ECOLOGICAL IMPACT ASSESSMENT

GATE FARM, CHIPPENHAM, WILTSHIRE

carried out by

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commissioned by

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ECOLOGICAL IMPACT ASSESSMENT

GATE FARM, CHIPPENHAM, WILTSHIRE

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The information, data and advice which has been prepared and provided is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions. This report and its contents remain the property of Clarkson and Woods Ltd. until payment has been made in full.

EXECUTIVE SUMMARY

- Clarkson and Woods Ltd. was commissioned by David Wilson Homes to conduct an Ecological Impact Assessment of land associated with Gate Farm in Chippenham, Wiltshire to inform a proposed planning application.

- This report details the ecological constraints and opportunities associated with the Site and provides an assessment of the likely impacts resulting from the proposed development. Measures to reduce/avoid the impacts during construction and operational phases of development have been outlined.

- The development proposals for the Site comprise a residential development of up to 150 dwellings with associated parking and gardens, access roads, public open space and landscaping.

- A UKHab Survey was undertaken on 13th October 2022, and categorised all habitats on Site according to the UK Habitat Classification criteria. Further botanical surveys and species-specific surveys for bats, reptiles and great crested newt were carried out between April and September 2023.

- The Site comprised five grassland fields rotationally grazed by horses and sheep, a small area of traditional orchard, a complex of thirteen mixed-use agricultural buildings, tall ruderal and scrub vegetation, and allotments associated with neighbouring properties. The fields were bounded by a network of 11 hedgerows.

- The Site was found to be used for foraging and commuting by at least ten bat species, including barbastelle, lesser and greater horseshoe bats. The buildings were all considered to be of Negligible or Low bat roosting potential. A single emergence survey of buildings with Low potential confirmed the likely absence of bat roosts within the Site.

- Great crested newt (GCN) eDNA surveys of five off-site ponds within 250m of the Site were conducted in May 2023. The survey returned positive results for three of the five ponds surveyed, confirming the presence of GCN in proximity to the Site.

- A reptile survey was carried out using artificial refugia between May and July 2023. No reptiles were recorded during the survey, and they are considered likely to be absent from the Site.

- A Construction Ecological Management Plan: Biodiversity and Landscape and Ecological Management Plan will be provided for the Site, which will detail sensitive working methods for clearance of habitats and buildings to avoid potential impacts on protected species, protection of all retained habitats during the construction phase and management of all retained and newly created habitats in the long-term.

- Several ecological enhancements are recommended, including creation of biodiverse habitats within Field 5 and provision of habitat features such as bird and bat boxes, and hibernacula.

- Provided the recommendations and mitigation measures detailed within this report are implemented, the proposals are not anticipated to have a significant residual impact on any ecological features that may be present within the Site.

- The scheme is anticipated to deliver a net gain in biodiversity; a detailed Biodiversity Net Gain Assessment will be provided in a separate stand-alone design stage report.

1 INTRODUCTION

1.1.1 Clarkson and Woods Ltd. was commissioned by David Wilson Homes to carry out an Ecological Impact Assessment at Gate Farm off Stanley Lane in Chippenham, Wiltshire, SN15 3RE, hereafter referred to as 'the Site'.

1.1.2 This Impact Assessment discusses the likely effects of the Proposed Development on the ecology of the Site using information collected during a UK Habitat Classification Survey conducted in October 2022, as well as further botanical and species-specific surveys for bats, reptiles and great crested newt carried out by Clarkson and Woods Ltd during 2023.

1.1.3 The assessment has been prepared by Molly Brown, an experienced ecologist, who is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The report has been subject to a two-stage quality assurance review by appropriately experienced senior consultants who are full members of CIEEM.

1.1.4 Unless the client indicates to the contrary, information on the presence of species collected during the surveys will be passed to the county biological records centre in order to augment their records for the area. This is in line with the CIEEM code of professional conduct[1].

1.1.5 If no action or development of the Site takes place within twelve months of the date of this report, then the findings of the assessment and supporting surveys should be reviewed. An update of the surveys and/or assessment may be required.

1.2 Report Aims

1.2.1 The aims of this report are:

- To establish, as far as possible, the baseline ecological conditions existing on Site at the time of survey and to identify any likely future changes in the baseline conditions up to the point of commencement.
- To determine likely significant effects resulting from the proposals upon the ecological features identified within the assessment.
- To assess whether the proposals are likely to be in accordance with relevant nature conservation legislation and planning policies, including Biodiversity Net Gain.
- To identify where further surveys to establish baseline conditions, inform assessment or develop mitigation or compensatory measures are required.
- To identify how mitigation or compensation measures will be secured, maintained and monitored.
- To identify ecological enhancements to be carried out and how they will be implemented, maintained and monitored.

1.3 Site Description Summary

1.3.1 The Site comprised five fields and a complex of buildings associated with Gate Farm, located off Stanley Lane in Chippenham, Wiltshire. The Site consisted largely of grassland habitat, grazed by horses and sheep to varying degrees across the five fields, bounded by a network of hedgerows and ditches. Habitats within the Site also included areas of scrub and ruderal vegetation, allotments associated with neighbouring dwellings and a small area of orchard habitat.

1.3.2 The Site was immediately bounded by a small woodland parcel to the south-east, a number of residential buildings to the west, Stanley Park Youth Football Club to the east, and Stanley Lane formed most of the northern boundary. Habitats in the wider landscape consisted of mixed agricultural fields and associated hedgerow network, with the village of Pewsham and town of Chippenham to the north and west. The Site was generally similar to the rural habitats present in the surrounding area.

[1] Code of Professional Conduct. CIEEM, January 2019.

1.3.3 The approximate centre of the Site was at Ordnance Survey Grid Reference ST 93801 72378, and the location of the site is shown in Figure 1.

1.3.4 The development Site is approximately 7.1 hectares (ha) in size. An aerial photo of the Site and surrounding area is provided in Figure 2.

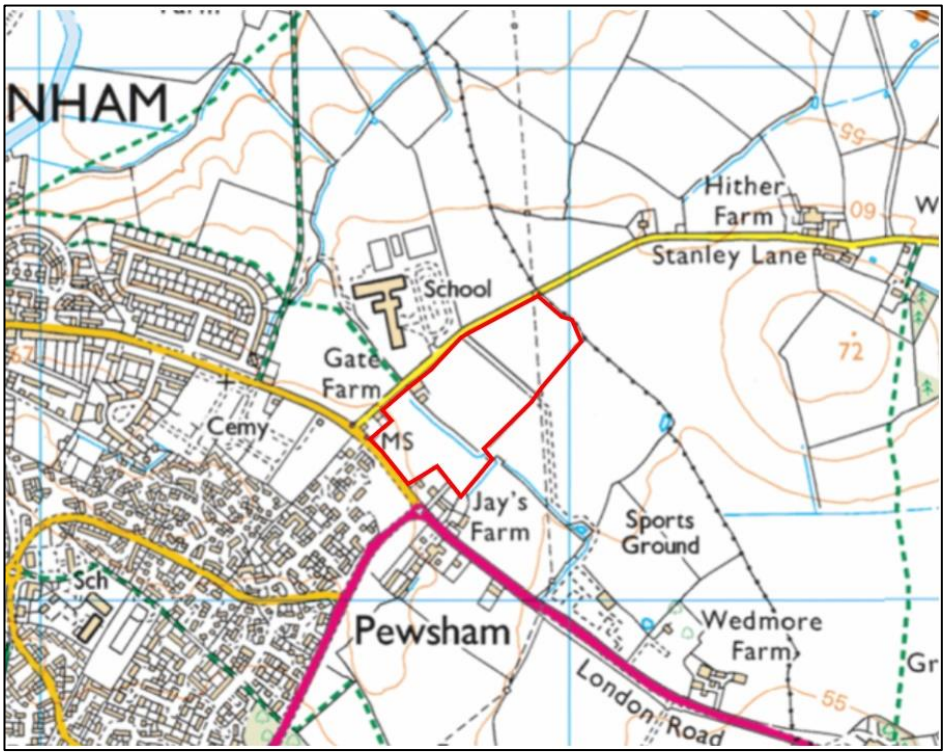


Figure 1: Ordnance Survey Map Showing Location of Site (©2020 Bing Maps)



Figure 2: Aerial Photograph of Site Boundary (©2020 Google)

1.4 Development Proposals

1.4.1 The proposed works comprise the development of the Site into residential housing (up to 150 dwellings) with associated roads, landscaping and allied infrastructure.

1.4.2 The proposals will result in the loss of most grassland habitat in Fields 1-4 (refer to Figure 3 for field numbering), the demolition of all existing buildings within the Site. Much of the hedgerow network will be retained and enhanced, with only relatively small, discrete sections to be removed to facilitate construction of access roads. No residential units will be constructed within Field 5, which has been allocated as an area of public open space and ecological mitigation habitat within the scheme. This habitat area will be enhanced to maximise benefits to biodiversity.

1.4.3 Any changes to the building design and layout and landscaping made subsequent to publication of this report should be issued to Clarkson and Woods Ltd. for review. Ecological impacts and mitigation opportunities may be affected by any such changes.

1.5 Quality Assurance

1.5.1 All ecologists employed by Clarkson and Woods are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow the Institute's Code of Professional Conduct[2] when undertaking ecological work.

1.5.2 The competence of all field surveyors has been assessed by Clarkson and Woods with respect to the CIEEM Competencies for Species Survey (CSS)[3].

1.5.3 This report has been prepared in accordance with the relevant British Standard: *BS42020: 2013 – Biodiversity: Code of Practice for Planning and Development*[4]. It has been prepared by an experienced ecologist who is a member of CIEEM. The report has also been subject to a two-stage quality assurance review by appropriately experienced ecologists who are full members of CIEEM.

1.6 Assessment Scope / Consultation

1.6.1 The impact assessment will consider impacts arising during the construction and operation/occupation phases of the scheme in order to encompass its entire lifespan as far as can reasonably be anticipated.

1.6.2 The Zone of Influence of the proposed development will in terms of ecological impacts will include all habitats within the red line boundary that will be subject to direct impacts during the construction and operational phases. Significant impacts to habitats beyond the red line boundary are considered unlikely.

[2] CIEEM (2013). *Code of Professional Conduct*. www.cieem.net/professional-conduct.
[3] CIEEM (2013). *Competencies for Species Survey (CSS)*. www.cieem.net/competencies-for-species-survey-css-
[4] The British Standards Institution (2013*). BS42020: 2013 – Biodiversity: Code of Practice for Planning and Development*. BSI Standards Ltd.

2 BASELINE CONDITIONS

2.1 Introduction

2.1.1 This section sets out the results of the Desk Study and ecological field surveys along with an evaluation of their relative importance to inform the Impact Assessment. The methodologies associated with the baseline assessment are summarised within each ecological feature's subheading below, however detailed methodologies and results for further botanical, bat and reptile surveys are presented in Appendices B-D.

2.1.2 The specific surveys carried out were chosen based on the likelihood, in our considered opinion, of each protected species or Species of Conservation Concern being present on or within the vicinity of the Site. This is informed by the Site's geographic location and the habitat types present on and around the Site. The following species-specific baseline surveys were chosen: bats, reptiles and great crested newt.

2.1.3 Details of the legislative protection afforded to those protected species which have been identified as occurring or potentially occurring on the Site are given in Appendix A. Species of Conservation Concern are defined as those appearing in any of the following; Priority Habitats and Species under Section 41 of the Natural Environment and Rural Communities Act (2006); red or amber-listed birds within the British Trust for Ornithology's Birds of Conservation Concern (2021; and any specific local conservation priority species such as those listed in Red Data Books.

2.2 Evaluation Methodology

2.2.1 Each recorded ecological feature, whether it is a species, a habitat or a site designated for nature conservation, is described in turn in this section to provide the pre-development baseline conditions on Site. Subsequently, an evaluation of each feature's 'ecological importance' is made. The evaluation of ecological importance is informed by the criteria provided within the CIEEM Guidelines for Ecological Impact Assessment (2018)[5].

2.2.2 With due consideration to the criteria, each feature is classified on a geographical scale of ascending importance as follows; Negligible, Site, Local, District, County, National and International. The chosen geographic level of importance is considered that which best represents the scale at which the loss of the Site's area or population of the feature would have the greatest impact. Where sufficient survey information not available to determine the importance of a species or habitat present on the Site, the importance of the receptor is marked as 'uncertain' and based upon the professional judgement of the author together with available relevant desk study information.

2.2.3 Once importance has been determined for each feature, those of Local importance or above will be considered Important Ecological Features (IEFs). Non-IEFs will typically not be considered further within the impact assessment. However, where a feature does not qualify as an IEF but is afforded specific legal protection or coverage under a particular legislation or planning policy it will also be assessed to ensure the scheme's legal and policy compliance.

2.3 Desk Study

Methodology

2.3.1 Statutory designated sites for nature conservation were identified using the Natural England/DEFRA web-based MAGIC map database (www.MAGIC.gov.uk). International-level sites such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) within 5km from the Site were searched for. National-level sites such as National Nature Reserves (NNRs) and Sites of Special Scientific Interest (SSSIs) within 2km of the Site were searched for.

2.3.2 The Wiltshire and Swindon Biodiversity Records Centre (WSBRC) was consulted for records of protected species and species of conservation concern within 1km of the Site, with an extended search for bats records within 2km. WSBRC was also asked to provide details of locally designated and non-statutory sites for nature conservation within 1km of the Site.

[5] *CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Chartered Institute of Ecology and Environmental Management. www.cieem.net

2.3.3 Clarkson and Woods' own database of ecological records derived from past survey work was also consulted for further locally relevant data.

2.3.4 The Natural England/DEFRA web-based MAGIC map database was also consulted for records of European Protected Species (EPS) licences issued for mitigation projects concerning EPS within 2km of the Site.

2.3.5 The Wiltshire Core Strategy to 2026 (adopted January 2015) was consulted for details of planning policies relevant to designated sites, protected species and habitats, and general ecological and environmental protection.

2.3.6 The Wiltshire Biodiversity Action Plan (BAP) 2011 was consulted for information on conservation priority species and habitats which may require further consideration and weight within Ecological Impact Assessments.

2.3.7 Ordnance Survey maps (1:25,000) and aerial images of the Site were examined online (bing.com/maps and maps.google.co.uk) to allow a better understanding of the context of the Site and its connections to potentially important habitats, known species records and protected sites.

2.3.8 The data presented within this report constitutes a summary of the data obtained from the local records centre. Should additional detail be required on any of the records described within this report Clarkson and Woods Ltd. should be contacted.

Limitations

2.3.9 No specific limitations to the desk study were encountered.

2.3.10 The data presented within this report constitutes a summary of the data obtained from the local records centre. Should additional detail be required on any of the records described within this report Clarkson and Woods Ltd. should be contacted.

2.3.11 It should be noted that the data obtained from within the search area will not constitute a complete record of habitats and species present within the search area. It is therefore possible that protected species may occur within the vicinity of the proposed development site that have not been identified within the desk study.

Desk Study Findings

Designated Sites

Statutory Designated Sites

2.3.12 One statutory designated site for nature conservation was identified within the desk study. Mortimore's Wood Local Nature Reserve (LNR) is a small area of ancient woodland habitat located approximately 1.72km south-west of the Site.

2.3.13 Kellaway's-West Tytherton River Avon Site of Special Scientific Interest (SSSI) was also identified during the desk study, located approximately 2km north of the Site. This SSSI is designated for its notable geological features, rather than nature conservation. The Site lies within the SSSI Impact Risk Zone for this feature.

2.3.14 The Site also lies within the SSSI Impact Risk Zone for Bencroft Hill Meadows SSSI.

Local and Non-statutory Designated Sites

2.3.15 Two local or non-statutory designated sites for nature conservation were identified within the desk study. Bristol Avon River Local Wildlife Site (LWS) and Baydon's Meadow LWS are both located approximately 0.95km north-west of the Site at their nearest points. Avon River LWS is 150ha in size and is designated for its open water habitat and importance as a functional drainage feature within the landscape. Baydon's Meadow LWS is a small (2.68ha) area of notable neutral grassland habitat.

Local BAP

2.3.16 The Wiltshire Biodiversity Action Plan (BAP) 2011 outlines action plans for the following priority habitats and species that have been identified as relevant to the Site;

Habitats

- Ancient and species-rich hedgerows

- Built environment
- Traditional orchards

Species

- Bats (multiple species)
- Birds (multiple species)
- Invertebrates (multiple species)
- Common toad
- Great crested newt
- Palmate newt
- Slow worm
- Grass snake
- Adder
- Dormouse
- West European hedgehog
- Harvest mouse

Planning Policy

2.3.17 The following policy has been identified within the Wiltshire Core Strategy to 2026 (adopted January 2015), which is considered relevant to the Site;

'Core Policy 50: Biodiversity and Geodiversity

Protection

Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term. Where it has been demonstrated that such features cannot be retained, removal or damage shall only be acceptable in circumstances where the anticipated ecological impacts have been mitigated as far as possible and appropriate compensatory measures can be secured to ensure no net loss of the local biodiversity resource, and secure the integrity of local ecological networks and provision of ecosystem services.

All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development.

Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance set out in paragraphs 6.75-6.77 where possible, otherwise bespoke measures must be provided to demonstrate that the proposals would have no adverse effect upon the Natura 2000 network. Any development that would have an adverse effect on the integrity of a European nature conservation site will not be in accordance with the Core Strategy.

Biodiversity Enhancement

All development should seek opportunities to enhance biodiversity. Major development in particular must include measures to deliver biodiversity gains through opportunities to restore, enhance and create valuable habitats, ecological networks and ecosystem services. Such enhancement measures will contribute to the objectives and targets of the Biodiversity Action Plan (BAP) or River Basin/ Catchment Management Plan, particularly through landscape scale projects, and be relevant to the local landscape character.

Local Sites

Sustainable development will avoid direct and indirect impacts upon local sites through sensitive site location and layout, and by maintaining sufficient buffers and ecological connectivity with the wider environment. Damage or disturbance to local sites will generally be unacceptable, other than in exceptional circumstances where it has been demonstrated that such impacts:

i. cannot reasonably be avoided

ii. are reduced as far as possible

iii. are outweighed by other planning considerations in the public interest

iv. where appropriate compensation measures can be secured through planning obligations or agreements.

Development proposals affecting local sites must make a reasonable contribution to their favourable management in the long-term.'

2.4 Habitat Survey

Habitat Survey Methodology

2.4.1 A habitat survey was carried out based on standard field methodology set out in the *UK Habitat Classification User Manual Version 1.1*[6] The survey was completed by Charlie Durigan, ACIEEM. Charlie has 9 years' experience undertaking ecological surveys and has a BSc, PgCert and MSc in relevant subjects. Charlie holds a licence for the survey of great crested newts in England (Natural England Level 2 Reg. No. 2017-10553-CLS-CLS) and bats (NE Level 1 Reg. No. 2020-44777-CLS-CLS).

2.4.2 Charlie was assisted on the survey by Molly Brown, who is a qualifying member of CIEEM. Molly has over 2 years' experience undertaking ecological surveys and holds a BSc and MSc in relevant subjects. Molly is an Accredited Agent under Charlie Durigan's Natural England licence for the survey of great crested newts (Reg. No. 2017-10553-CLS-CLS).

2.4.3 A further botanical survey was conducted on 7th June 2023, during the optimal botanical survey period. The survey was completed by Rebecca Sandey, ACIEEM. Rebecca has 4 years' experience undertaking ecological surveys and holds an MSc in Biodiversity, Wildlife and Ecosystem Health. Five 1x1m botanical quadrats were taken in each of the grassland fields on Site, targeting areas determined by the surveyor to be representative of the habitat. Species lists were recorded for each quadrat and used as an indicator of species richness within the grassland. The quadrat survey data are provided in Appendix B.

2.4.4 All surveyors have been assessed under the Clarkson and Woods quality assurance process as competent to complete the survey.

2.4.5 Botanical names follow Stace (1997)[7] for higher plants and Edwards (1999)[8] for bryophytes.

2.4.6 The results of the UKHab Survey are included in map form on Figure 3. Habitats are mapped following the codes and conventions described within the *UK Habitat Classification Version 2*[9] and Target Notes (Table 3) are used to describe habitats not readily conforming to recognised types and evidence of, or potential for, protected species and species of conservation concern. Photographs of the Site are provided below.

Habitat Assessment Limitations

2.4.7 There were no specific limitations encountered during the initial habitat assessment conducted in October 2022, as the survey was undertaken within the optimal period for a UKHab survey (April – October inclusive). At the time of the survey, the weather was fair, with moderate cloud cover, a light breeze and an ambient temperature of approximately 15°C.

2.4.8 An extensive species list was not collected, but species characteristics of the habitats on Site were recorded.

2.4.9 As the initial UKHab survey was carried out outside of the peak botanical survey period (June to August inclusive), it was not possible to undertake condition assessments of the grassland habitats on Site against the UKHab Condition Assessment criteria. A further botanical survey was therefore conducted on a subsequent visit to Site in June 2023.

2.4.10 The grassland within Field 5 was noted to be very dry, with a layer of thatch/arisings from previous cutting of the field left in situ, and Field 2 had been recently mown, which made identification of grassland species in these areas challenging during the further botanical survey. As a result, some flowering and herbaceous species are likely to have been under-represented or missed within the quadrats.

