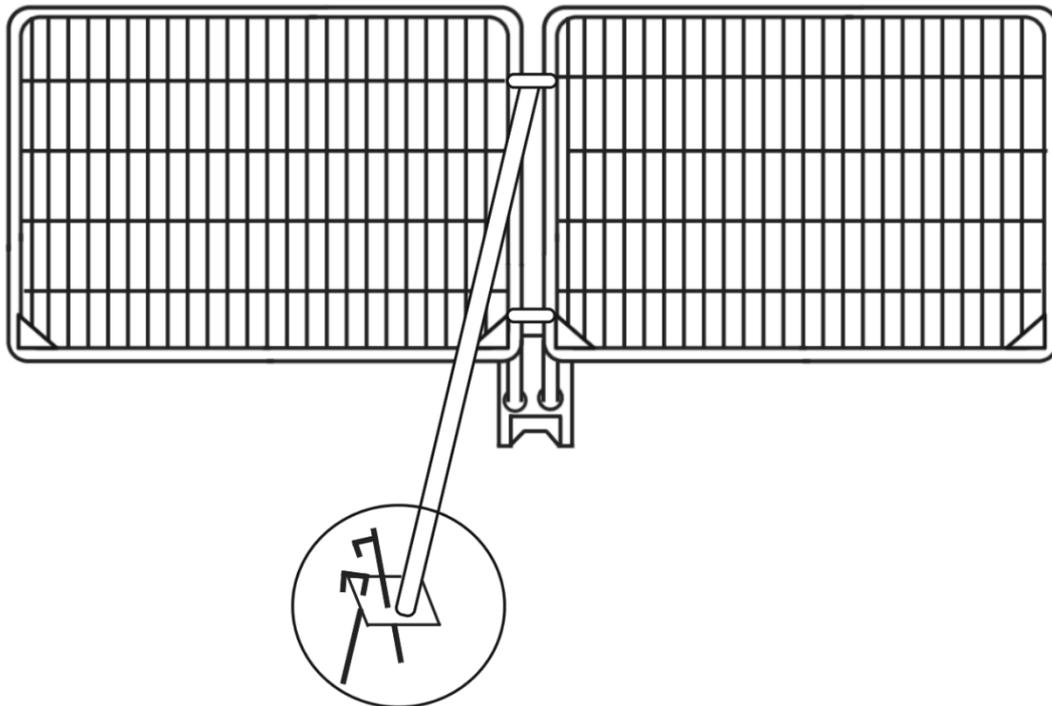
Bat Box Availability

The bat box is available from NHBS (www.nhbs.com) where it retails at approximately £19.99 including VAT

Appendix 12: Protective Barriers



Wildlife barrier surrounding tree



Stabilizer strut with base plate secured with ground pins

Redrawn after BS 5837:2012 Figure 1

Note: Consideration of badgers needs to be taken when installing fencing so that their routes of access are not restricted.

Acer Ecology