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[6] Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). *The UK Habitat Classification User Manual Version 1.1* at http://www.ukhab.org/
[7] Stace, C. (1997). *New Flora of the British Isles Second Edition*. Cambridge University Press
[8] Edwards, S.R. (1999). *English Names for British Bryophytes*. BBS, Cardiff
[9] UKHab Ltd. (2023). *UK Habitat Classification Version 2.0* at https://www.ukhab.org/

Other Neutral Grassland (ONG)

Desk Study Information

2.4.11 No information pertaining to this habitat type was returned during the desk study.

Field Survey Results

2.4.12 Of the five grassland fields on Site, Fields 1, 2 and 3 were classified as ONG following the further botanical survey. This classification was made based on both the quadrat survey data and general species lists from each field, with consideration for the management observed at the time of the survey.

Field 1

2.4.13 Field 1 was internally divided into several smaller sections by temporary electric fencing and was rotationally horse-grazed. During the surveys, the grazed areas were generally tightly cropped (<5cm) with frequent evidence of poaching. Across both the initial UKHab survey and botanical survey, the grassland in the south-east corner of Field 1 had been left un-managed. In this area, the sward had become more structurally diverse, with tussocks beginning to form, and the sward height was between 5-50cm. These habitats are shown below in Photographs 1 and 2.

2.4.14 The greatest number of species was recorded within Field 3, although this diversity was not reflected in the botanical quadrat data. Relatively high numbers of both grasses and herbaceous species were recorded within the sward.



Photograph 1: Un-managed ONG within Field 1



Photograph 2: ONG within Field 1 Subject to Grazing

Field 2

2.4.15 Field 2 was bounded entirely by wooden post and rail fencing. Management varied between the UKHab survey and further botanical survey visits; during the initial survey the grassland was uncut with a sward height of approximately 20cm, whereas much of the field had been mown during the second visit (Photograph 3). No significant areas of bare ground were noted within Field 2.



Photograph 3: ONG within Field 2 Subject to Varied Management

Field 3

2.4.16 Field 3 was bounded by a wooden post and rail fence, with H3 to the west and the on-site orchard to the north. At the time of the initial UKHab survey the grassland in Field 3 had been mown with arisings left in situ, however during the further botanical survey visit the sward in this field was generally longer (up to 40cm)(Photograph 4). The species assemblage recorded within the botanical quadrats was the most diverse and the species diversity was also the most consistent across Field 3.

2.4.17 Conversations with tenants revealed that the fields was occasionally grazed by horses but was typically managed via a late hay cut and appeared to be managed at a lower intensity than Fields 1 and 2.



Photograph 4: ONG within Field 3

2.4.18 Whilst, on average, a lower number of species per quadrat were recorded within Fields 1 and 2, the grassland in these fields appeared to be relatively diverse, with high numbers of further species recorded outside of the quadrats. Also, at the time of the survey, large areas of Fields 1 and 2 were either currently subject to horse-grazing (Field1), or had been recently mown (Field 2), which made recording herbaceous species within the sward challenging, and species numbers may have been under-recorded as a result.

2.4.19 Given that the fields were separated only by wooden post and rail fencing or temporary electric fencing, and that the fields appeared to be managed on a rotational basis, it was assumed the grassland type was contiguous across the three fields. Species assemblages recorded in the un-managed areas of Fields 1 and 2 were representative of the ONG confirmed in Field 3, and it was therefore considered likely that Fields 1 and 2 would achieve the same level of species richness in botanical quadrats as Field 3 when the management practices were rotated.

2.4.20 Full species lists for Fields 1, 2 and 3 are provided alongside the botanical quadrat data in Appendix B.

Evaluation

2.4.21 The ONG habitat was considered to be of **Site** Importance.

Modified Grassland

Desk Study Information

2.4.22 No information pertaining to this habitat type was returned during the desk study.

Field Survey Results

2.4.23 Following further botanical surveys, Fields 4 and 5 were classified as modified grassland habitat, due to the lower diversity of grassland species recorded within the quadrats, and fewer incidental species in the fields.

Field 4

2.4.24 During both the initial UKHab survey and consequent botanical survey, Field 4 was tightly horse-grazed with a sward height <5cm, on average. The grassland was heavily poached, resulting in occasional patches of bare ground cover (Photograph 5).

2.4.25 Species recorded within Field 4 included creeping bent, crested dog's tail, meadow foxtail, perennial ryegrass, red fescue, creeping and meadow buttercup, silverweed, red and white clover, common mouse-ear and dandelion.



Photograph 5: Modified Grassland Habitat within Field 4

Field 5

2.4.26 Management of Field 5 appeared to vary throughout the year, with sheep observed grazing the field during the summer months (July/August) and arisings left in situ from previous cutting during the botanical survey in June. The sward was generally longer and more structurally diverse than in Field 4, recorded between 5-20cm in height (Photograph 6).

2.4.27 Very few herbaceous species were recorded within Field 5, with the sward dominated by grasses including cock's foot, Italian ryegrass, meadow barley, meadow brome, meadow foxtail, perennial ryegrass, red fescue smooth meadow grass and Yorkshire fog. Creeping buttercup, white clover, dandelion and creeping thistle were the only other species recorded.



Photograph 6: Modified Grassland Habitat within Field 5

Evaluation

2.4.28 The modified grassland habitat was considered to be of **Site** Importance.

Traditional Orchard

Desk Study Information

2.4.29 Traditional Orchard is listed as a priority habitat within the Wiltshire BAP (2008) and is also listed as a Habitat of Principle Importance (HPI) in England under the NERC Act (2006).

2.4.30 The area of orchard on Site is not shown under Natural England's priority habitat mapping on MAGIC or registered as a designated traditional orchard by the People's Trust for Endangered Species (PTES).

Field Survey Results

2.4.31 A small area of orchard habitat was recorded in the north-west corner of the site, bounded by a wooden post and rail fence. The orchard comprised twelve fruit trees, namely apple and plum, oversailing recently mown modified grassland, with grassland species largely consistent with the common grasses and forbs noted in Fields 1, 2 and 3. The fruit trees were of varying ages, with most appearing to have been present for >15 years.

2.4.32 The habitat structure and composition met the UKHab definition for priority traditional orchard habitat and is shown in Photograph 7 below.



Photograph 7: Traditional Orchard (UKHab) Habitat

Evaluation

2.4.33 The 'traditional orchard' habitat within the Site was considered to be of **Local** Importance.

Scrub (Blackthorn, Bramble & Mixed Scrub)

Desk Study Information

2.4.34 No information pertaining to these habitat types were returned during the desk study.

Field Survey Results

2.4.35 Several areas of scrub habitat were noted within the Site, with distinct patches dominated by different species.

2.4.36 To the east of the bioswale attenuation feature associated with the complex of buildings on Site was a small strip of mixed scrub habitat. Woody species recorded in this area included blackthorn, elder and elm, as well as bramble, nettles, hogweed and willowherb sp. The scrub habitat was relatively sparse but varied in height and structure.

2.4.37 Also associated with the developed area to the north of the Site were several patches of bramble scrub, where the vegetation had been left largely unmanaged. The bramble scrub was particularly dense at the northern end of H5, shown in Photograph 8 below.



Photograph 8: Dense Bramble Scrub Habitat

2.4.38 At the southern end of H5, in the corner of Field 1, was a small area of blackthorn-dominated scrub habitat. Blackthorn suckers had established extending beyond the hedgerow to form a dense patch of scrub vegetation.

Evaluation

2.4.39 The different types of scrub habitat within the Site were considered to be of **Site** Importance.

Ruderal/Ephemeral Vegetation

Desk Study Information

2.4.40 No information pertaining to this habitat type was returned during the desk study.

Field Survey Results

2.4.41 Within the Site, ruderal/ephemeral vegetation was noted in several areas; sparse coverage of common urban pioneer species including mosses, curled dock, spear thistle, creeping thistle and silver weed were noted associated with the complex of buildings. The limited ruderal vegetation in this area provided a mosaic of habitats alongside the bramble and mixed scrub, with varying vegetation structure.

2.4.42 A larger, more densely vegetated area of ruderals was noted in the south-east corner of Field 4, including further species such as nettle and willowherb sp. This habitat area was fenced off from the surrounding grassland habitat and provided a large margin of vegetation extending from the base of adjacent hedgerows.

Evaluation

2.4.43 The ruderal/ephemeral vegetation was considered to be of **Site** Importance.

Allotments

Desk Study Information

2.4.44 Habitats associated with the 'Built Environment' are listed as a priority habitat within the Wiltshire BAP (2008), including allotments.

Field Survey Results

2.4.45 To the north-west of the Site, a small plot of allotments was recorded during the survey. The area was associated with the residential property immediately adjacent the Site and was bounded by H2 to the north and wooden fencing separating the land from Field 2.

2.4.46 The allotments appeared to have been planted with vegetables and garden flowers, and the surrounding grassland was maintained as an extension of the amenity lawn of the neighbouring property (Photograph 9).



Photograph 9: Allotment Habitat within Site

Evaluation

2.4.47 The allotments on Site, associated with the adjacent residential properties, were considered to be of **Site** Importance.

Bioswale

Desk Study Information

2.4.48 No information pertaining to this habitat type was returned during the desk study.

Field Survey Results

2.4.49 A small area of swale habitat was recorded within the Site, located in the developed area to the north of the Site. The habitat appeared to have been created to assist drainage from land surrounding the complex of buildings and comprised a short channel approximately 12m long and 1m wide.

2.4.50 At the time of the initial UKHab survey, the channel held 20cm of water, however the habitat was considered unlikely to provide permanent aquatic habitat within the Site as the area was recorded as dry during subsequent, species-specific surveys.

2.4.51 Vegetation surrounding the channel feature included common nettle, white-dead nettle, willowherb sp., curled dock, cleavers, hogweed, and garlic mustard. Ruderal species were also noted within the channel. No aquatic vegetation was noted.

Evaluation

2.4.52 The bioswale habitat was considered to be of **Site** Importance.

Artificial Unvegetated, Unsealed Surface

Desk Study Information

2.4.53 No information pertaining to this habitat type was returned during the desk study.

Field Survey Results

2.4.54 Much of the land surrounding the complex of buildings and at the entrance to the Site from Stanley Lane comprised artificial unvegetated, unsealed surface (loose stone aggregate). Within this area, patches of grasses and ruderal/ephemeral species had established where the integrity of the developed surface was not intact (see 'Ruderal/Ephemeral Vegetation').

2.4.55 Situated within this area were several metal storage containers, wooden sheds and lean-to structures, with artificial unvegetated, unsealed surface forming the habitat underlying the footprints of these structures.

2.4.56 This habitat type offered limited value for biodiversity.

Evaluation

2.4.57 The areas of artificial unvegetated, unsealed surface within the Site were considered to be of **Negligible** Importance.

Developed Land; Sealed Surface

Desk Study Information

2.4.58 Habitats associated with the 'Built Environment' are listed as a priority habitat within the Wiltshire BAP (2008), including man-made structures and buildings classified as developed land; sealed surface.

Field Survey Results

2.4.59 The majority of developed land; sealed surface habitat within the Site consisted of the complex of buildings to the north of the Site. Fifteen buildings were identified during the survey and are described briefly in Table 1 below. A map of the buildings present on Site is provided in Figure 4.

Table 1: Description of Buildings Present on Site

Building No.	Description	Photograph
1	Concrete and brick building, used as a tack room, with two loose-fitting, stable-style wooden doors. Timber framed, unlined, single pitch roof constructed using corrugated asbestos type/cement fibre and Perspex panels.	
2	Red brick building, with vent bricks, used as a stable and separate storeroom. Single pitch, corrugated asbestos type/cement fibre and Perspex roof with plastic lining on northern elevation. Modern timber frame and open loft space internally. Single stable door.	

3	Stable and storeroom with roof. Construction as per B2. No internal separation. Wooden sarking noted at eastern gable. One open, square window on southern elevation.	
4	Three adjacent storerooms with internal walls separating each unit. Building constructed of rendered brick and block walls. Pitched, corrugated asbestos type/cement fibre roof across all three units. Building 4a had an open, half stable door, and Buildings 4b and 4c had full length doors, all of which were not tightly fitted to their frames.	
5	Red brick building/garage used for storage, with timber double door and high pitched roof constructed of unlined asbestos type/cement fibre boards. Open to rafters.	

6	Five adjacent block storerooms with corrugated asbestos type/cement fibre roof. Rooms separated by full height block walls. Perspex panel noted in roof. Each unit had a full length stable door, and vent bricks were visible in the walls.	
7	Three adjacent block stable/storerooms with vent bricks and half stable doors. Full height block walls separating each unit. Flat corrugated asbestos type/cement fibre roof with Perspex panels.	
8	Metal-framed open fronted (to south), shelter with block rear wall and corrugated metal roof with small, internal storeroom at eastern end of building.	
9	Block storeroom with loose-fitting stable door and corrugated asbestos roof.	

10	Three block stable buildings, with loose-fitting stable doors. Corrugated asbestos roofing with Perspex panels, slightly overhanging at the front of the stables. Small, metal lean-to structure constructed alongside.	
11	Metal-framed, open-fronted hay barn, with corrugated metal to the rear. Asbestos type/cement fibre roof with sliding pitch.	
12	Corrugated metal shed, with Perspex panels.	
13	Timber stable with Onduline roofing and Perspex panels. Tightly fitted doors and roofing materials.	

14	Stable/shelter building in poor condition, with corrugated asbestos type/cement fibre roof.	

2.4.60 A small strip of developed land; sealed surface was present between B1-5 and B6-7, forming a small stable yard and walkway.

2.4.61 The access road for the adjacent Stanley Park Youth Football Club facilities intersected Fields 4 and 5, and also comprised developed land; sealed surface habitat. The concrete surface along the road offered negligible intrinsic value for wildlife.

Evaluation

2.4.62 Where developed land; sealed surface comprised buildings, the evaluation of this habitat for biodiversity is discussed in 'Bats' and 'Birds' in Section 2.5 below.

2.4.63 The areas of developed land; sealed surface forming hardstanding or roads within the Site were considered to be of **Negligible** Importance.

Hedgerows

Desk Study Information

2.4.64 Ancient and species-rich hedgerows are listed as a priority habitat within the Wiltshire BAP (2008), and hedgerows are also listed as an HPI in England under the NERC Act (2006).

Field Survey Results

2.4.65 A network of twelve hedgerows were recorded within and bounding the Site, providing connectivity to habitat in the surrounding landscape. These are labelled in Figure 3 and a description of each hedgerow is provided in Table 2 below.

2.4.66 Hedgerows on Site were generally species-poor, with the exception of H3, H5 and H10, and were occasionally associated with dry ditch features. Many of the hedgerows were considered likely to have been present in the landscape for more than 30 years, forming important ecological corridors.

Table 2: Hedgerow Descriptions

Hedgerow No.	UKHab Hedgerow Type	Description
1	Native Hedgerow with Trees	H1 was between 1.5-2m in height and 1.5m wide, on average. The hedgerow was species-poor but largely intact and three standard holly trees were noted within H1. Woody species present within the hedgerow included; hawthorn and holly. Bramble, ivy and nettles were also recorded within H1.
2	Native Hedgerow	H2 was 1.5m in height and 1.5m wide. A small (<1m) gap was noted within the hedgerow but was otherwise intact. Woody species present within the hedgerow included; hawthorn and field maple. Buddleia was also recorded within H2.

Hedgerow No.	UKHab Hedgerow Type	Description
3	Native Species-Rich Hedgerow – Associated with Bank or Ditch	H3 was recorded as species-rich and was 4m in height and 2m wide. Several gaps were noted within the hedgerow. The hedgerow was also associated with a dry ditch feature to the west. Woody species present within the hedgerow included; dogwood, elder, hawthorn, hazel, willow sp. and wytch elm.
4	Native Hedgerow	H4 was between 2-3m in height and up to 4m wide. The hedgerow was defunct, and species-poor, with several gaps in the canopy. Woody species present within the hedgerow included; blackthorn and elder.
5	Native Species-Rich Hedgerow – Associated with Bank or Ditch	H5 was a large, species-rich hedgerow, with a dense structure along its length. The hedgerow was 4m in heigh and between 2-4m wide. A dry ditch feature was present at the centre of the hedgerow. Woody species present within the hedgerow included; blackthorn, elder, elm, field maple, hawthorn and willow sp.
6	Native Hedgerow	H6 was 1.5m in height and 2m wide, with a large hedgerow gap noted. The hedgerow had been recently flailed at the time of the survey. Woody species present within the hedgerow included; blackthorn, field maple, hawthorn and rose sp.
7	Native Hedgerow	H7 was generally intact and was 2m in height and between 1.5-2m wide. On standard oak tree was noted within the hedgerow. Woody species present within the hedgerow included; blackthorn, hawthorn, pedunculate oak and rose sp.
8	Native Hedgerow	H8 had been recently flailed to a height and width of 2m. One mature, standard oak was noted within the intact hedgerow. Woody species present within the hedgerow included; blackthorn, oak and rose sp.
9	Native Hedgerow with Trees	H9 was a large, mature hedgerow, with four standard oak trees noted. The hedgerow was 3m in height and up to 4m wide, forming a dense structure. Woody species present within the hedgerow included; blackthorn, hawthorn, oak and willow sp.
10	Native Species-Rich Hedgerow – Associated with Bank or Ditch	H10 was a dense, species rich hedgerow 2.5m in height and 3m wide. The hedgerow was fenced, with a dry ditch feature present along its northern side. Woody species present within the hedgerow included; blackthorn, elder, field maple, hawthorn, hazel and willow sp.
11a	Native Hedgerow – Associated with Bank or Ditch	H11a was up to 4m in height and between 2-3m wide. The hedgerow was generally intact, with a dry ditch feature present along its northern side. Woody species present within the hedgerow included; blackthorn, elm and hawthorn. Also noted at the western end of H11a was wall cotoneaster, an invasive, non-native species.
11b	Native Hedgerow	H11b had the same structure as H11a, but the dry ditch was absent along this feature. The hedgerow was fenced and formed the northern boundary of Field 4.

Hedgerow No.	UKHab Hedgerow Type	Description
		Woody species present within the hedgerow included; blackthorn, elm and hawthorn.

Evaluation

2.4.67 The network of hedgerows within and bounding the Site were considered to be of **Local** Importance.



Figure 3: Habitat Survey Map



Figure 4: Building Layout and Numbers

Table 3: Target Notes

No.	Description
1	Complex of farm buildings and stables considered to be of Negligible to Low potential for roosting bats.
2	Log piles providing suitable sheltering habitat for reptiles, amphibians and invertebrates.
3	Fox scat recorded at boundary of Field 1.
4	Fenced area of ruderal vegetation, including several bonfire piles providing suitable habitat for reptiles, amphibians and hedgehogs.
5	Large pile of litter and debris associated with lean-to buildings and storage containers.
6	Potential badger 'snuffle hole', and frequent mammal paths noted.

2.5 Protected Species Survey and Species of Conservation Concern

Badger

Methodology

2.5.1 A search was made for badger *Meles meles* setts, and any sett entrances found were checked for signs of use by badgers or other mammals. Where found, setts were classified into the following categories: Main, Subsidiary, Annexe or Outlying[10]. Any sett entrances were counted and mapped to record tunnel direction and their relative level of usage.

2.5.2 Field signs such as 'snuffle holes' (holes dug by badgers when searching for invertebrates), pathways through vegetation, 'latrines' (small pits in which badgers deposit their faeces) and 'day nests' (nests of bedding material made by badgers for sleeping above ground) were also mapped, if found.

Limitations

2.5.3 Areas with dense ground cover, particularly at the base of hedgerows and within areas of scrub, were examined closely. If impenetrable vegetation prevented entry then the perimeter was examined in order to detect badger paths suggesting a hidden sett within the area. It cannot be guaranteed that all the entrances have been located, especially if a small sett is currently inactive or used seasonally and concealed in an area of thick scrub. Badgers may dig new holes and create new setts in a very short space of time.

Desk Study Information

2.5.4 WSBRC returned 10 records of badger within 1km of the Site, including two records of likely outlier setts. The closest record was located approximately 0.37km south-west of the Site.

2.5.5 A previous survey of the Site undertaken by Aspect Ecology in 2016 did not record any badger setts on or adjacent to the land within the red line boundary[11].

Field Survey Results

2.5.6 No evidence of badger setts on Site was detected during the survey following a thorough search of suitable habitat. However, possible evidence of badger foraging, or 'snuffle holes', were recorded to the south of Field 1 and several mammal paths were noted within H9, although these paths may be attributable to other mammal species such as deer.

2.5.7 Grassland and scrub habitats within the Site were considered suitable for badger foraging, and the traditional orchard habitat was considered to offer particular ecological value for badger as the fallen fruit constitutes a valuable foraging resource.

[10] Lewns, P., Clarkson, T. & Lewns, D. (2019). *Badger Survey and Mitigation Guidelines (The Mammal Society Mitigation Guidance Series)*. Eds. Fiona Mathews and Paul Chanin. The Mammal Society, London. (*as yet unpublished*)
[11] Aspect Ecology (2016) *Ecological Appraisal – Gate Farm, Chippenham*

2.5.8 Given the suitable habitat on Site, possible signs of badger activity and local records of badger within the surrounding area, the Site was considered likely to form part of the foraging grounds of a local social group. Conversation with one of the tenants of the buildings on Site also provided anecdotal evidence of badgers utilising the traditional orchard habitat in recent years.

Evaluation

2.5.9 Badgers are considered to be of **Site** Importance, where present.

Bats

Methodology

2.5.10 The assessment of the suitability of the Site for foraging and roosting bats was based on current guidance set out by the Bat Conservation Trust[12].

2.5.11 *Buildings:* during the initial Site survey, the exteriors of the buildings were examined through the use of ladders, torches and binoculars for potential roosting features (PRFs). Wherever possible, these points were thoroughly investigated using ladders and a video fibrescope to determine the likelihood of their occupation and evidence of presence. Extra factors taken into consideration included the potential for noise disturbance to the potential roost feature, exposure to the elements, lighting levels, proximity/connectivity of vegetation and water and whether these PRFs led on to cavities further into the structure.

2.5.12 Internal access to all buildings on Site was not possible during the initial visit to Site, and therefore a subsequent visit was undertaken to complete the building inspections on 15th June 2023. This visit was undertaken by Paul Kennedy ACIEEM. Paul has over 20 years' experience undertaking surveys for bats and holds a licence for the survey of bats in England (Natural England Level 2 Reg. No. - 2015-14471-CLS-CLS) and great crested newts in England (Natural England Level 2 Reg. No. 2016-19774-CLS-CLS). Paul was assisted on the survey by Alfie Dickens BSc. Both surveyors have been assessed under the Clarkson and Woods QA process as competent to complete the survey.

2.5.13 Internally, all accessible roof voids and accessible parts of the building were entered where safe and possible to do so in order to describe their characteristics and to look for PRFs. A 1 million candle-power torch, ladders and a video fibrescope were used where necessary. Any signs of occupation including urine staining, prey remains, fur rubbing marks and droppings were noted where found. Droppings were compared against reference material to identify likely species, but DNA analysis may be undertaken in certain circumstances to confirm species identification.

2.5.14 Following completion of the inspections, each building was assigned a 'high', 'medium', 'low' or 'negligible' category as a guide to inform any necessary further survey effort as stipulated in the Bat Surveys Good Practice Guidelines (Bat Conservation Trust, 2016).

2.5.15 *Trees:* an inspection of trees on Site was carried out from the ground, using binoculars, to record any signs of use of the tree by bat species. Features such as frost cracks, rot cavities, flush cuts, split or decaying limbs (including hazard beams), loose bark and dense plates of ivy were inspected and recorded. Any signs of staining (from urine or fur rubbing) and scratch marks below potential access points were noted, and a search was made for droppings underneath these features.

2.5.16 *Habitat:* the habitats within the Site were appraised for their suitability for use by foraging and commuting bats. In particular, the connectivity of the habitats on Site to those lying beyond was taken into account. Vegetated linear features are typically important for many species to navigate around the landscape, while the presence of woodland, scrub, gardens, grassland and wetland features increases a site's foraging resource value to bats. The potential for noise or lighting disturbance which may affect commuting links was also recorded.

2.5.17 *Dusk Emergence Survey:* Following the results of the building inspections, the buildings considered to be of 'low' bat roost potential were subject to a single dusk emergence survey on 24th August 2023 using two surveyor locations. The survey was undertaken by Charlie Durigan and Molly Brown, commencing 15 minutes before sunset and continued until 1.5 hours after sunset. The surveyors were equipped with hand-held bat

[12] Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.

detectors and recording devices, and the survey effort was augmented through the use of an infra-red (IR) camera. Detailed methodology and survey details are provided in Appendix C.

2.5.18 *Walked Transect Survey:* Three walked transect surveys were carried out in Spring, Summer and Autumn 2023 (May, July and September). The transect surveys involved walking a pre-determined route at a constant speed using hand-held bat detectors and recording devices to log bat activity. The transect was designed to provide a balanced overview of bat activity across the Site. Full survey details and a map of the transect route is provided in Appendix C.

2.5.19 *Static Detector Survey:* Six automated static bat detectors were deployed within the Site on three occasions (in Spring, Summer and Autumn 2023) for a minimum period of 7 nights to record bat activity. Full details of the surveys and locations of the detectors are provided in Appendix C.

2.5.20 All bat survey data were analysed using the software 'Kaleidoscope Pro', with calls manually verified by an ecologist to confirm the automated identification given to bat calls by the software.

Limitations

2.5.21 Bats are very small creatures, capable of accessing extremely tight spaces and it is possible that they, or their signs, might have been missed during the survey if they are normally present opportunistically or in small numbers for a short period of time each year.

2.5.22 Not all features in trees or buildings suitable for use by bats are visible from the ground and there can be no external evidence of use of features by bats; consequently, it is only possible to make a best effort when carrying out such a survey.

2.5.23 Internal access to the buildings on Site was not possible during the initial survey, so a further visit was undertaken to complete the building inspections.

2.5.24 Several standard trees were located within hedgerows that bounded the Site it was not possible to view the trees from all angles. It is therefore possible that suitable roost features may have been missed during the ground-based assessment, and only a best effort assessment was made.

2.5.25 External security lighting located at the entrance of the Site was on for the duration of the emergence survey and activity surveys. Most bat species are known to avoid lit areas due to the increased risk of predation, and species such as long-eared, myotis and horseshoe bats are particularly sensitive to light. The external lighting of the buildings may have discouraged bats that may have been present from emerging or dissuaded bats from using this area of the Site during activity surveys, however the light fixtures are permanent so are unlikely to have affected the results of the surveys.

2.5.26 No further specific limitations were encountered during the activity surveys, as all surveys were undertaken during the optimal survey period under suitable weather conditions. However, temporary fencing slowed the progress of surveyors on the walked transect surveys, and stopping times were adjusted accordingly to ensure sufficient coverage of the Site.

2.5.27 A number of limitations were identified when using the data analysis software 'Kaleidoscope Pro', which are detailed within Appendix C. These limitations are related to the automatic identification feature of the software, which are considered to have been resolved through the manual verification of call ID by ecologists and are not considered to be significant limitations on the data.

Desk Study Information

2.5.28 Records returned within the WSBRC data search included a least 12 bat species and within 2km of the Site, which included; common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, brown long-eared *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinoplophus hipposideros*, western barbastelle *Barbastella barbastellus*, serotine *Eptesicus serotinus*, whiskered *Myotis mystacinus*, Bechstein's *Myotis bechsteinii* and Daubenton's *Myotis daubentonii.*

2.5.29 The exact locations of bat roosts identified during the desk study were withheld by WSBRC, however records of roosts for the following species were returned within 2km of the Site:

- Greater horseshoe - one roost, recorded in 2014
- Lesser horseshoe – two roosts, recorded in 2012 and 2020

- Daubenton's - one roost, recorded in 2021
- Pipistrelle sp. - three roosts, recorded in 2014, 2014 and 2015
- Soprano pipistrelle- two roosts, recorded in 2014
- Brown long-eared- two roosts, recorded in 2014

2.5.30 Three European Protected Species (EPS) mitigation licences relating to bats were identified through a search on the MAGIC website, which have been granted within 2km of the Site:

- One bat licence impacting common pipistrelle through damage and destruction of a resting place and breeding site approximately 0.97km south-west of the Site in 2019 (2019- 43073-EPS-BDX).
- One bat licence impacting common pipistrelle, soprano pipistrelle and serotine through destruction of a resting place approximately 1.63km north-west of the Site from 2019 to 2022 (2019-43644-EPS-MIT).
- One bat licence impacting common pipistrelle and lesser horseshoe through destruction of a resting place approximately 1.84km north-west of the Site from 2013-2015 (EPSM2013- 5777).

2.5.31 A search of Clarkson and Woods own in-house records returned no further bat records within 2km.

2.5.32 Previous surveys of the Site by Aspect Ecology recorded all buildings to be of 'negligible' roosting potential.

Field Survey Results

Habitat

2.5.33 Habitats within the Site were considered to provide suitable foraging opportunities for bats; the grassland (subject to horse and sheep-grazing), scrub and ruderal/ephemeral vegetation is likely to support a range of invertebrate prey. The bioswale habitat may also provide limited, seasonal drinking opportunities and habitat for a greater diversity of insects. Traditional orchard habitat is also likely to provide suitable foraging habitat but is subject to disturbance from artificial lighting associated with neighbouring properties.

2.5.34 Security lighting at the entrance to the Site, associated with the complex of buildings, impacted habitats to the north-west of the Site. However, habitats to the east, namely Fields 4 and 5, and to the south of the Site were subject to very low levels of artificial lighting. Conditions in these areas increase their value for light sensitive bat species in particular.

2.5.35 Hedgerows within and bounding the Site form a network of linear features that extend into the wider landscape, which are considered likely to form commuting corridors for bats that may be using the Site and within the local area.

Buildings

2.5.36 The complex of buildings on Site comprised a mix of storage units, stables and barns, described in full in Table 1 (in 'Developed Land; Sealed Surface). External inspections identified a number of potential roost features (PRFs) and possible entry/exit points in a number of the buildings, which are described in Table 4 below alongside an assessment of each buildings potential to support roosting bats.

2.5.37 Internal inspections found no evidence of roosting bats in any of the buildings.

Table 4: Results of Building Inspections

Building No.	Description of PRFs and Access Points	Bat Roost Potential
1	Stable-style wooden doors not tightly fitted to frame, some gapping under ridge tiles at the apex.	Negligible
2	Stable-style wooden door not tightly fitted to frame, vent bricks present in exterior wall, internal roof void/loft area, egress at the apex at gable (western) end, gapping under ridge tiles.	**Low**
3	Gaps in brick work at gable with B2, potential access point at central apex, timber sarking at eastern gable.	Negligible
4	4a: door not tightly fitting, gap between rear wall and internal fascia, gaps at western gable.	**Low**

	4b: door not tightly fitting. 4c: door not tightly fitting, vent bricks at eastern gable, gap between rear wall and internal fascia.	
5	Double timber doors not tightly fitted to frame, lots of gaps in brick work on southern elevation and at eastern apex, several gaps under ridge tiles.	**Low**
6	Stable-style doors not tightly fitted to frames, vent bricks.	Negligible
7	No notable features.	Negligible
8	No notable features.	Negligible
9	Stable-style door not tightly fitted to frame.	Negligible
10	Stable-style doors not tightly fitted to frames, gaps above wall plate.	Negligible
11	Open-fronted.	Negligible
12	No notable features.	Negligible
13	No notable features – building is modern and elements tightly sealed.	Negligible
14	No notable features.	Negligible

2.5.38 The buildings on Site were considered to offer 'negligible' hibernation potential for bats.

2.5.39 All buildings identified as being of 'low' potential for roosting bats were subject to a single dusk emergence survey, detailed in the relevant section below.

Trees

2.5.40 None of the trees within the Site were identified as having PRFs such as rot holes, cavities or peeling bark, and were considered to be of 'negligible' potential for roosting bats.

Dusk Emergence Survey

2.5.41 No bats were recorded emerging from the buildings subject to survey.

2.5.42 During the survey, bat activity was recorded from 20:40pm. At least five species were recorded, including common and soprano pipistrelle, serotine, Nyctalus sp., and Myotis sp., with a total of 47 bat passes recorded across both surveyor locations.

2.5.43 Lower levels of bat activity were recorded at surveyor Location A than Location B (Figure Cf1). No Myotis sp. and only occasional passes by pipistrelles and serotine were recorded, with relatively frequent Nyctalus sp. activity recorded towards the end of the survey. It is possible that the security light located at the western end of the buildings, which remained on for the duration of the survey, impacted the level of activity.

2.5.44 At Location B, regular common pipistrelle activity was recorded (25 passes) from 20:50pm (37 minutes after sunset); this activity was largely associated with the scrub and fields to the east of the surveyor. Occasional passes by the other four species were recorded, with no activity associated with the buildings.

2.5.45 Given that no bats emerged from the buildings and relatively low levels of bat activity were recorded, largely towards the end of the survey, it was considered unlikely that roosting bats were present within the buildings.

Activity Transect Surveys

2.5.46 Table 5 provides a summary of bat species and the total number of bat passes recorded during the activity transect surveys. The *Myotis sp.* and *Nyctalus sp.* bats, whose calls are often too difficult to separate when analysing recordings, may comprise more than one species. The number of bat passes provided for each species is the combined number of passes recorded during walked sections and at the stopping points.

Table 5: Summary of Activity Transect Survey Results

Species	Number of Bat Passes Recorded per Month				Percentage of Total Passes
	May	July	September	Total	
Serotine	3	9	3	15	9.87
Nyctalus sp.	37	26	15	78	51.32
Common pipistrelle	8	10	23	41	26.97
Soprano pipistrelle	3	3	10	16	10.53
Brown long-eared	0	2	0	2	1.32
Total No. of Passes (all species)	51	50	51	152	

2.5.47 Table 5 above shows that a total of 152 bat passes were recorded from at least five bat species, with levels of activity remaining consistent across the surveys.

2.5.48 Overall, Nyctalus sp. was the most frequently recorded, comprising just over half (51.32%, 78 passes) of the total calls. Common pipistrelle, soprano pipistrelle and serotine were recorded in relatively low numbers across each of the three survey visits, with brown long-eared recorded in very low numbers (1.32%, 2 passes) during only the July survey.

2.5.49 Figure 4 below illustrates the distribution of bat activity within the Site, combined over all three surveys.

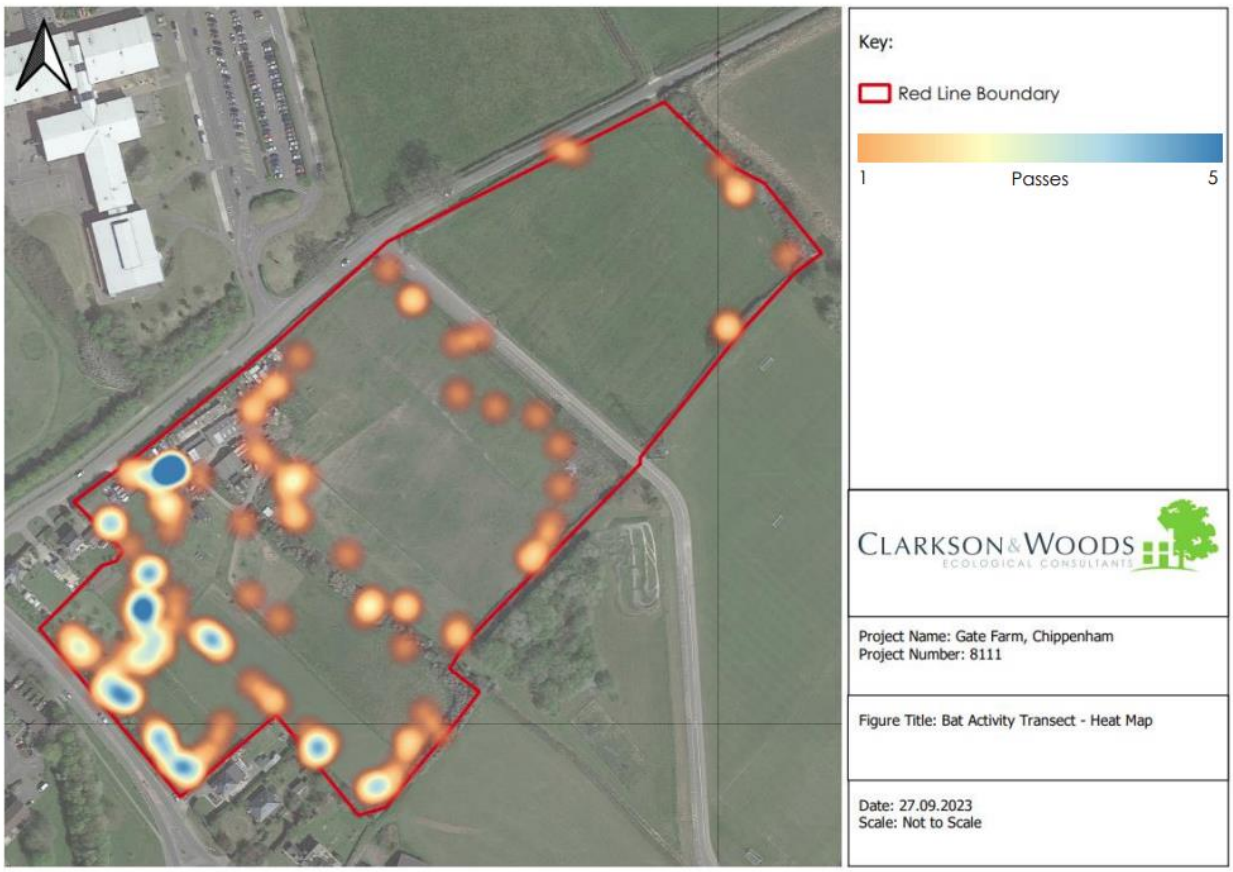


Figure 4: Bat Activity Transect Heat Map (all surveys)

2.5.50 Interestingly, the highest levels of activity were recorded to the west and north-west of the Site; habitats in these areas were noted as having greater disturbance from artificial lighting than habitats to the east. The

high levels of activity are also in proximity to species-rich hedgerows, areas of more diverse grassland and the traditional orchard habitat, however.

Static Detector Surveys

2.5.51 A total of 20,655 bat passes (combined) and a minimum of 10 bat species were recorded during the surveys. The following species were recorded on Site during across the surveys:

- Barbastelle
- Serotine
- Myotis sp.
- Nyctalus sp.
- Nathusius' pipistrelle
- Common pipistrelle
- Soprano pipistrelle
- Brown long-eared
- Lesser horseshoe
- Greater horseshoe

2.5.52 Five additional species were recorded during the static detector surveys that were not recorded during the activity transects. This includes rarer species such as barbastelle, lesser and greater horseshoe; the presence of these species is considered significant given their elevated conservation concern.

2.5.53 Figure 5 shows the total number of bat passes throughout the survey period for each of the different species, and Table 6 provides a summary of the average number of bat calls per night for each species during each of the three deployments.

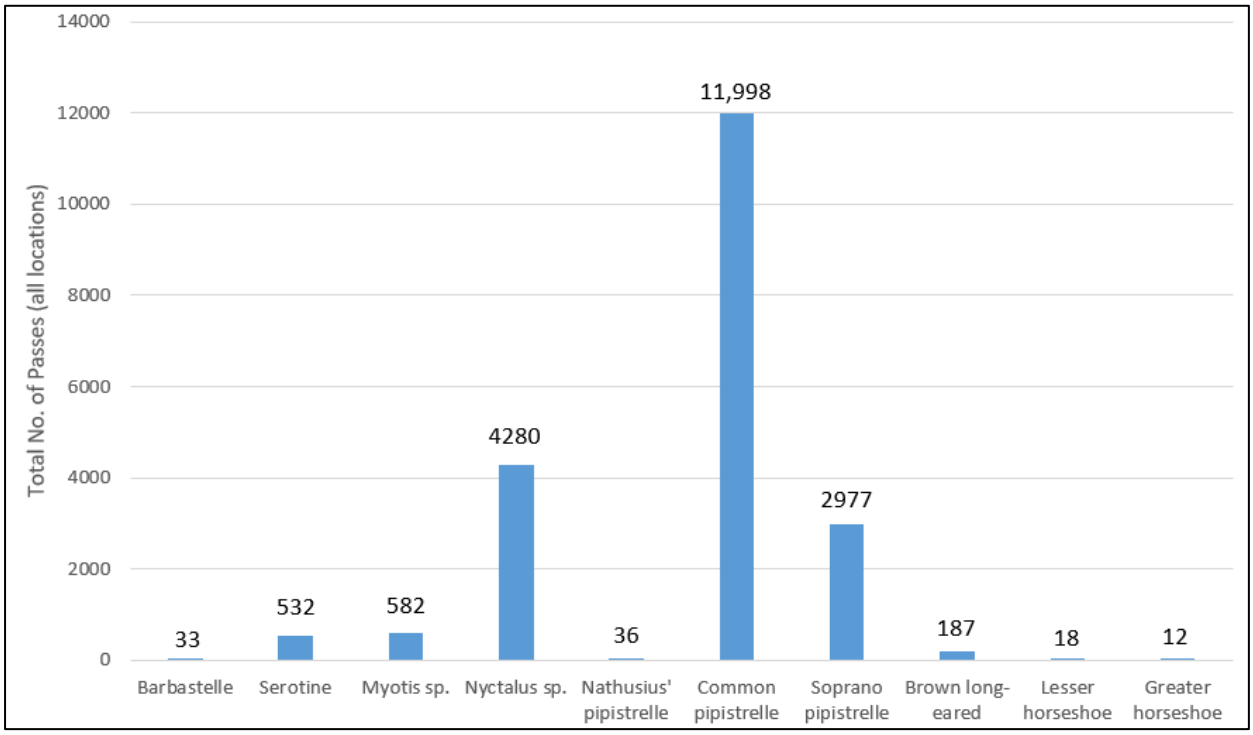


Figure 5: Total No. of Passes per Species (all surveys)

Table 6: Average No. of Passes per Night per Species per Month

Species	Average No. of Bat Passes per Night			Percentage of Total Passes
	May	July	September	
Barbastelle	0.71	0.14	3.86	0.16
Serotine	27	25.86	23.14	2.58
Myotis sp.	6.43	3.43	73.29	2.82
Nyctalus sp.	235.86	274.43	101.14	20.72
Nathusius' pipistrelle	3.14	1.86	0.14	0.17
Common pipistrelle	170.71	415.43	1127.86	58.09
Soprano pipistrelle	73.29	104.43	247.57	14.41
Brown long-eared	4.75	2.86	19.29	0.91
Lesser horseshoe	0	0	2.57	0.09
Greater horseshoe	0.57	0.14	1	0.06
Total Average No. of Passes (all species)	**522.29**	**828.57**	**1599.86**	

2.5.54 The highest number of bat passes were recorded during the autumn (September) deployment, with almost double the number of passes compared to the summer (July) deployment and more than three times the total for the spring (May) deployment. All 10 species were recorded during the autumn deployment, with nine recorded in the spring and summer deployments.

2.5.55 Common pipistrelle was found to be the most frequently recorded species during the static detector surveys, comprising more than half of the total passes (57.09%). Nyctalus sp., the most frequently recorded during the transect, was also relatively abundant during the static surveys (20.72% of total passes).

2.5.56 Table 7 and Figure 6 provide a summary of the total bat passes recorded throughout the survey period according to each species at each static detector location.

Table 7: Total Number of Bat Passes Recorded per Species per Static Detector Location

Species	No. of Bat Passes Recorded per Static Detector Location					
	A	B	C	D	E	F
Barbastelle	2	9	1	2	2	17
Serotine	240	122	28	44	62	36
Myotis sp.	108	146	41	97	69	121
Nyctalus sp.	2502	360	586	219	352	261
Nathusius' pipistrelle	12	0	23	1	0	0
Common pipistrelle	6023	485	2165	1397	1216	712
Soprano pipistrelle	1018	141	225	439	443	711
Brown long-eared	32	45	19	23	33	35
Lesser horseshoe	5	1	0	3	7	2
Greater horseshoe	1	2	2	4	0	3
Total No. of Passes (all species)	**9943**	**1311**	**3090**	**2229**	**2184**	**1898**

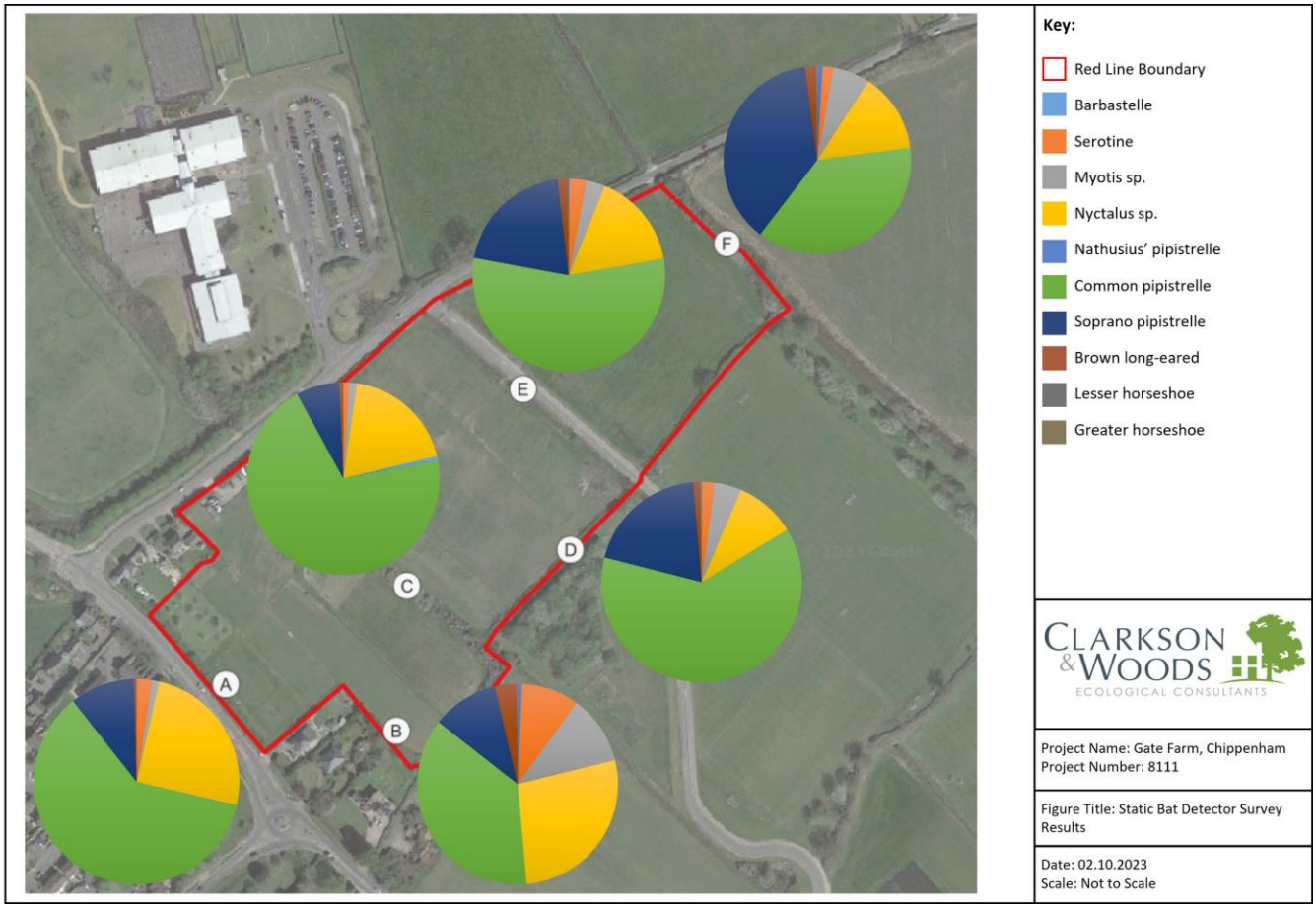


Figure 6: Bat Activity per Static Detector Location

2.5.57 Location A recorded the highest number of bat passes in total, including more than 50% of the total common pipistrelle passes recorded on Site during the surveys. Location A also recorded the highest number of serotine, Nyctalus sp., and soprano pipistrelle passes.

2.5.58 Location B recorded the least amount of bat passes across the surveys, accounting for only 6% of the total bat passes. However, the highest number of Myotis sp. and brown long-eared passes, both of which are light-sensitive species.

2.5.59 The highest numbers of the other light-sensitive species (barbastelle, lesser and greater horseshoe) were recorded to the east of the Site at Locations D, E, and F. These locations were associated with larger grassland fields, grazed by livestock.

2.5.60 Each detector location recorded a peak count of bat calls for at least one species, suggesting that bat species utilise the Site in different ways, highlighting the value of the variety of habitats present.

Evaluation

2.5.61 Roosting bats were considered to be of **Negligible** Importance, however commuting and foraging bats were considered to be of **Local** Importance due to the diversity of species recorded within the Site.

Otter

Desk Study Information

2.5.62 WSBRC returned four records of otter within 1km of the Site, the nearest and most recent of which was recorded in 2020 approximately 0.88km north-west of the Site.

Field Survey Results

2.5.63 No features suitable for otter were identified on or adjacent to the Site. There was a lack of connectivity to major watercourses in the surrounding landscape.

2.5.64 It was considered likely that otter are absent from the Site, and this species are therefore not considered further in this impact assessment.

Evaluation

2.5.65 Otter were considered to be of **Negligible** Importance.

Water Vole

2.5.66

Desk Study Information

2.5.67 No records of water vole were returned by WSBRC within 1km of the Site, or during a data search of Clarkson and Woods own in-house records.

Field Survey Results

2.5.68 The ditches present on Site were considered to be unsuitable for water vole. All of the ditches were associated with hedgerows, being very narrow, dry, unconnected and heavily shaded. The channels lacked any aquatic vegetation and water suitable for water voles. No connective watercourses were identified in proximity to the Site.

2.5.69 Given the lack of local records of the species and absence of suitable habitat within the Site, water vole were considered likely to be absent from the Site and are not considered further in this impact assessment.

Evaluation

2.5.70 Water vole were considered to be of **Negligible** Importance.

Dormouse

Methodology

2.5.71 Any hedgerows, scrub and woodlands were assessed during the walkover for their suitability to support dormice *Muscardinus avellanarius*. Particular consideration was paid to the abundance of food sources within them, density for nesting and overnight shelter and the strength of connectivity to other suitable

habitats leading off site. In addition, any direct sightings, nests or feeding signs during the site visit were also recorded.

Limitations

2.5.72 Areas of scrub habitat within the Site comprised dense vegetation, and it is possible that field signs of dormice may have been missed during the survey. Fruiting hazel was absent within the Site, and it was therefore not possible to conduct an incidental nut search.

Desk Study Information

2.5.73 No records of dormice were returned by WSBRC within 1km of the Site since 2012, or during a search of Clarkson and Woods own in-house records. No granted EPS licence applications were identified within at least 2km of the Site.

2.5.74 Aspect Ecology previously considered the Site unlikely to support dormice (2016).

Field Survey Results

2.5.75 No field signs of dormice were incidentally recorded during the survey; however, the network of hedgerows within and bounding the Site provide suitable habitat with connectivity to hedgerows and woodland parcels within the wider landscape.

2.5.76 Hazel and other fruiting and flowering species such as bramble and hawthorn recorded within the hedgerows and fruit trees within the on-site orchard provide suitable food sources for dormice, if present.

2.5.77 Although no dormouse nests or characteristically gnawed hazel nuts were recorded during the survey, on-site habitats, namely hedgerows and scrub, were considered suitable for dormice. The presence of dormice cannot therefore be completely ruled out without further survey effort. However, through careful design and avoidance the existing hedgerows and scrub habitats have been retained and placed outside private ownership. Therefore, impacts on dormice can be avoided and thus surveys were therefore not considered reasonable or proportionate in this instance and a suitably robust precautionary approach to works has been proposed in Section 3.

Evaluation

2.5.78 Presence of dormice is unknown, but for the purpose of this assessment assumed present. Any dormice would be of Local Importance.

Amphibians

Methods

2.5.79 All waterbodies within 250m of the Site were identified using Ordnance Survey maps and aerial imagery. Waterbodies on publicly accessible land were assessed during the field survey for their suitability to support amphibian species where access was possible.

2.5.80 Where suitable water bodies were identified on accessible land a Habitat Suitability Index (HSI) score was calculated for each one following the methodology described by Oldham et al[13]. HSI scores give a relative indication of the likelihood that a water body would support breeding great crested newts (GCN). Factors which increase these scores include the presence of other ponds nearby, water quality, pond size, absence of fish/waterfowl, vegetation cover and shading.

2.5.81 GCN eDNA surveys of all accessible ponds within 250m of the Site were undertaken during the optimal survey window (mid-April to June) to determine the presence/likely absence of GCN. Surveys were carried out following best practice as outlined in the DEFRA Project WC0167 and kits supplied by, and samples submitted for analysis to, ADAS. The survey was carried out on 25th May 2023 by Molly Brown assisted by Bryan Tan MBiolSci, who have been assessed by Clarkson and Woods as competent to complete the survey.

[13] Oldham. R.S., Keeble L., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.

2.5.82 Terrestrial habitats were also assessed for their suitability for foraging and sheltering GCN. This species requires habitats such as grassland, scrub, woodland and hedgerows for dispersal and hibernation. Further hibernation features include buried rubble and logs, or mammal burrows.

Limitations

2.5.83 Due to surrounding dense vegetation, it was not possible to access Pond 5 to collect samples for eDNA survey. Access to Pond 4 was also constrained by dense vegetation, with samples only being taken from the eastern edge. However, it was possible to calculate a HSI score for both waterbodies.

2.5.84 The survey was conducted following a period of relatively dry weather, and Pond 3 held only c.10cm of water in a small area at the time of the survey. However, it was still possible to obtain sufficient samples.

2.5.85 Whilst eDNA tests confirm presence or absence of GCN, they do not provide information on population estimates or whether the waterbody is used for breeding.

Desk Study Information

2.5.86 Five records of common frog were returned by WSBRC within 1km of the Site. The closest record was located approximately 0.21km north-west of the site in 2013.

2.5.87 WSBRC returned 12 records of GCN within 1km of the Site. The closest record was located approximately 0.42km south of the Site in 2015.

2.5.88 Class Survey Licence Returns within 2km of the site identified using the MAGIC website revealed six positive records of GCN, the closest of which was located approximately 0.60km south of the Site in 2015.

2.5.89 The majority of the Site lies within a Green Natural England GCN Risk Zone, with a small section to the south of the Site within an Amber Risk Zone.

2.5.90 Aspect Ecology undertook a previous ecological assessment of the site in 2016 and surveyed five ponds within 250m of the Site for GCN, using eDNA sampling. The results returned positive results for four of the five ponds (Ponds 1, 2, 4 and 5), confirming GCN presence.

Field Survey Results

2.5.91 Six ponds were identified within 250m of the Site during the desk study. The locations of these waterbodies and eDNA results are shown in Figure 7.

2.5.92 HSI scores were calculated for each of the waterbodies, and samples for eDNA surveys were obtained from five off-site ponds. A description of each waterbody, HSI scores and eDNA survey results are provided in Table 8 below.

Table 8: Description of Waterbodies, HSI Scores and eDNA Results

Waterbody No.	Description & HSI Score	eDNA Result	Photograph
P1	P1 was approximately 100m^2 in size, unlined and was largely shaded by willow sp. and bramble. The pond was immediately surrounded by dense scrub, with a wooden post and rail fence separating this habitat from managed football pitches. HSI Score: 0.62 (average) Distance from Site: 215m	GCN Present *12/12 replicates*	

Waterbody No.	Description & HSI Score	eDNA Result	Photograph
P2	P2 was immediately adjacent P1 and was surrounded by similar habitats. Emergent vegetation, including reed mace, was present within the unlined pond with some buried rubble and possible hibernation features noted at the perimeter. HSI Score: 0.70 (good) Distance from Site: 205m	GCN Present *7/12 replicates*	
P3	P3 was relatively small (<50m^2), and was largely shaded. The footprint of the pond was choked with vegetation including willow sp., nettles and cow parsley. At the time of the eDNA, much of the pond was dry, with ~10cm water in the south-east corner. Per P1/P2, the pond was fenced off from surrounding football pitches, with a hedgerow to the east. HSI Score: 0.48 (poor) Distance from Site: 245m	GCN Absent	
P4	P4 was unlined, and approximately 200m^2 in size. The pond held deep (at least 1.5m) water in the centre, with lots of emergent reed mace present. A collapsed wooden jetty was noted at the pond edge, and P4 was surrounded by scrub with a hedgerow to the west. Perimeter post and wire fencing separated the pond from mown grassland and access road. HSI Score: 0.82 (excellent) Distance from Site: 210m	GCN Present *12/12 replicates*	
P5	P5 was difficult to access, however appeared to be surrounded by similar habitat to P4; bramble scrub and bull rush noted on banks, with hedgerow to west. A warning sign was noted next to the pond indicating deep water. HSI Score: 0.66 (average) Distance from Site: 200m	N/A (assumed present for the purpose of this assessment)	

Waterbody No.	Description & HSI Score	eDNA Result	Photograph
P6	Small (2x2m) ornamental pond in amenity garden, situated beside H1. Plastic liner with planted aquatic species shading perimeter. Conversation with homeowner revealed pond is topped up regularly with water (never dries), and anecdotal evidence of frogs and newts within the pond. HSI Score: 0.60 (average) Distance from Site: <5m	GCN Absent	

2.5.93 Of the five off-site ponds sampled, three returned positive GCN eDNA results; GCN presence was confirmed in Ponds 1, 2 and 4. A copy of the detailed results provided by ADAS is available from Clarkson and Woods on request.

2.5.94 Although access to Pond 5 was not possible, presence of GCN is assumed given the positive results within the neighbouring ponds, and previous record of GCN in this pond.

2.5.95 Terrestrial habitat within the Site was considered to be of varied suitability for GCN, and other common amphibian species. Grazed fields and bioswale offered limited suitable habitat, with hedgerow bases and scrub providing greater value sheltering opportunities.

2.5.96 The log and bonfire piles and piles of debris noted within the Site (TN2, TN4 and TN5) offer further sheltering opportunities and possible hibernation features for amphibians.

Evaluation

2.5.97 Positive eDNA records were returned from three ponds within 250m of the Site, and it is considered likely that suitable habitats within the Site may support GCN in their terrestrial phase. GCN were therefore considered to be of **Local** Importance.

2.5.98 Other amphibians, such as common toad, were considered to be of **Site** Importance.

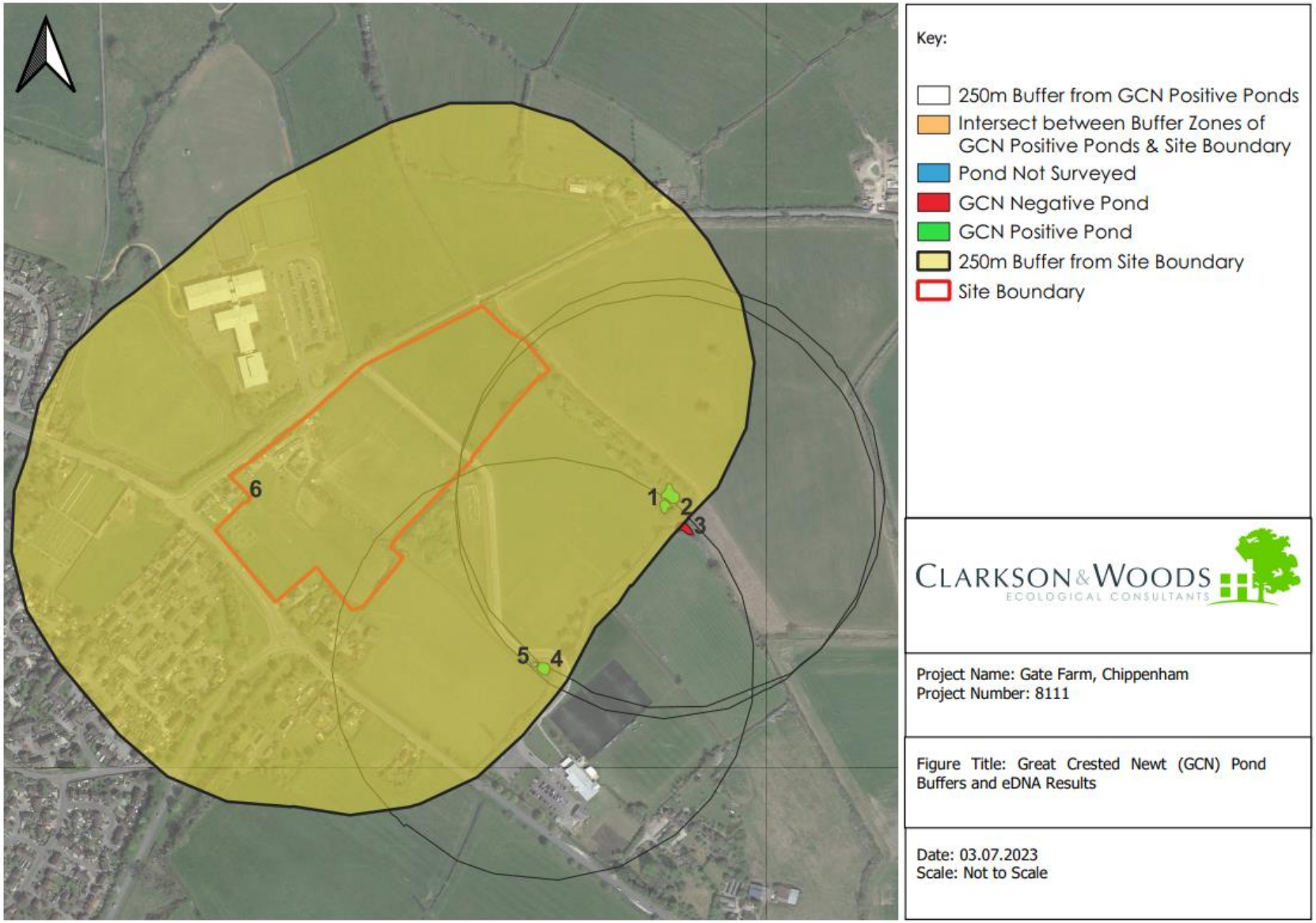


Figure 7: GCN Pond Buffers and eDNA Results

Reptiles

Methods

2.5.99 Features on Site were assessed for their potential to provide suitable habitats for use by reptile species. These include rough, tussocky grassland, scrub, disturbed land or refugia such as wood piles, rubble or compost heaps. Where present, suitable existing refugia were inspected for sheltering reptiles, and the ground was scanned whilst walking to look for basking species. Following this assessment, further reptile surveys were considered necessary.

2.5.100 On 18th May 2023 a total of 50 reptile refugia (0.5m x 0.5m square) were deployed across the Site in areas of suitable habitat for reptiles. Refugia consisted of a combination of roofing felt and metal tins. This methodology is in accordance with the Froglife Reptile Survey Guidance (1999) and the Herpetofauna Workers' Manual. JNCC. All refugia were subsequently checked on seven separate occasions to establish whether reptiles were present on Site and which species were present. The surveys were undertaken during optimal survey conditions when temperatures were between 9-18°C. Full details of the survey and locations of the refugia are provided in Appendix D.

2.5.101 In addition to checking the refugia, a careful visual assessment of the Site was completed on each survey visit. This included searching natural refuges and observing natural basking sites for short periods.

Limitations

2.5.102 During the surveys, a small number of refugia (<10%) were lost/not found.

2.5.103 All refugia checks were conducted under suitable weather conditions during the optimal survey period. Ideally, at least one day would have been allowed between checks to reduce disturbance to any reptiles present within the Site, however due to sub-optimal weather conditions preventing survey checks on one occasion checks were conducted on consecutive days.

Desk Study Information

2.5.104 No records of reptiles within 1km of the Site were returned during the desk study, either from WSBRC or Clarkson and Woods' own in-house records.

2.5.105 During the 2016 survey by Aspect Ecology, the Site was considered to be of low value to reptiles and no species-specific survey was undertaken.

2.5.106 Recent surveys conducted by aLyne Ecology to inform a planning application submission at Abbeyfield School (Ref.: PL/2023/01340), located ~50m from the Site to the north of Stanley Lane, recorded a small population of slow worm in 2022. During the species-specific survey, a peak count of three individuals was recorded, with detailed survey results available in the species-specific report[14].

Field Survey Results

2.5.107 During the initial UKHab survey, the majority of habitats on Site were considered to be of limited suitability for reptiles. The horse and sheep-grazed fields provided sub-optimal habitat; however the un-managed and tussocky areas of these fields were considered more suitable. The scrub, hedgerow and ruderal/ephemeral offered further reptile habitat.

2.5.108 Log piles noted within the Site formed suitable sheltering features for reptiles, and farm debris including sheets of corrugated roofing board and metal provided natural refugia.

2.5.109 Across the seven refugia checks, no reptiles were recorded within the Site, which is considered sufficient to assume likely absence. However, conversation with tenants of the buildings on Site revealed that slow-worms and grass snake have been observed in Fields 1 and 2 in previous years, and so the presence of reptiles on Site cannot be completely ruled out.

Evaluation

2.5.110 Reptiles, if present, are considered to be of **Site** Importance.

[14] Reptile Presence/Absence Survey Report – Abbeyfield School, Chippenham (November 2022) aLyne Ecology

Birds

Methodology

2.5.111 Any buildings and vegetation were surveyed for signs of use by nesting birds and any birds seen or heard during the survey were noted. The Site's potential to support bird species of particular conservation concern (i.e. Schedule 1, NERC S41 and Red List species) was assessed, taking into consideration the bird species assemblage observed during the survey, the habitats present on and around the Site, the context of the Site in the wider landscape and the results of the desk study.

2.5.112 Incidental records of birds were also recorded during subsequent visits to Site when undertaking other species-specific surveys.

Limitations

2.5.113 The initial UKHab survey was conducted outside of the breeding bird season (broadly February-August inclusive). As such, it was likely that bird species that may use the habitats within the Site for nesting/foraging during the breeding season were not observed.

Desk Study Information

2.5.114 WSBRC returned records pertaining to 25 species within 1km of the Site, listed in Table 9 below. Those species listed as Annexe 1 species are highlighted in bold, and those recognised as Red or Amber listed Species of Conservation Concern by British Trust for Ornithology are also highlighted.

Table 9: Bird Species Records Returned within 1km of the Site

Common Name	Scientific Name	Date of Latest Record
Barn owl	***Tyto alba***	**2021**
Brambling	***Fringilla montifringilla***	**2017**
Fieldfare	***Turdus pilaris***	**2019**
Golden plover	Pluvialis apricaria	2017
Greenfinch	*Chloris chloris*	2019
Hawfinch	*Coccothraustes coccothraustes*	2017
Hen harrier	***Circus cyaneus***	**2017**
Herring gull	*Larus argentatus*	2020
Hobby	***Falco subbuteo***	**2015**
House martin	*Delichon urbicum*	2020
House sparrow	***Passer domesticus***	**2020**
Kingfisher	*Alcedo atthis*	2019
Lapwing	*Vanellus vanellus*	2017
Linnet	*Linaria cannabina*	2019
Little Egret	*Egretta garzetta*	2017
Mediterranean gull	***Ichthyaetus melanocephalus***	**2019**
Mistle thrush	*Turdus viscivorus*	2019
Peregrine	***Falco peregrinus***	**2019**

Common Name	Scientific Name	Date of Latest Record
Red kite	***Milvus milvus***	**2020**
Redwing	***Turdus iliacus***	**2019**
Reed bunting	*Emberiza scheoniclus*	2019
Skylark	*Alauda arvensis*	2019
Starling	*Sturnus vulgaris*	2020
Swift	*Apus apus*	2020
Woodcock	*Scolopax rusticola*	2012
Yellowhammer	*Emberiza citrinella*	2020

Field Survey Results

2.5.115 In total, 13 bird species were incidentally recorded on Site during the surveys; these are summarised in Table 10 below.

Table 10: Bird Species Recorded During Field Surveys

Common Name	Scientific Name
Bullfinch	***Pyhrrula pyrrhula***
Carrion crow	*Corvus corone*
Goldfinch	*Carduelis carduelis*
Great tit	*Parus major*
House sparrow	***Passer domesticus***
Long-tailed tit	*Aegithalos caudatus*
Magpie	*Pica pica*
Red Kite	*Milvus milvus*
Robin	*Erithacus rubecula*
Swallow (nest)	*Hirundo rustica*
Woodpecker sp.	-
Woodpigeon	*Columba palumbus*
Wren	*Troglodytes troglodytes*

Table 11: Key for Styling in Tables 9 and 10 Above

Style	Meaning
Bold text	Listed under Section 41 of the NERC Act 2006 (Species of Principal Importance - SPIs) or UK Biodiversity Action Plan species

Style	Meaning
Underlined text	Listed under Schedule 1 species under the Wildlife and Countryside Act 1981 (as amended)
Red fill	'Red listed' species according to BTO/RSPB Birds of Conservation Concern 2021
Orange fill	'Amber listed' species according to BTO/RSPB Birds of Conservation Concern 2021

2.5.116 Birds recorded within the Site during the surveys were generally considered typical of the farmland and nearby urban habitats, including a small number of notable species.

2.5.117 The hedgerow, scrub, trees and grassland habitats within the Site offered suitable nesting and foraging habitat for birds. The complex of buildings on Site were also considered suitable for nesting birds, and frequent evidence of nesting swallows was noted within during the building inspection surveys.

2.5.118 The grassland habitat on Site was considered to offer very limited potential for ground-nesting species such as skylark. The larger fields, Field 4 and 5, are typically preferred by skylark due to open lines of sight required for nesting. However, tight grazing of Field 4 and the lack of vegetation structure within Field 5 resulted in the habitat being considered largely sub-optimal.

2.5.119 Anecdotal evidence of barn owl *Tyto alba* and little owl *Athene noctua* within the Site was also obtained from discussions with tenants on Site. However, no evidence of barn owl was recorded within the buildings on Site during the internal inspections.

2.5.120 Given that much of the suitable nesting habitat for birds recorded on Site is to be retained within the proposals, and given the relatively widespread species recorded, further bird surveys were not considered necessary in this case.

Evaluation

2.5.121 Breeding birds were considered to be of **Site** Importance.

Invertebrates

Methods

2.5.122 Any notable invertebrates identified during the survey were recorded. The habitat was also assessed for its suitability for notable invertebrates, including the presence of specific species known to be foodplants or larval plants or habitats which may be favoured by invertebrates (such as bare ground, deadwood or grass tussocks). The habitat structure was also considered, such as mosaics, brownfield or unmanaged areas.

Limitations

2.5.123 The initial survey was conducted outside of the optimal survey period for invertebrates (April-September inclusive), and therefore it is possible that invertebrate species that may be present within the Site at other times of year were not observed at this time. However, further surveys conducted throughout the year and during the optimal period provide opportunities for further incidental observations.

Desk Study Information

2.5.124 No records of notable invertebrate species were returned by WSBRC within 1km of the Site, or during a search of Clarkson and Woods own in-house records.

Field Survey Results

2.5.125 No notable invertebrate species were recorded on Site during surveys.

2.5.126 The grassland, scrub, ruderal/ephemeral and hedgerow habitats within the Site form a mosaic of habitats suitable to support a range of common invertebrate species. Fruiting trees within the area of orchard habitat and the log pile (TN2) noted during the survey were also considered likely to provide valuable habitat for invertebrates.

Evaluation

2.5.127 Invertebrates were considered to be of **Site** Importance.

Other Protected Species and Species of Conservation Concern (SoCC)

Methods

2.5.128 Habitats were assessed for their suitability for Species of Conservation Concern (SoCC), including non-native species.

Limitations

2.5.129 Although completing the initial UKHab survey outside of the optimal botanical survey period may have resulted in non-native plant species being missed at the time, these would have been recorded during the further botanical survey conducted during the optimal period.

Desk Study Information

2.5.130 Data returned from WSBRC contained 157 records of western European hedgehog within 1km of the Site, with a large number of these records located within the developed area enclosed by Pewsham Way to the west of the Site.

2.5.131 WSBRC returned 12 records of brown hare within 1km of the Site, the closest of which located approximately 0.42km north-west of the Site, recorded in 2014.

2.5.132 No records of harvest mouse within 1km of the Site were returned during the desk study, either from WSBRC or Clarkson and Woods' own in-house records.

Field Survey Results

2.5.133 The open grassland habitat on Site was considered suitable for brown hare, and anecdotal evidence of this species within the Site was provided by a tenant of the property.

2.5.134 Given the proximity to sub-urban environments and abundance of local records of the species, the variety of habitat types within the Site were considered likely to support hedgehog. Hedgerow bases, scrub and various refugia within the Site provide suitable sheltering habitat for hedgehog. The grassland, particularly rough grassland areas, traditional orchard and ruderal/ephemeral vegetation provide a range of foraging opportunities.

2.5.135 The tussocky grassland to the south of the Site was also considered suitable habitat for harvest mice, although no records of the species were returned during the desk study. No nests were found in this area although extensive searches for this species were not carried out during the field survey work.

2.5.136 *Cotoneaster horizontalis* was recorded growing along a small section of wall at the entrance of the Site, within H11a. This species is listed on Schedule 9 of the Wildlife and Countryside Act as an invasive species.

2.5.137 The habitats on Site were not considered likely to support additional protected species, and no further evidence of invasive species was noted during the surveys.

Evaluation

2.5.138 Brown hare and hedgehog are considered to be of **Site** Importance.

2.5.139 Harvest mouse, if present, would also be considered of **Site** Importance.

2.5.140 The wall cotoneaster noted within the Site is of limited ecological value, however action is required to remove the invasive species and is therefore considered to be of **Site** Importance.

2.6 Summary of Ecological Importance

2.6.1 Table 12 below gives all the identified ecological features on Site and their individual assessment of importance. Those coloured green are considered to be Important Ecological Features and will form the basis of the Assessment of Effects in Section 3. Those coloured yellow will be included on the basis of their specific legal protection or applicable planning policies.

Table 12: Summary of Ecological Importance

Feature	Importance
Designated Sites	
Mortimore's Wood LNR	Local
Kellaway's-West Tytherton River Avon SSSI	National
Bristol Avon River LWS	Local
Baydon's Meadow LWS	Local
Habitats	
Other Neutral Grassland	Site
Modified Grassland	Site
Traditional Orchard	Local
Scrub (Blackthorn, Bramble & Mixed Scrub)	Site
Ruderal/Ephemeral Vegetation	Site
Allotments	Site
Bioswale	Site
Artificial Unvegetated, Unsealed Surface	Negligible
Developed Land; Sealed Surface	Negligible
Hedgerows	Local
Species	
Badger	Site
Bats (Roosting)	Negligible
Bats (Foraging/Commuting)	Local
Otter	Negligible
Water Vole	Negligible
Dormouse	Local (if present)
Great Crested Newt	Local
Amphibians (exc. GCN)	Site
Reptiles	Site (if present)
Birds	Site
Invertebrates	Site
Brown Hare	Site
Hedgehog	Site
Harvest Mouse	Site
Wall Cotoneaster	Site

3 ASSESSMENT OF EFFECTS

3.1 Methodology

3.1.1 Continuing from the valuation of Important Ecological Features (IEFs), this section lists each IEF in turn together with a characterisation of any potential impacts upon them likely to arise from the proposals. This takes into consideration any measures inherent to the designed scheme which seek to avoid such impacts altogether. Next, any agreed mitigation measures chosen to reduce likely impacts are then set out, along with the mechanism(s) through which these would be secured.

3.1.2 Residual effects, being those effects which would likely still arise despite any avoidance measures or agreed mitigation efforts, are subsequently discussed. Residual effects are determined to be either significant or not significant and any significant residual effects are given a geographical scale at which they might be felt. This assessment methodology is in accordance with that set out in the CIEEM Guidelines for Ecological Impact Assessment, 2018.

3.1.3 Where residual effects are identified compensatory measures may be proposed to make up for the loss or permanent damage to an IEF, as far as possible. Monitoring or management schemes which may be necessary to ensure the long-term achievement of all intended mitigation and compensation are discussed.

3.1.4 Where potential for cumulative impacts upon IEFs in association with other proposed or ongoing local development are identified these are described as appropriate for the affected IEF. The Zone of Influence for each IEF, together with their level of ecological importance will be of relevance when considering the scope of a cumulative impact assessment.

3.1.5 Ecological enhancement measures that will be incorporated into the development are given in line with the National Planning Policy Framework.

3.2 Summary of Development Proposals and Sources Potential of Impacts

3.2.1 Habitat clearance activities to facilitate construction will result in the loss of habitats ranging from Site to Local importance, which will include the following:

- Allotments (0.03ha)
- Artificial unvegetated, unsealed surface (0.27ha)
- Developed land; sealed surface (including demolition of all existing buildings on Site) (0.12ha)
- Ruderal/ephemeral (0.08ha)
- Blackthorn scrub (0.02ha)
- Bramble scrub (0.06ha)
- Hedgerows (0.056km)
- Mixed scrub (0.01ha)
- Modified grassland (4.18ha)
- Other neutral grassland (1.96ha)
- Traditional orchard (0.05ha)

3.2.2 Increased artificial lighting will result from the proposed development, including street lighting and external lighting associated with individual dwellings. This will largely be concentrated in the western parcel.

Inherent Avoidance Measures

3.2.3 Clarkson & Woods were commissioned at the commencement of the project and have been involved with proposal design from an early stage; having previously prepared a preliminary ecological appraisal outlining constraints and opportunities. During the initial stages of design proposals were amended to seek to retain important habitats, including the orchard, as far as possible. The current scheme design avoids impacts to 0.11ha of traditional orchard and proposes creation of additional priority habitat to compensate for the small loss of this habitat (of which includes 5 trees).

3.2.4 No residential development will take place within Field 5, which will be used to provide a large area of public open space that will be managed to maximise biodiversity value. This includes creation of diverse grassland, scrub, a community orchard and allotments, and an attenuation feature that will provide aquatic habitat.

3.2.5 The design also retains a development-free buffer zone of varying width along the existing boundary and internal hedgerows during the construction and operational phases, avoiding potential adverse impacts to these habitats. The hedgerows will also be maintained outside of private ownership to ensure management practices that will provide benefits to wildlife for the lifetime of the development.

3.2.6 Construction works will be timed appropriately to avoid impacts to protected species as far as possible, details of which are provided in Section 3.6 below.

New Habitat Creation/ Enhancement

3.2.7 Based on the landscape information provided in the Illustrative Masterplan (Drawing No.: 230703-22548-3200C) for the Site, newly created habitats to be delivered within the scheme include the following:

- Allotments (0.43ha)
- Artificial unvegetated, unsealed surface (0.27ha)
- Developed land; sealed surface (comprising dwellings, access roads and other associated infrastructure) (2.56ha)
- Mixed scrub (0.08ha)
- Modified grassland (0.08ha)
- Other neutral grassland (1.90ha)
- Vegetated gardens (1.13ha)
- Ponds (non-priority habitat) (0.04ha)
- Rain garden (0.02ha)
- Species-rich hedgerows (0.43km)
- Sustainable drainage system (SUDS) (0.15ha)
- Traditional orchard (0.12ha)
- Urban and Rural trees (~50)

3.2.8 It is assumed that the majority of existing habitats will be lost to facilitate creation of the proposed habitats on Site, rather than enhancement of baseline habitat conditions. This is particularly in reference to the habitats within Field 5. Most orchard and hedgerow habitat will be retained.

3.2.9 Retained boundary hedgerows, however, will be enhanced through in-fill planting with native species where possible to increase species richness and integrity of hedgerow structure. Hedgerow enhancements will also include the removal of invasive species from H11a.

Generic Measures

3.2.10 A Construction Environmental Management Plan (CEMP): Biodiversity will be prepared to detail how the habitats and species within and surrounding the Site should be protected during the construction phase. The CEMP will include details of appropriate fencing to restrict access into key ecological areas; information on any timing restrictions; and measures to prevent damage to sensitive ecological habitats and protected species. Creation of new wildlife features (such as bat and bird boxes) will also be included. Typically, the preparation of a CEMP will be a conditional requirement of the planning permission.

3.2.11 A Landscape and Ecological Management Plan (LEMP) will be prepared for the operational Site that will cover how retained habitats and newly planted areas should be managed so as to maximise their biodiversity value and achieve the objectives of ecological mitigation and compensation. The LEMP should also set out any measures necessary to ensure protected species are appropriately accommodated within the operational Site.

3.3 Biodiversity Net Gain Assessment

3.3.1 The development proposals have been subject to a Biodiversity Net Gain Assessment using the Defra 4.0 metric. The value of existing habitats on-site has been calculated using the Habitat Survey Map (Figure 3) and habitat descriptions in this report. The value of proposed habitats has been calculated using the illustrative masterplan for the Site (Drawing No.: 22548/3200C (Pad Design, July 2023)), and assumptions have been made regarding landscape specifications for the purpose of this outline planning application.

3.3.2 The outcome of this assessment is provided below in Figure 8 and indicates that the development proposals will result in **28.36%** net gain for area-based habitats, a **60.75%** net gain for linear habitats. Full details are provided in the Biodiversity Net Gain Assessment report and metric spreadsheet submitted with this application.

Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	5.76
	Hedgerow units	7.94
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	28.36%
	Hedgerow units	60.75%
	Watercourse units	0.00%

Figure 8: Outcome of Defra 4.0 Biodiversity Net Gain Assessment

3.3.3 The Biodiversity Net Gain Assessment, and associated report, will be updated following the receipt of detailed landscape specifications at reserved matters stage.

3.4 Designated Sites

3.4.1 The desk study revealed two statutory designated sites within the search area; Mortimore's Wood LNR located 1.72km south-west of the Site and designated for ancient woodland habitat, and Kellaway's-West Tytherton River Avon SSSI located 2km north and designated for notable geological features. The Site was located within the SSSI Impact Risk Zones for Kellway's-West Tytherton River Avon SSSI and Bencroft Hill Meadows SSSI.

3.4.2 Two non-statutory designated sites were identified during the desk study; Bristol Avon River LWS designated for open-water habitat, and Baydon's Meadow LWS designated for neutral grassland habitat, both located 0.95km north-west of the Site.

Potential Impacts

3.4.3 Due to the distances from the above designated sites, construction phase activities are not considered likely to have any significant, direct impacts. There is also no direct connectivity between the Site and riverine designated sites due to the absence of watercourses within the Site.

3.4.4 During operation, there is potential for increased recreational pressure on the nearby designated sites. Given that the east of the Site has been committed to delivering public open space, in the form of biodiverse amenity areas, community orchard and allotments, and the distance of the designated sites from the development, it is not expected that any adverse impacts on the nearby designated will occur. As such, any increase in recreational disturbance is likely to be minor.

3.4.5 The proposed development does not fall under the planning application categories listed in the SSSI Impact Risk Zone descriptions for either SSSIs identified, and therefore does not require assessment in relation to these sites.

Mitigation, Compensation, Enhancement and Monitoring

3.4.6 There is no potential for significant impacts on the identified designated sites, and therefore no specific mitigation measures are recommended.

Residual Effects

3.4.7 No significant impacts on designated sites are anticipated as a result of the development.

3.5 Habitats

Traditional Orchard

3.5.1 A small (0.16ha) area of orchard habitat was identified in the north-west corner of the Site, identified as a priority habitat within the Wiltshire BAP and HPI under the NERC Act, and comprised twelve fruit trees oversailing modified grassland. Although not shown as designated traditional orchard, it comes under the UKHab classification as 'traditional' and therefore a precautionary approach to assessment has been made.

Potential Impacts

3.5.2 The majority of this habitat will be retained within the proposals, however 0.05ha of existing orchard habitat will be lost to facilitate the development.

3.5.3 There is a risk of inadvertent damage to retained orchard habitat during construction through physical damage by machinery (damage to limbs or to roots via soil compaction), or through pollution resulting from construction.

3.5.4 During operation, the retained traditional orchard could be mismanaged, resulting in reduced condition of this local and national priority habitat.

Mitigation, Compensation, Enhancement and Monitoring

3.5.5 During construction, a Biodiversity Protection Zone (BPZ) delineated by appropriate protective fencing and signage in line with British Standard 5837: 2012 'Trees in relation to design, demolition and construction', will be established to protect the retained orchard from damage. The details of these measures will be set out in a CEMP: Biodiversity for the Site, alongside appropriate pollution control measures.

3.5.6 Creation of a new community orchard area in Field 5 will mitigate in full for the loss of orchard and provide an additional 0.07ha of priority habitat within the Site that will provide benefits to the residents, and to biodiversity through appropriate management. Only 5 trees will be lost, of which trees were likely only 10 years old.

3.5.7 Management specifications for the retained and newly created community orchard habitat will be provided within the LEMP to be prepared for the Site.

Residual Effects

3.5.8 Provided the above mitigation measures, to be outlined within the CEMP: Biodiversity, are adhered to and traditional orchard habitats are managed in accordance with the LEMP post-construction, no residual negative impacts on this habitat type are anticipated. The development will result in a gain in the extent of orchard habitat within the Site.

Hedgerows

3.5.9 A network of twelve hedgerows were recorded within and bounding the Site, including three species-rich hedgerows. Most hedgerows were well-established and considered to be important linear features within the surrounding landscape.

Potential Impacts

3.5.10 Several small lengths of hedgerow (56m in total cumulatively) will be lost to facilitate access to and within the Site. A summary of hedgerows to be lost is provided in Table 13 below.

Table 13: Hedgerow Habitat to be Lost

Hedgerow No.	Length to be Lost (m)
H5	31m
H7	4m
H11a	16m
H11b	5m

3.5.11 The retained hedgerows may be adversely impacted through physical damage by machinery (damage to limbs or damage to roots via soil compaction), or through pollution resulting from construction. There is also the potential for debris from the construction phase to be deposited within the hedgerows, damaging the hedgerow, and impacting on root systems.

3.5.12 During operation, the hedgerows may be mismanaged, resulting in a poorer structure and lower overall biodiversity value. Alternatively, they may be managed more sympathetically, resulting in an enhancement of this habitat type and benefits for biodiversity.

Mitigation, Compensation, Enhancement and Monitoring

3.5.13 Where hedgerow removal is required, this will be carried out under Reasonable Avoidance Method Statements (RAMS) to minimise the risk of impacts to protected species that may be residing therein (detailed in Section 3.6 below).

3.5.14 During construction, a Biodiversity Protection Zone (BPZ) delineated by appropriate protective fencing and signage in line with British Standard 5837: 2012 'Trees in relation to design, demolition and construction', will be established to protect the retained hedgerows and associated trees. The details of these measures will be set out in a CEMP: Biodiversity for the Site, alongside appropriate pollution control measures.

3.5.15 Those retained hedgerows that are currently species-poor will be infill planted with native species where possible, to increase species richness and improve the integrity of the hedgerow structure.

3.5.16 New hedgerow planting will be included within the scheme, creating an additional 0.43km of hedgerow habitat within the Site. All newly planted hedgerows will be species-rich and planted with native species of local provenance. Hedgerow whips will also include fruiting and flowering species, to provide a foraging resource for a range of species. The provision of high-value hedgerows within the Site will mitigate for the minor loss of existing hedgerows in full, as well as providing additional hedgerow habitat as an enhancement.

3.5.17 All hedgerows will be maintained outside of private ownership, and therefore subject to management specifications to be set out within the LEMP for the Site. Retained and newly created hedgerows will be managed to maximise their biodiversity value and promote a dense vegetation structure in order ensure their functionality as ecological corridors.

Residual Effects

3.5.18 Provided the above measures are adhered to, no residual negative impacts on hedgerows are anticipated as a result of the development, and the scheme will deliver a net gain in hedgerow biodiversity units according to the BNG Assessment of the Site.

3.6 Protected Species and Species of Conservation Concern

Badger

3.6.1 No setts were recorded within the Site during the surveys, however possible field signs of badger foraging were recorded within Field 1. In general, the habitats on Site were considered suitable foraging habitat for badger, with areas of scrub, diverse grassland and traditional orchard being particularly valuable.

Potential Impacts

3.6.2 The proposals will not result in damage to setts, as no active setts were recorded within or immediately adjacent to the Site during the survey. However, badgers can create new setts in a short period of time and therefore the proposed works have the potential to result in the damage/destruction of a sett should any be created prior to the commencement of construction.

3.6.3 Due to the necessary footprint of the development, the proposals with result in the loss of suitable badger foraging habitat within the Site, namely ONG and modified grassland and scrub.

3.6.4 Installation of roads and the increased traffic flow associated with the development has the potential to increase the likelihood of road collision accidents with badger that may previously have used the Site for foraging/commuting undisturbed. However, the volume of traffic is anticipated to be low, and extensive evidence of badger activity within the Site was not observed; the potential impact of increased traffic is therefore considered likely to be minimal.

Mitigation, Compensation, Enhancement and Monitoring

3.6.5 Badgers may excavate new setts in a very short space of time, therefore as a precaution, a pre-construction badger survey within 2 months prior to construction commencing will be completed by an experienced ecologist to confirm that no badger setts will be disturbed by Site activities.

3.6.6 In the event that a badger sett is discovered, a licence will be required from Natural England to exclude the badgers from the sett and possibly to subsequently destroy the sett, depending on its location. Such licences can only be obtained between July and November. In the case of closing larger setts, it is possible that the creation of an alternative artificial sett may be required. As such, the timing of a pre-construction survey should take due account of these seasonal constraints.

3.6.7 Badgers, if present, may move within the Site during the construction phase so, as a precaution, any pits or trenches dug during the construction phase greater than 1m in depth will be covered overnight or a wide, rough sawn plank will be placed in the pit at a 45° angle of less to enable any badgers to escape should they fall in.

3.6.8 Creation of diverse grassland habitat within Field 5 will ensure the continued provision of high value habitat and foraging opportunities for badger within the Site. Maintenance of un-lit grassland buffers between dwellings and the on-site hedgerow network will provide ecological corridors that can be utilised by badgers commuting within the Site and reduce the likelihood of collisions of badger with road traffic. Ensuring appropriate speed restrictions on traffic are enforced on Site will also act to minimise the risk of collision.

Residual Effects

3.6.9 No direct impacts on badgers and their setts are anticipated, and, provided the above mitigation measures are adhered to, no significant residual effects on badgers present on Site or locally are anticipated as a result of the development.

Bats (Roosting)

3.6.10 Trees and the majority of built structures within the Site were considered to offer 'negligible' potential for roosting bats, however Buildings 2, 4 and 5 were identified as being of 'low' bat roost potential following internal and external building inspection surveys.

3.6.11 No evidence of roosting bats was recorded during the building inspections, and no bats were recorded emerging from the three buildings subject to further survey in August 2023. The single dusk emergence survey recorded low levels of bat activity in the habitat immediately surrounding the buildings, and roosting bats were considered likely to be absent from the Site. Direct impacts on roosting bats are therefore unlikely to occur due to their assumed absence from the Site.

Mitigation, Compensation, Enhancement and Monitoring

3.6.12 Prior to any works, it is recommended that contractors should be briefed on the potential for bats being encountered during the works and advised on the correct procedure to take, in the unlikely event that bats are encountered; this briefing will be undertaken as part of a toolbox talk by the Site manager covering other ecological constraints associated with the Site.

3.6.13 Should demolition of the buildings take place more than two years from the date of the most recent building inspection (15th June 2023), an update inspection will be undertaken by a suitably qualified and licensed ecologist to check for signs of roosting bats. Provided that no signs of roosting bats are recorded, demolition works can proceed without the presence of an ecologist on Site.

3.6.14 No timing constraints are considered necessary in relation building demolition, however work between September and February would avoid constraints relating to nesting birds.

3.6.15 In the unlikely event of a bat being encountered during construction, contractors will be advised that works in that area must stop at once. Construction personnel should not handle the bat and should leave it in-situ, covering the immediate area as necessary to protect it from the elements. Clarkson and Woods should be contacted immediately on 01934 712500 for advice and to ensure that legislation protecting bats and their roosts is not breached. If bats are discovered during the inspection or subsequent demolition Natural England will need to be contacted and a licence applied for prior to any further works being undertaken.

3.6.16 In order to enhance the Site for roosting bats, it is recommended that the proposals incorporate one in-built or wall mounted bat roosting feature for every five new dwellings constructed. Care should be taken to ensure proposed bat roost features are appropriately located on south facing elevations and not compromised by windows or other sources of illumination. Details of new roosting features will be included within a mitigation and enhancement plan, which is anticipated would be a conditioned document.

3.6.17 It is also recommended that three additional bat roost boxes are provided on suitably mature trees in the boundaries of Field 5, to provide roosting opportunities in an unlit area of the Site.

Residual Effects

3.6.18 Provided the above precautions are implemented, the proposals will not result in any significant adverse impacts on roosting bats.

Bats (Foraging/Commuting)

3.6.19 The Site provides suitable foraging and commuting habitat, with at least ten species identified during the static detector surveys, including barbastelle, lesser and greater horseshoe. Overall, foraging/commuting bats were assessed as being of Local Importance.

Potential Impacts

3.6.20 The development will result in a loss of foraging habitat for a range of bat species. Specifically, the proposals will result in the loss of grassland within Fields 1-4 to facilitate the provision of residential units, gardens and associated infrastructure. These fields were utilised by a range of species for foraging during the surveys, although activity recorded was generally concentrated alongside hedgerows and linear features on Site. Nonetheless, the loss of diverse and grazed grassland fields could have a negative impact on foraging bats within the area.

3.6.21 Small sections of hedgerow habitat will be lost as a result of the development, which may disrupt existing commuting routes for bats within the Site, as they generally rely on linear features within the landscape. However, given that the majority of hedgerow lengths will be retained and the footprint of these commuting corridors maintained, the potential impacts resulting from hedgerow loss are considered likely to be minor.

3.6.22 The introduction of night-time and security lighting within the new development scheme could result in light pollution of retained and new habitats within and adjacent to the Site. The majority of bat species, particularly horseshoe, long-eared and Myotis species, which have been recorded within the Site, will actively avoid lit areas due to the increased risk of predation. Artificial light can create a physical barrier to bat movement within the landscape. Several species including common and soprano pipistrelle (and occasionally serotine and noctule), however, will forage for insects attracted to white mercury streetlamps (i.e. those containing Ultra Violet [UV] elements). This is often to the detriment of other light sensitive bat species as insect food becomes scarcer in surrounding darker areas as a result.

3.6.23 Light pollution can result in a significant change in how bats utilise a landscape. If, for example, a flight path between a roost and foraging habitat is affected by light pollution, the roost may be abandoned if it is no longer energetically viable for the bats to remain there (i.e. they would need to fly for longer to reach seasonal foraging habitat). Light pollution can, therefore, have a significant detrimental impact on individual bats and potentially colonies.

Mitigation, Compensation, Enhancement and Monitoring

3.6.24 To maintain the commuting value of the Site, an undeveloped buffer will be maintained along the Site boundaries and alongside existing hedgerows, although this may vary in width. A minimum 2m buffer (from the hedgerow's outer edge) will be maintained along all Site boundaries and retained hedgerows from any built development/roads. The southern boundary will have a larger retained buffer (ranging between 15m and 40m), in order to accommodate drainage features including attenuation ponds, swales and pumping station.

3.6.25 In order to minimise the impact of increased artificial light upon bat populations a detailed lighting strategy should be prepared in conjunction with a suitably qualified lighting engineer to ensure that existing features and mitigation habitats of value to bats remain unlit. The lighting strategy should demonstrate that the important foraging and commuting routes identified within the Site are not directly illuminated as a result of street lighting for access roads, security lighting and lighting transmitted from within the proposed

development. It is recommended that the adoption of a sensitive lighting strategy is made a condition of the planning permission.

3.6.26 The aim will be to minimise light spill onto new and retained habitats, which will need to be based on the Bats and Lighting guidelines[15]. In principle, the following parameters, which will ensure bats are not affected by the proposals and can continue to navigate around the Site, will need to be adhered to:

- Low-level lighting of access routes to be controlled by dimming and / or motion triggers creating a light attenuation zone with no more than 3lux at 0m;
- Lamp height will be carefully considered to ensure minimal light spill is achieved;
- A warm light spectrum (<2700 Kelvin) will be adopted to reduce impacts of blue light upon wildlife;
- Luminaires with an Upward Light Ratio above zero will not be used; and
- If external security lighting is provided, the specification will be agreed with an ecologist and set on motion-sensors/timers to decrease the light pollution impacts. These will be directed away from retained hedgerows and trees, be hooded/cowled where necessary, and be of the lowest intensity/brightness necessary for their purpose.

3.6.27 To mitigate for the loss of suitable foraging habitat, species-rich grassland will be created in Field 5, alongside scrub planting and the creation of a wetland managed for biodiversity in this area. The provision of additional aquatic habitat and inclusion of nectar-rich species within the newly created grassland will increase the diversity of invertebrate prey present within the Site, thus increasing foraging opportunities for bats. The attenuation and swale features in the western parcel will support further bat foraging.

Residual Effects

3.6.28 Provided the above mitigation measures are implemented, the proposals will not result in any significant adverse effects on foraging and commuting bats.

Dormouse

3.6.29 The network of largely mature hedgerows provides suitable habitat for dormice with connectivity to the wider landscape, and their presence within the Site therefore cannot be ruled out.

Potential Impacts

3.6.30 The majority of hedgerow habitat will be retained with impacts avoided to these features; however, a number of small sections will be removed (56m in total). In the unlikely event that dormice are present within the Site, there is a risk of accidental injury/killing of individuals during habitat clearance works.

3.6.31 Removal of hedgerow habitat will reduce the extent of suitable dormouse habitat within the Site and may disrupt habitat connectivity within the Site and with habitat parcel in the wider landscape.

3.6.32 Mismanagement of retained hedgerows during the operational phase may also result in reduced suitability of habitats within the Site for dormice.

3.6.33 Residential development risks introduction of domestic cats which may predate on dormice, however given the proximity of the Site to existing residential properties and developed areas, this is considered likely to have a minor negative effect on dormice, if present.

Mitigation, Compensation, Enhancement and Monitoring

3.6.34 Per Section 3.5, appropriate fencing will be installed to protect retained hedgerows within the Site from inadvertent damage during the construction phase. This mitigation will also act to minimise the risk of disturbance to dormice that may be present within the hedgerows. This protective fencing will remain in place for the duration of works.

3.6.35 Given the small amount of habitat which requires clearance, with the largest single loss being 31m of H5 it is considered unlikely that dormice would be disturbed, or dormouse nests removed, during the proposed

[15] Bats and Artificial Lighting at Night – Guidance Note 08/23 (2023) Bat Conservation Trust, Institution of Lighting Professionals

works. As such, guidance from Natural England[16] suggests that the proposed work is unlikely to require a licence, though a precautionary approach to dormice should still be adopted.

3.6.36 As a precaution, hedgerow removal works will be carried out under a non-licensed RAMS. The details of the RAMS will be provided in a CEMP: Biodiversity for the Site and will include the following principles:

- A toolbox talk by an ecologist will be conducted prior to works, explaining the potential presence of this species and importance of following the prescribed working methods.
- Prior to the removal of vegetation it will be thoroughly inspected by an ecologist who holds a dormouse survey and handling licence. The ecologist will confirm the absence of nests within the vegetation to be cleared and within any areas of adjacent vegetation.
- The clearance of vegetation may take place at any time of year although undertaking the works between March and August will risk delays caused by nesting birds within or immediately adjacent to the vegetation to be removed.
- To avoid conflict with nesting birds it is recommended that vegetation is removed between September and February. Should clearance take place during the dormouse hibernation period (December – February) then the licensed ecologist will also carefully inspect the ground beneath the vegetation for hibernating animals. In the event a hibernation nest was found it would be left in place and works within this area would be restricted until a licence is obtained and dormice have emerged from hibernation (typically early May).
- Should dormouse nests be found works will stop and advice sought from Natural England on how to proceed.
- An ecologist will remain on-call throughout the construction phase to address any queries and provide additional support relating to dormice, as required.

3.6.37 Clearance of these small areas of habitat would not result in fragmentation of dormouse habitat.

3.6.38 Once operational any lighting required should be kept to a minimum using directional, low-level lighting only and avoiding the hedgerow features.

3.6.39 In the unlikely event that any nests (either summer nests or hibernation nests, active or otherwise) are found within the development footprint during Site works, all work must stop and the appointed Ecological Clerk of Works (ECoW) will assess whether a European Protected Species licence is likely to be required or if Natural England need to be informed to facilitate continued operations.

3.6.40 Retained hedgerows will be maintained outside of private ownership during the operational phase, and will be managed sympathetically to maximise biodiversity value, including benefits to dormice. Measures for enhancement and management will be detailed within a LEMP for the Site.

3.6.41 The provision of additional, species-rich hedgerow planting within the Site, and creation of scrub and orchard habitat will provide further benefits to dormice, if present. New planting should include species such as hazel, honeysuckle, and other flowering/fruiting plants that will provide foraging resources and nesting materials for dormice. New planting is provided to connect into the surrounding landscape.

Residual Effects

3.6.42 Impacts on dormice have been considered only on a precautionary basis, as their presence within the Site is unknown. However, if present, no significant negative impacts on dormice are anticipated as result of the development provided the above mitigation measures are adhered to.

Great Crested Newt (GCN) & Amphibians

3.6.43 Positive GCN eDNA results in three of the five off-site ponds surveyed confirm presence of GCN in proximity to the Site, alongside several records of GCN returned during the desk study. Habitats on Site were considered to provide suitable habitat for GCN and other common amphibian species, namely the limited scrub habitat, hedgerow bases and tussocky grassland.

[16] European Protected Species - How to get a licence, Natural England (2012)

3.6.44 Potential hibernation features for amphibians were also identified within the Site, including log piles and debris associated with the complex of buildings.

Potential Impacts

3.6.45 No ponds or suitable waterbodies will be lost as a result of the development. Although a small, isolated bioswale drainage feature was noted on Site, this was largely unsuitable for GCN, and only noted to have a very low level of water in during November, with all other site inspections between May and September showing it being dry.

3.6.46 The proposals will result in the loss of suitable terrestrial habitat for GCN and other amphibian species, which may provide habitat links between waterbodies in the local area. This includes the removal of several suitable hibernation features; destruction of these features and removal of suitable habitat has the potential to result in harm to individual amphibians that may be sheltering therein.

3.6.47 There is potential for GCN and other widespread amphibians to move within the construction area during works, resulting in killing or injury to individuals.

3.6.48 Where piles of materials are left during Site works, these could attract sheltering amphibians or basking reptiles, which could then be harmed when removed from the Site.

3.6.49 Construction works that are proposed and will occur within 250m of ponds returning positive records of GCN include; creation of attenuation features and associated pumping station along southern boundary, creation of allotments, creation of wildlife pond and surrounding landscaping within Field 5.

Mitigation, Compensation, Enhancement and Monitoring

3.6.50 To compensate for the loss of suitable terrestrial habitat for newts, it is recommended that the developer seek to register the Site with the Natural England District Level Licensing (DLL) Scheme for Wiltshire.

3.6.51 The DLL scheme will provide sufficient off-site habitat within the Wiltshire area to offset the proposed loss of terrestrial habitat for newts which have been confirmed as present within 250m of the Site.

3.6.52 The DLL will fully compensate for impacts to GCN which will result from the proposals and ensure the development is in line with legislation and local planning policy with regard to the conservation of this European protected species.

3.6.53 Following receipt of the GCN DLL, a precautionary approach to clearance of suitable habitats within the Site will likely be taken, as per Natural England's DLL guidance document and carried out under supervision from an appointed ECoW, details of which will be provided within a CEMP: Biodiversity for the Site.

3.6.54 Development proposals include the creation of attenuation features within the Site, and the creation of a wildlife pond within Field 5. The provision of additional waterbodies within the Site will increase the availability of suitable aquatic habitat for GCN.

3.6.55 Habitats within Field 5 and immediately surrounding the proposed attenuation ponds will provide suitable terrestrial habitat, namely diverse grassland and scrub, with connectivity to retained hedgerows on Site. Ensuring suitable ecological corridors are maintained within the Site, and between waterbodies, will enable GCN to move within and onto the Site from adjacent land. Establishment of diverse grassland will also provide improved foraging opportunities for GCN in their terrestrial phase.

3.6.56 As a further enhancement, it is recommended that two hibernacula, comprising partially buried logs and rubble, will be provided within the Site. These features will provide additional sheltering and hibernation opportunities for GCN and other amphibians, to be located along the southern margins of Field 5.

Residual Effects

3.6.57 Implementation of suitable mitigation, through entry into Natural England's DLL Scheme, will ensure no significant negative residual effects on GCN and other widespread amphibians result from the development. Therefore, the favourable conservation status of the local GCN population will be maintained. The provision of additional waterbodies, suitable terrestrial habitat and hibernation features within the Site may result in a minor positive effect for amphibians.

Reptiles

3.6.58 No reptiles were recorded on Site during the species-specific surveys. However, given the presence of suitable habitat, namely tussocky grassland, scrub and hedgerows, and anecdotal evidence of reptiles within the Site, their presence in low numbers remains possible.

Potential Impacts

3.6.59 Clearance of grassland, scrub, ruderal/ephemeral vegetation and sections of hedgerow will result in a loss of suitable habitat for reptiles. This includes the removal of several suitable hibernation/sheltering features.

3.6.60 Destruction of these features and removal of suitable habitat has the potential to result in accidental injury/killing of reptiles in the unlikely event that they are present on Site.

3.6.61 Reptiles, if present, could also be impacted by the proposals by machinery and vehicles tracking over suitable grassland habitat during construction.

Mitigation, Compensation, Enhancement and Monitoring

3.6.62 Precautionary clearance of habitats following the Natural England GCN guidelines (detailed above) will also ensure that impacts on any reptiles which may be present will also be avoided.

3.6.63 Clearance of suitable grassland will be undertaken during the reptile active season (April to mid-October inclusive), to ensure reptiles, if present, are motile and able to respond to disturbance. The grassland will be cleared in a directional manner under guidance from the ECoW.

3.6.64 Any potential hibernation features present within the Site will be subject to a finger-tip inspection by the ECoW, following which they will be carefully dismantled by hand during the reptile active season.

3.6.65 The diverse grassland and mixed scrub habitat to be created in Field 5 will provide suitable habitat for reptiles, and the provision of aquatic habitat may provide benefits for species such as grass snake.

3.6.66 As detailed in 'GCN & Amphibians' above, two hibernacula will be created within the Site which will also benefit reptiles, if present. It is recommended that log and brash piles are created to provide further sheltering opportunities for reptiles within the Site.

Residual Effects

3.6.67 Provided the above measures are adhered, no significant, residual adverse effects on reptiles, if present, are anticipated as a result of the development.

Birds

3.6.68 The Site is likely to support an array of common birds associated with urban fringe habitats, associated with the farmland, hedgerows and buildings.

Potential Impacts

3.6.69 There is potential for accidental injury/killing of nesting birds, their eggs or young during Site clearance.

3.6.70 The demolition of all buildings on Site will result in the loss of large areas of suitable nesting habitat for a number of species, as well as having the potential of disturbing or damaging current nesting if works are carried out during the bird nesting season.

3.6.71 The removal of some sections of hedgerow and scrub habitat will result in the loss of available nesting habitat, and the removal of grassland on Site will also result in a loss of foraging habitat for birds.

Mitigation, Compensation, Enhancement and Monitoring

3.6.72 It is recommended that, wherever possible, all building demolition works should be time to avoid the key bird nesting season (March to August inclusive).

3.6.73 If this is not possible, a check to confirm the absence of nesting birds should be carried out by a suitably experienced ecologist no more than 48 hours prior to the demolition taking place. This check would identify individual nests and life stages of the occupants (eggs, chicks, fledglings). Any active nests found would need to be appropriately protected until eggs have hatched and young fledged. Until the young have fledged, the nest should be subjected to regular monitoring to ensure that a second brood is not raised once the first brood has fledged.

3.6.74 It is recommended that vegetation clearance, namely of scrub, hedgerows and trees be undertaken using a two-stage approach to avoid impacts to other protected species that may be sheltering/hibernating at the base of vegetation (e.g. dormice, GCN & reptiles).

3.6.75 The first stage of vegetation clearance will be carried out to avoid the nesting bird season, and during the hibernation season for the species mentioned above (November– February inclusive). Vegetation will be cleared to a height of ~30cm above ground using hand-held tools only (e.g. chainsaws and brush cutters), and undertaken in a directional manner, as instructed by the ECoW.

3.6.76 If it is not possible to undertake this work outside of the nesting season, the vegetation clearance will be preceded by a nesting bird check by the EcoW.

3.6.77 All cut wood/brash will either be removed from the Site, chipped or burnt to prevent protected species from sheltering within. A proportion may be stored securely and used to create wildlife enhancement features.

3.6.78 The second stage of vegetation clearance may be carried out during the nesting bird season, as the vegetation will no longer be suitable for nesting, and will be timed to avoid the hibernation seasons of other protected species. This is detailed further in GCN and Reptiles above.

3.6.79 Measures to ensure the protection of retained hedgerows, and trees therein, during construction are outlined in Section 3.5 above.

3.6.80 Creation of diverse grassland habitat, new scrub, tree and hedgerow planting within the proposals will provide additional nesting and foraging opportunities for birds. Sympathetic management of these habitats for benefits to wildlife will be detailed within the LEMP.

3.6.81 In line with BS 42021:2022, one integrated nest box will be installed for each new dwelling. As per the standard this may result in more than one box being installed on a single unit. Integrated boxes should target species such as swifts and house sparrows. Details of the installation and maintenance of these features will be provided in the CEMP: Biodiversity and LEMP. It is recommended that swallow nest cups are included within these provisions on any suitable buildings to ensure nesting opportunities for this species are provided on Site following the loss of buildings.

3.6.82 It is recommended that further mitigation for nesting swallow be provided within Field 5. An open-fronted storage structure, e.g. a wood store, could be provided associated with the community orchard and allotments including a number of artificial swallow nest cups inside the building as it is often challenging to provide swallow mitigation on or within houses.

Residual Effects

3.6.83 Overall, no residual negative effects on birds are anticipated as a result of the proposals, provided the above mitigation measures are implemented. However, a minor negative effect on swallows may result from the development, given the extent of suitable nesting opportunities to be lost.

Invertebrates

3.6.84 No notable invertebrates were recorded, however the range of different habitat types within the Site, including hedgerows, orchard, scrub and grassland, provide suitable habitat.

Potential Impacts

3.6.85 The proposals will result in the loss of suitable habitat for a range of invertebrate species.

Mitigation, Compensation, Enhancement and Monitoring

3.6.86 The creation of habitats within Field 5, including diverse grassland, mixed scrub, wildlife pond and additional orchard habitat, will provide ecologically valuable habitat for a range of invertebrate species, including aquatic species.

3.6.87 As an enhancement, it is recommended that bee bricks are provided on at least half of new dwellings.

3.6.88 Provision of log/brash piles also suitable for reptiles and amphibians will deliver further enhancement.

Residual Effects

3.6.89 No residual negative effects on invertebrates are anticipated as a result of the development.

Brown Hare

3.6.90 Open grassland habitat that dominated the Site was considered suitable for brown hare, and anecdotal evidence of this species within the Site was provided.

Potential Impacts

3.6.91 Construction may result in accidental killing/injury of brown hare during clearance of the fields.

3.6.92 Proposals will result in the loss of grassland habitat suitable for brown hare, which may result in the displacement of this species from the Site in the absence of mitigation.

Mitigation, Compensation, Enhancement and Monitoring

3.6.93 A CEMP: Biodiversity will be prepared to detail sensitive habitat clearance measures and timescales to minimise direct mortality impacts on brown hare.

3.6.94 Creation of diverse grassland habitat within Field 5 will provide limited habitat for brown hare. This area of POS be used frequently by residents and dog walkers, and so is unlikely to be suitable for the species.

Residual Effects

3.6.95 No significant residual, negative impacts on brown hare are anticipated during construction. The proposals will result in the loss of suitable habitat for brown hare. However, given that the Site comprises urban fringe habitat immediately surrounded by residential properties and sports pitches and given the availability of optimal, more rural habitat in the wider landscape, the impact on brown hare resulting from loss of habitat within the Site is not considered to be significant.

Hedgehog and Harvest Mouse

3.6.96 Habitats within the Site were considered highly likely to support hedgehog, providing a range of foraging and sheltering opportunities.

3.6.97 Tussocky grassland within the Site was considered to provide suitable habitat for harvest mouse, although no evidence of this species was recorded during the survey or returned in the desk study. Their presence on Site is considered unlikely.

Potential Impacts

3.6.98 Hedgehogs could be disturbed, killed or injured during hedgerow/scrub removal, and removal of piles of logs and debris on Site. Hedgehogs could also be at risk or injury or death by falling into excavations within the construction Site. The removal of grassland habitat will decrease foraging opportunities for hedgehogs in the short-term.

3.6.99 The new development, including the erection of boundary fences, could exclude hedgehogs from a large portion of the Site.

3.6.100 Increased traffic within the Site presents a risk to hedgehogs from vehicular collision, potentially resulting in injury or mortality. However, given the slow vehicle speeds expected this is unlikely to be a significant risk.

3.6.101 Creation of new waterbodies within the Site may increase the risk of drowning, in the absence of mitigation.

3.6.102 The proposals will result in the loss of tussocky grassland habitat, suitable for harvest mice.

3.6.103 Residential development risks introduction of domestic cats which may predate on harvest mice, however given the proximity of the Site to existing residential properties and developed areas, this is considered likely to extend an extant impact rather than resulting in new impacts. Cat predation can nevertheless have a minor negative effect on harvest mice, if this species is present.

Mitigation, Compensation, Enhancement and Monitoring

3.6.104 The CEMP: Biodiversity will outline sensitive working measures for clearance of any habitats of value to hedgehogs and harvest mice. This will be in line with mitigation measures for other protected species.

3.6.105 Provision of undeveloped wildlife corridors around the Site will ensure that hedgehogs can continue to commute around the Site. Providing dropped curbs where access roads intersect grassland corridors and hedgerows will minimise physical barriers to hedgehog movement within the Site. It is also recommended that traffic calming measures are implemented within the Site reduce the likelihood of road traffic collisions.

3.6.106 During removal of hedgerows and scrub, the ECoW will first inspect the habitats to ensure no hedgehogs are present. If a hedgehog is found, it will be relocated into retained habitat outside the construction zone.

3.6.107 Any new open water bodies will be designed with wildlife in mind with shallow sloping margins where possible, allowing egress for any species which enter them.

3.6.108 Proposed species-rich grassland, community orchard, amenity grassland in gardens, scrub and hedgerows will provide additional foraging opportunities for hedgehogs, and suitable grassland habitat for harvest mice.

3.6.109 The creation of 13 cm x 13 cm access holes (or custom-made gravel boards) within new fences bounding residential gardens will allow hedgehogs to access the new gardens and move around the operational Site.

3.6.110 It is recommended that log/brash piles are created within the Site, which will provide additional sheltering opportunities for hedgehog.

Residual Effects

3.6.111 Provided the above mitigation measures are implemented, no significant residual, negative effects on hedgehog or harvest mice are anticipated as a result of the development.

Wall Cotoneaster

3.6.112 Wall cotoneaster, listed under Schedule 9 of the WCA, was noted within H11a.

Mitigation, Compensation, Enhancement and Monitoring

3.6.113 It is recommended that this invasive species is removed from the hedgerow during construction and landscaping works and replaced with native hedgerow species of local provenance. The specimen should be carefully removed and disposed of securely; methodology for this work will be provided within the CEMP: Biodiversity for the Site.

3.7 Summary of Assessment of Effects

3.7.1 The assessment of effects is summarised in Table 13 overleaf, which also outlines the proposed method to secure any relevant mitigation associated with reducing impacts.

Table 13: Summary of Assessment of Effects

Feature	Importance	Mitigation/Compensation Proposed	Residual Effect and Significance	Proposed Mechanism to Secure
Habitats				
Traditional Orchard	Local	Protect from inadvertent damage during construction through establishment of BPZs and installation of appropriate protective fencing. Creation of new community orchard habitat to mitigate for habitat loss and provide additional priority habitat.	Neutral	CEMP: Biodiversity LEMP
Hedgerows	Local	Protect from inadvertent damage during construction through establishment of BPZs and installation of appropriate protective fencing. Native species-rich hedgerow planting proposed to mitigate for habitat loss, as well as enhancement of existing hedgerows. Hedgerows to be maintained outside of private ownership during operation to ensure appropriate management.	Positive	CEMP: Biodiversity LEMP
Species				
Badger	Site	Pre-construction check no more than 2 months prior to commencement of works to confirm no setts have been created within the Site. Any trenches/pits should be covered overnight, or a plank provided at 45° to ensure no badger becomes trapped. Creation of diverse grassland, scrub and orchard habitat within Field 5 will provide badger foraging opportunities within the Site. Maintenance of undeveloped grassland buffers within Site will provide ecological corridors for badger commuting within the Site.	None	CEMP: Biodiversity LEMP
Bats (Roosting)	Negligible	Toolbox talk delivered to Site personnel outlining risks in relation to roosting bats. Inspection of buildings prior to demolition by licensed ecologist to confirm continued absence of evidence of roosting bats should more than two years elapse from date of internal building inspection.	None	CEMP: Biodiversity

Feature	Importance	Mitigation/Compensation Proposed	Residual Effect and Significance	Proposed Mechanism to Secure
		Provision of bat roost boxes will provide additional roosting opportunities within the Site.		
Bats (Foraging/Commuting)	Local	An undeveloped buffer will be maintained along the Site boundary and retained hedgerows to maintain the commuting value of the Site. Sensitive Lighting Strategy to be prepared to ensure sensitive approach to the use of artificial lighting to avoid impacts upon foraging and commuting bats. New planting on Site will include native, nectar-rich species and creation of aquatic habitat will attract a range of invertebrates and increase a feeding resource for bat populations to mitigate for the loss of grassland foraging habitat.	None	CEMP: Biodiversity Sensitive Lighting Strategy LEMP
Dormouse	Site	Retained hedgerows to be protected via establishment of BPZs. Non-licensed works to be carried out under RAMS to ensure any dormice and their habitat are protected during construction, if present. Creation of additional hedgerows and scrub will provide further suitable habitat for dormice within the Site.	None	CEMP: Biodiversity (including RAMS) LEMP
Great Crested Newt	Local	Licensed under DLL Scheme, following sensitive methodology stipulated by the license. Mitigation habitat to be provided by scheme. Creation of new attenuation features, wildlife pond, diverse grassland and scrub will provide suitable habitat for GCN. Provision of two hibernacula will provide sheltering habitat.	Minor Positive	Natural England DLL Scheme *Or* CEMP: Biodiversity (including RAMS) LEMP
Amphibians (exc. GCN)	Site			
Reptiles	Site	Sensitive habitat clearance and removal of hibernation features to avoid construction impacts. Creation of grassland and scrub mosaic will provide suitable habitat for reptiles. Aquatic habitat may benefit grass snake.	None	CEMP: Biodiversity LEMP

Feature	Importance	Mitigation/Compensation Proposed	Residual Effect and Significance	Proposed Mechanism to Secure
		Provision of two hibernacula and log/brash piles will provide suitable sheltering habitat.		
Birds	Site	Building demolition and Stage 1 vegetation clearance to take place outside of bird nesting season or be preceded by check by ECoW. Sensitive vegetation clearance to accommodate other protected species constraints and avoid construction impacts. Creation of diverse grassland, scrub, hedgerow and tress will provide suitable habitat for birds. Provision of one integrated nest box per dwelling, in line with BS 42021:2022. Additional nest boxes will provide enhancement. If possible, provide appropriate structure for swallow nesting within proposals.	None Possible Minor Negative on Swallows	CEMP: Biodiversity LEMP
Invertebrates	Site	Creation of diverse grassland, scrub and wildlife pond will provide suitable habitat for invertebrates. Provision of bee bricks and log/brash piles will provide enhancement.	None	LEMP
Brown Hare	Site	Sensitive habitat clearance measures to avoid construction impacts.	None	CEMP: Biodiversity LEMP
Hedgehog	Site	Sensitive habitat clearance measures and working methods to avoid construction impacts. Design new waterbodies with wildlife in mind. Creation of access holes within fencing to prevent exclusion of hedgehog. Creation of diverse grassland, scrub, orchard and hedgerows will provide suitable habitat. Provision of log/brash piles will provide sheltering habitat.	None	CEMP: Biodiversity LEMP
Harvest Mouse	Site			

Feature	Importance	Mitigation/Compensation Proposed	Residual Effect and Significance	Proposed Mechanism to Secure
Wall Cotoneaster	Site	Removal of cotoneaster from H11a and replace with native species.	N/A	CEMP: Biodiversity LEMP

4 CONCLUSIONS

4.1.1 The proposed development has the potential to result in adverse impacts upon a number of ecological features ranging from Local to Site Importance. However, avoidance, mitigation and compensation measures have been proposed to ensure that these adverse impacts are reduced as far as possible.

4.1.2 These measures include:

- A CEMP: Biodiversity will be prepared to detail all construction-phase habitat protection, supervision and impact avoidance measures to be adopted, including:
  - Sensitive working methods during Site clearance and construction to avoid impacts to protected species; and
  - Installation and maintenance of BPZs during construction to protect retained habitats;
- A LEMP will be produced which will detail operation phase mitigation, compensation, enhancement, management and monitoring measures;
- Maintenance of undeveloped buffer zones at Site boundaries and along retained hedgerows during construction and operational phases;
- Ensure retained and newly created hedgerows remain outside of private ownership and are managed sympathetically for wildlife;
- Creation of diverse grassland habitat, attenuation features, traditional orchard, allotments and residential gardens, and new hedgerow, scrub and tree planting, providing a range of habitats for different species; and
- A sensitive lighting strategy which preserves dark corridors and protects sensitive habitats.

4.1.3 Habitat creation and enhancement measures are proposed which should deliver a XX net gain for biodiversity, as quantified through the Defra 4.0 Biodiversity Metric. A full assessment of the Site to be provided within a stand-alone BNG report.

4.1.4 Enhancement measures include:

- Provision of a range of bat and bird boxes, hibernacula and log piles;
- Potential for provision of swallow nesting opportunities;
- Provision of hedgehog access gaps in fences;
- Enhancement and in-fill planting of retained boundary hedgerows;
- Creation of additional priority traditional orchard habitat; and
- Creation of attenuation pond to be managed for biodiversity providing aquatic habitat on Site.

4.1.5 Assuming the successful implementation of the measures described above the proposed development can be considered in line with Core Policy 50 of the Wiltshire Core Strategy 2026, as the scheme includes measures to retain and protect important ecological features and ensure their favourable management in the long-term. The proposals also include detailed measures to avoid potential impacts on protected species during the construction and operational phases of the development, as well as providing enhancements to both habitats and species on Site.

APPENDIX A: WILDLIFE LEGISLATION & SPECIES INFORMATION

BADGER

Badgers and their setts are protected under the Protection of Badgers Act 1992 (as amended) against damage or destruction of a sett, or disturbance, death or injury to the badgers. The Act defines a sett as "any structure or place which displays signs indicating current use by a badger". The definition of current use is subject to considerable debate. Natural England have produced guidance on the definition of current use. (*Badgers and Development – A guide to best practice and development. Natural England 2011*). Given the ambiguity surrounding the definition in all circumstances we would recommend an assessment of current use is always undertaken by a qualified ecologist. Natural Resources Wales (NRW) have a slightly different definition of current use. Please see the NRW website for further information. Penalties for offences against badgers or their setts include fines of up to £5,000 and/or up to six months in prison.

Disturbance of badgers could be caused by any digging activity or scrub clearance within 30 metres of an occupied sett and therefore every case needs to be assessed individually. Felling of trees close to a badger sett may also cause disturbance in some situations. Some activities such as pile driving may cause disturbance at even greater distances and should be discussed with Natural England or NRW.

Licences are issued by Natural England (or NRW in Wales) to allow the disturbance of badgers, and the destruction of their setts in certain circumstances, in relation to development. Full planning permission must be obtained before a licence application will be considered. Although licences can be applied for at any time of year, disturbance of badgers or exclusion of badgers from a sett can only take place between 1 July and 30 November, to avoid the breeding season when dependant young may be underground. This restriction may be relaxed in some cases where a sett is seasonal and badgers can be shown to be absent from a sett at that time of year.

BATS

All 17 species of bat known to breed in England and Wales, and their roost sites, are protected under the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019, known as the 'Habitats Regulations'. This makes it an offence to deliberately kill or injure a bat, or to deliberately disturb a bat such that its ability to hibernate, breed or rear young, or such that the species' distribution, were significantly affected. It is also an offence to damage or destroy any breeding site or resting place. Intentional or reckless disturbance of bats in their resting places, and damage to or obstruction of resting places are also offences under the Wildlife and Countryside Act 1981 (as amended). Under UK law a bat roost is "any structure or place which any wild [bat]...uses for shelter or protection". As bats tend to reuse the same roosts, legal opinion is that the roost is protected whether or not the bats are present at the time. Penalties for offences against bats or their roosts include fines of up to £5,000 and/or up to six months in prison.

As a result, development works which are likely to involve the loss of or alteration to roost sites, or which could result in killing of or injury to bats, need to take place under licence. Works which could disturb bats may also be licensable, though this needs to be assessed on a case by case basis, as bats' sensitivity to disturbance varies depending on normal background levels, and the definition of disturbance offences under the Habitats Regulations is complex. In practice this means that works involving modification or loss of roosts (typically in buildings, trees or underground sites) or significant disturbance to bats in roosts are likely to be licensable.

Licences can be obtained from Natural England or the Welsh Government to permit works that would otherwise be illegal, provided it can be demonstrated that the proposed works are needed to protect public health or safety, or for other reasons of overriding public interest including social and economic reasons. It is also necessary to demonstrate that there is no satisfactory alternative to the proposed works, and that the conservation status of bats in the area will be maintained. Appropriate mitigation and post-construction monitoring are therefore a requirement of all licences.

DORMOUSE

Dormice and their nests are protected in England and Wales under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, known as the 'Habitats Regulations'. This makes it an offence to deliberately kill or injure a dormouse, or to deliberately disturb a dormouse such that its ability to hibernate, breed or rear young, or such that the species' distribution, were significantly affected. It is also an offence to damage or destroy any breeding site or resting place. Intentional or reckless disturbance of dormice in their nests, and damage to or obstruction of nests are also offences under the Wildlife and Countryside Act 1981 (as amended). Penalties for offences against dormice or their nests include fines of up to £5,000 and/or up to six months in prison.

As a result, development works which are likely to involve the loss of nest sites, or which could result in killing of or injury to dormice, need to take place under licence. Works which could disturb dormice may also be licensable, though this is rarely the case unless loss of dormouse habitat is also proposed and should be assessed on a case by case basis. In practice this means that works involving any removal of habitat (typically woodland, hedgerows, and scrub) supporting dormice are likely to be licensable.

Licences can be obtained from Natural England or the Welsh Government to permit works that would otherwise be illegal, provided it can be demonstrated that the proposed works are needed to protect public health or safety, or for other reasons of overriding public interest including social and economic reasons. It is also necessary to demonstrate that there is no satisfactory alternative to

the proposed works, and that the conservation status of dormice in the area will be maintained. Appropriate mitigation and post-construction monitoring are therefore a requirement of all licences.

AMPHIBIANS

Great Britain supports seven native amphibian species. The four most widespread species; smooth and palmate newts, common frog, and common toad, receive partial protection under the Wildlife and Countryside Act 1981 (as amended) which prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy. The great crested newt, pool frog and natterjack toad are also fully protected in England and Wales under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Penalties for offences against amphibian species include fines of up to £5,000 and/or up to six months in prison.

Four amphibian species (great crested newt, pool frog, common toad, natterjack toad) are listed as priority species under the UK Biodiversity Action Plan, and are therefore considered to be Species of Principal Importance in England and Wales (excluding the pool frog, which does not occur in Wales) under the Natural Environment and Rural Communities (NERC) Act 2006. All public bodies including local and regional authorities have a duty under this legislation to have regard for the conservation of biodiversity.

GREAT CRESTED NEWT

Great crested newts are protected in England and Wales under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, known as the 'Habitats Regulations'. This makes it an offence to deliberately kill or injure a great crested newt, or to deliberately disturb a great crested newt such that its ability to hibernate, breed or rear young, or such that the species' distribution, were significantly affected. It is also an offence to damage or destroy any breeding site or resting place for great crested newts. Intentional or reckless disturbance of great crested newts in places of shelter (ponds or terrestrial refuges), and damage to or obstruction of places of shelter are also offences under the Wildlife and Countryside Act 1981 (as amended). Penalties for offences against great crested newts include fines of up to £5,000 and/or up to six months in prison.

As a result, development works which are likely to involve the loss of ponds or terrestrial habitat, or which could result in killing of or injury to great crested newts, need to take place under licence. Works which could disturb great crested newts may also be licensable, though this is rarely the case unless loss of great crested newt habitat is also proposed and should be assessed on a case by case basis. In practice this means that works involving any removal of or significant modification to ponds or terrestrial habitats (typically rough grassland, scrub, hedgerow bases and woodland) supporting great crested newts are likely to be licensable.

Licences can be obtained from Natural England or the Welsh Government to permit works that would otherwise be illegal, provided it can be demonstrated that the proposed works are needed to protect public health or safety, or for other reasons of overriding public interest including social and economic reasons. It is also necessary to demonstrate that there is no satisfactory alternative to the proposed works, and that the conservation status of great crested newts in the area will be maintained. Appropriate mitigation and post-construction monitoring are therefore a requirement of all licences.

REPTILES

All six native reptile species receive protection under the Wildlife and Countryside Act 1981 (as amended). The four more common species (common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, adder *Vipera berus* and grass snake *Natrix natrix*) receive partial protection which makes it an offence to intentionally kill or injure a reptile. The two other reptile species (smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis*), both of which are rare with very restricted UK ranges receive full protection under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Penalties for offences against reptile species include fines of up to £5,000 and/or up to six months in prison.

Works such as site clearance or topsoil stripping which could result in killing or injury of reptiles could be considered result in an offence unless measures are taken to minimise the risk of this occurring. Any inadvertent impacts on common reptile species despite these mitigation measures being in place would be considered an 'incidental result of an otherwise lawful operation' which 'could not reasonably have been avoided' and therefore not an offence. Works which could affect smooth snakes or sand lizards, or their habitats, would need to take place under licence from Natural England or Natural Resources Wales. However, sites supporting smooth snakes or sand lizards are very rarely affected by development proposals.

In practice, mitigation for impacts of development on common reptiles generally comprise one or more of the following techniques: displacement, in which reptiles are encouraged to move to suitable retained habitat by changing the management of areas affected by development; exclusion, where reptile-resistant fencing is provided between a development site and suitable retained habitat allowing reptiles to be trapped from the development footprint and released elsewhere on the site; and translocation, where animals are trapped from a development site and released on another suitable site nearby. Reptile mitigation proposals, particularly those involving translocation of animals, should be agreed in advance with the local planning authority.

BIRDS

All British birds, their nests and eggs (with certain exceptions) are protected under the Wildlife & Countryside Act 1981 (as amended) which makes it an offence to: intentionally kill, injure or take a wild bird; intentionally take, damage or destroy nests which are in use or being built; intentionally take or destroy birds' eggs; or possess live or dead wild birds or eggs. A number of species receive

additional protection through inclusion on Schedule 1 of the Wildlife and Countryside Act; for these it is also an offence to intentionally or recklessly disturb birds while nest building, or at a nest containing eggs or young, or to disturb the dependant young of such a bird. Penalties for offences against bird species include fines of up to £5,000 and/or up to six months in prison.

General licences for control of some bird species are issued by Natural England and Natural Resources Wales in order to prevent damage or disease, or to preserve public health or public safety, but it is not possible to obtain a licence for control of birds or removal of eggs/nests for development purposes. Consequently if nesting birds are present on a development site when works are programmed to start it is usually necessary to delay works, at least in the areas supporting nests, until any chicks have fledged and left the nest. It is usually possible, once chicks have hatched, for an experienced ecologist to predict approximately when they are likely to fledge, in order to inform programming of works on site.

PLANNING POLICY IN RELATION TO BIODIVERSITY

The National Planning Policy Framework (NPPF), was published in March 2012, revised in July 2021, with a further revision in September 2023. Additional guidance can be found online at http://planningguidance.planningportal.gov.uk/blog/guidance/. The NPPF simplifies and collates a number of previous planning documents and outlines the government's objective towards biodiversity.

The NPPF identifies ways in which the planning system should contribute to and enhance the natural and local environment (Paragraph 174), including:

- (a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- (b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- (d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- (e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- (f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate. protecting and enhancing valued landscapes, geological conservation interests and soils;

It also emphasises the importance of conserving biodiversity and areas covered by landscape designations (Paragraph 176):

Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in all these areas, and should be given great weight in National Parks and the Broads. The scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.

When determining planning applications, the NPPF states that local planning authorities should aim to conserve and enhance biodiversity (Paragraph 180) by applying principles including:

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

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

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

There is a general presumption in favour of sustainable development within the NPPF. It is noted in Paragraph 182 that this presumption does not apply where the plan or project is likely to have a significant effect on a habitat site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

The Natural Environment and Rural Communities Act (2006) states that a 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 biodiversity; Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat". DEFRA issued further guidance on implementation of this act in the document; Guidance for Local Authorities on Implementing the Biodiversity Duty (May 2007), which notes that "Conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them".

The Environment Act (2021) was passed into law in November 2021. This Act is comprised of 8 Parts and sets out targets for conservation and environmental betterment along with a system for their implementation, including the creation of a new Office for Environmental Protection (OEP). Of particular pertinence to Ecology is Part 6 – Nature and biodiversity, which includes a mandatory requirement for developments to deliver a minimum 10% biodiversity net gain (as quantified through an approved metric such as the Defra 4.0 metric). Such gains must be secured for a minimum of 30 years post-completion of development.

For most schemes, Net Gain shall be secured through an amendment to the Town and Country Planning Act, which is likely to be passed into law in 2023. Nationally Significant Infrastructure Projects (NSIPs) will also be subject to this requirement, but this will be secured through the Planning Act 2008, which means that for NSIPs the mandatory net gain requirement will not be in place until 2025. Certain small schemes are exempt from the requirement for delivering net gain.

It is important to note that in the meantime, Local Planning Authorities across the country have already adopted their own, differing policies regarding net gain. Several stipulate no net loss as a minimum, whilst others have 10% or even 20% requirements.

ECOLOGICAL ENHANCEMENTS

The Natural Environment and Rural Communities Act (2006) states that a 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 biodiversity; Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat". DEFRA issued further guidance on implementation of this act in the document; Guidance for Local Authorities on Implementing the Biodiversity Duty (May 2007), which notes that "Conserving biodiversity can include restoring or enhancing a population or habitat"".

In England, the National Planning Policy Framework (NPPF), issued in September 2023, states that the planning system should contribute to "*minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*. It also states that "*opportunities to incorporate biodiversity in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity*".

UK BIODIVERSITY ACTION PLANS

The UK Biodiversity Action Plan (UK BAP) 2011 is a policy first published in 1994 to protect biodiversity and stems from the 1992 Rio Biodiversity Earth Summit. The policy is continuously revised to combine new and existing conservation initiatives to conserve and enhance species and habitats, promote public awareness and contribute to international conservation efforts. Each plan details the status, threats and unique conservation strategies for the species or habitat concerned, to encourage spread and promote population numbers.

Species or habitats identified as priorities under the UK Biodiversity Action Plan receive some status in the planning process through their identification as Species/Habitats of Principal Importance in England and Wales, under the Natural Environment and Rural Communities (NERC) Act 2006 (as amended).

Current planning guidance in England, the National Planning Policy Framework, does not specifically refer to Species or Habitats of Principal Importance, though it includes guidance for conservation of biodiversity in general. Supplementary guidance is available online at http://planningguidance.planningportal.gov.uk/blog/guidance/ and this guidance indicates that it is '*useful to consider*' the potential effects of a development on the habitats or species on the Natural Environment and Rural Communities Act 2006 section 41 list.

PROTECTED PLANTS

All wild plants receive some protection under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence for any unauthorised person to intentionally uproot any wild plant. Additionally, certain rare species of plants listed on Schedule 8 of the Act are given greater protection. For these species, it an offence to intentionally pick, uproot or destroy them, or to possess or sell them (live or dead), or anything derived them. Penalties for offences under this legislation include fines of up to £5,000 and/or up to six months in prison.

Schedule 8 of the Act is reviewed every 5 years, but currently it includes 185 species or sub-species of vascular plants, bryophytes (mosses, liverworts and hornworts), lichens and stoneworts (see www.jncc.gov.uk for current list), all protected due to their rarity and/or restricted distributions.

Works which could result in uprooting or destruction of plants listed on Schedule 8 of the Act could result in an offence being committed, unless measures are taken to minimise the risk of this occurring. Any inadvertent impacts on Schedule 8 plants despite these mitigation measures being in place, and impacts on other plant species during development works, would be considered an 'incidental result of an otherwise lawful operation' which 'could not reasonably have been avoided' and therefore not an offence.

In practice, the mitigation measures required on the very rare occasions when Schedule 8 plants are affected by development proposals will be determined by the ecological requirements of the species concerned, and any mitigation strategy should be agreed in advance with Natural England or Natural Resources Wales.

THE HEDGEROWS REGULATIONS

In England and Wales the Hedgerows Regulations (1997) as amended confer a level of protection on hedgerows (though hedgerows within or bordering domestic gardens are excluded), particularly those hedgerows classified as 'Important' under the legislation. The Regulations require those wishing to remove hedgerows to submit a Hedgerow Removal Notice to the Local Planning Authority (LPA), which will then determine whether the hedgerow affected is classified as 'Important' under the Regulations. If it is, the LPA will either approve the proposed hedgerow removal, or issue a retention notice. It is an offence to remove or destroy a hedgerow which is subject to a retention notice, or to remove one without a removal notice.

Routine management of hedgerows, removal of hedgerows for development which has been granted planning consent, and certain other situations are allowed under the Regulations, which also specifically exclude hedgerows within or bordering domestic gardens. Determination of whether a hedgerow should be classified as 'Important' is based on a number of criteria including assessment of its likely historic value (e.g. old parish boundary or part of an ancient monument), ecological value (e.g. presence of protected species, and/or diversity of tree/shrub species in the hedgerow), and landscape value (e.g. associated with a public footpath, or being associated with hedgebanks, ditches, hedgerow trees etc).

Ancient and species-rich hedgerows are listed as a priority habitat in the UK Biodiversity Action Plan (2011)

APPENDIX B: FURTHER BOTANICAL SURVEY RESULTS

In order to correctly classify and assess the condition of grassland habitats within the Site under UKHab and for the purposes of Biodiversity Net Gain calculations, a further botanical survey was undertaken. Five 1x1m quadrats were taken in each grassland field to obtain a representative species list. The species recorded in each quadrat are listed in Table Bt1 below.

Full species lists for Fields 1, 2 and 3 have been provided in Table Bt2, to aid justification for the classification of these fields as ONG.

Table Bt1: Botanical Survey Results

Location		Field 1					Field 2					Field 3					Field 4					Field 5				
Common Name	**Scientific Name**	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Cock's foot		✓									✓	✓	✓	✓	✓	✓								✓	✓	✓
Common mouse-ear											✓	✓	✓		✓	✓		✓	✓		✓					
Common sorrel										✓	✓			✓	✓											
Creeping bent		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	
Crested dog's tail					✓															✓						
Cut-leaved cranesbill			✓	✓		✓		✓				✓		✓												
Daisy						✓		✓	✓																	
Italian ryegrass					✓																	✓				
Meadow barley													✓			✓						✓				
Meadow brome																							✓	✓	✓	
Meadow buttercup										✓	✓		✓	✓	✓	✓				✓	✓					
Meadow foxtail			✓		✓	✓							✓		✓	✓	✓	✓			✓		✓	✓	✓	
Perennial ryegrass			✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Red clover						✓			✓	✓		✓	✓		✓					✓						
Red fescue											✓			✓	✓	✓				✓					✓	
Ribwort plantain				✓		✓	✓		✓	✓	✓	✓	✓			✓										
Rough meadow grass					✓																					
Silverweed			✓																	✓						
Smooth meadow grass												✓										✓				
Soft brome				✓			✓																			
Yarrow													✓													
Yorkshire fog		✓								✓			✓	✓	✓	✓						✓	✓	✓	✓	✓
Total No. of Species per Quadrat		3	5	5	5	7	8	10	7	10	9	4	4	4	9	7	3	4	3	6	4	6	5	5	7	3
Average No. of Species per Quadrat		**5**					**8.8**					**5.6**					**4**					**5.2**				

Table Bt2: Full Botanical Species Lists for Fields 1, 2 and 3

Field No.	Species List	Total No. of Species
1	Bristly ox-tongue, broad-leaved dock, cats' ear, cock's foot, common bird's foot trefoil, common mouse-ear, creeping bent, creeping buttercup, creeping cinquefoil, crested dog's tail, cut-leaved cranesbill, daisy, dandelion, false oat grass, greater plantain, ground ivy, hogweed, Italian ryegrass, meadow barley, meadow brome, meadow buttercup, meadow foxtail, ox-eye daisy, perennial rye, pineapple-weed, red clover, ribwort plantain, rough meadow grass, shepherd's purse, silverweed, smooth meadow grass, soft brome, sweet vernal grass, white clover, yarrow, and Yorkshire fog.	36
2	Cock's foot, common bird's foot trefoil, common knapweed, common mouse-ear, common sorrel, creeping bent, creeping buttercup, cut-leaved cranesbill, daisy, dandelion, meadow buttercup, meadowsweet, perennial rye, red clover, red fescue, ribwort plantain, soft brome, white clover, yarrow, and Yorkshire fog.	20
3	Cock's foot, common bird's foot trefoil, common knapweed, common mouse-ear, common sorrel, creeping bent, creeping buttercup, cut-leaved cranesbill, daisy, dandelion, meadow barley, meadow buttercup, meadow foxtail, perennial rye, red clover, red fescue, ribwort plantain, smooth meadow grass, white clover, yarrow, and Yorkshire fog.	21

APPENDIX C: DETAILED BAT SURVEY METHODOLOGY AND RESULTS

C1: Methodology

Dusk Emergence Survey

Buildings 2, 4 and 5, considered to be of 'low' bat roost potential, were subject to a single dusk emergence survey on 24th August 2023, in line with BCT Survey Guidelines. The purpose of the survey was to establish presence or likely absence of roosting bats within the buildings, and record the access point, species, number, and flight paths of any bats emerging from the buildings.

The survey was undertaken by Charlie Durigan and Molly Brown, and the surveyors were positioned around the building to ensure all elevations requiring monitoring could be adequately observed, as far as possible (Figure Cf1 refers). The survey commenced 15 minutes before sunset and continued for 1.5 hours after sunset. The surveyors were equipped with handheld bat detectors and appropriate recording devices (Echo Meter Touch and iPad Mini). The survey effort was augmented through the use of a thermal imaging camera (FLIR E96) deployed at Surveyor Location A.

The survey was undertaken on a warm, still evening (>10°), to ensure optimal conditions for emergence and foraging activity (insect activity being significantly reduced at low temperatures). Table Ct1 below provides the timings, personnel and weather details during the survey.

Table Ct1: Emergence Survey Details

Date	Surveyors	Sunset Time	Survey Start/End Time	Weather Conditions at Start	Weather Conditions at End
24.08.2023	Charlie Durigan Molly Brown	20:13	19:58 – 21:45	Temp = 19°C, Wind = 0/12, Cloud = 4/8, Dry	Temp = 17°C, Wind = 1/12, Cloud = 6/8, Dry



Figure Cf1: Dusk Emergence Survey – Surveyor Locations

Recordings made were subsequently analysed using computer software (Kaleidoscope) to confirm bat species recorded, and footage from the thermal imaging camera was also manually analysed to identify any bat activity that may not have been observed by the surveyor during the survey.

Activity Transect Surveys

The transect surveys were undertaken according to the BCT Bat Survey Guideline and involved surveyors walking a pre-determined transect at a constant speed, equipped with handheld bat detectors and recording devices (Echo Meter Touch and iPad Mini, Anabat Scout).

Surveys were undertaken once per season (Spring, Summer and Autumn 2023) and were only undertaken when weather conditions were suitable for bats to emerge and feed, i.e. little to no rain, no strong wind, and air temperatures above 10°C.

The transect route was designed to provide a balanced overview of bat activity across the entire Site. A total of twenty stopping points were included within the survey, to enable comparison of spatial and temporal levels of bat activity across the Site (Figure Cf2 refers). The duration of the transect survey was 2 hours, commencing at sunset, generally allowing for two laps of the transect route to be completed. Three-minute stops were taken at each stopping point on the first lap; however, the stops were shortened to one minute on the second lap during the May and July surveys as temporary fencing within the Site restricted the access of surveyors along the route. This is acknowledged as a minor limitation.

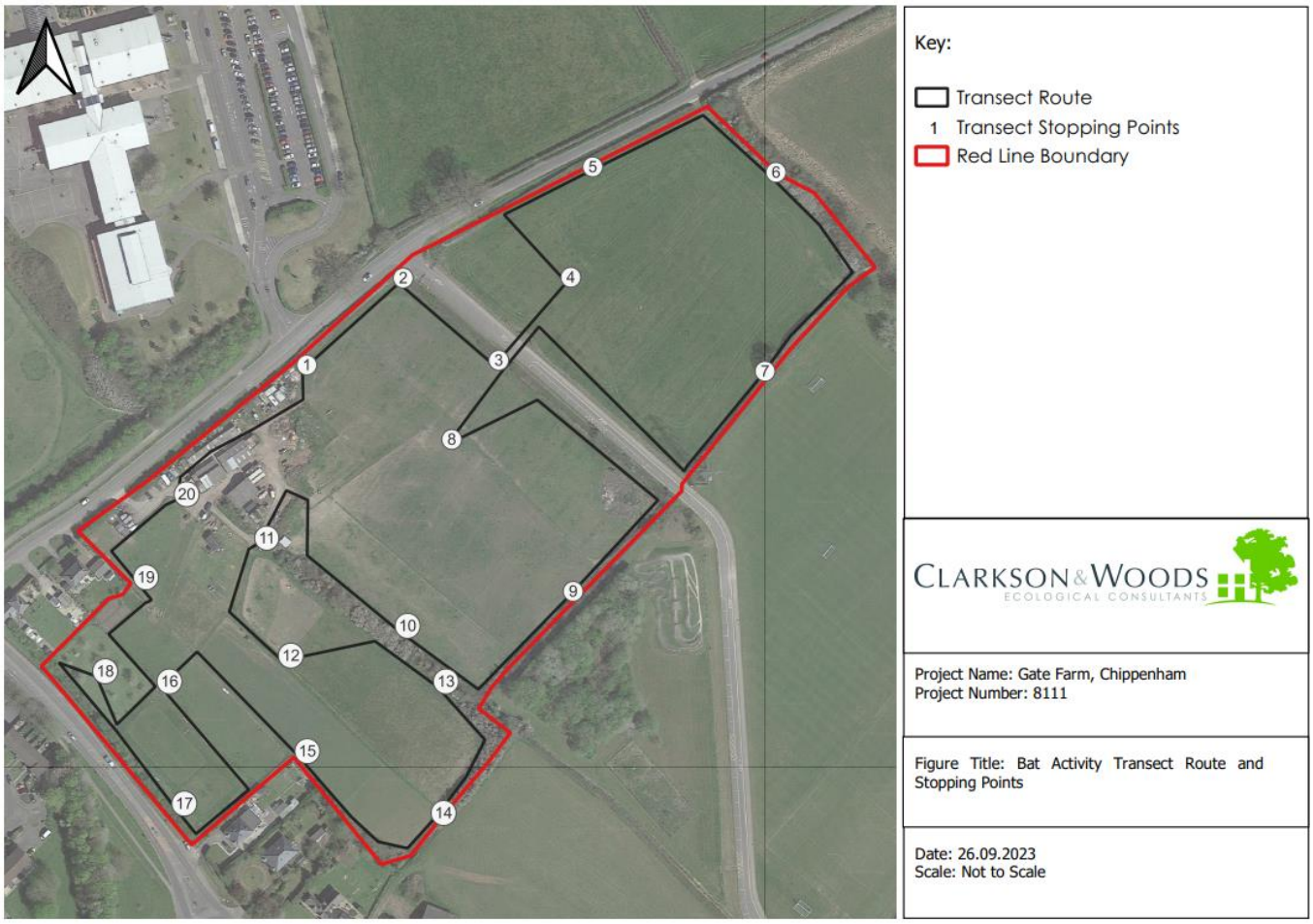


Figure Cf2: Activity Transect Survey – Transect Route and Stopping Points

Commuting bats and their direction of travel were easily observed immediately following sunset when light levels were high. As light levels dropped, observation of bat behaviour was often not possible and therefore behaviour such as: 'pass'; 'foraging'; or simply 'heard not seen' was recorded. Foraging was only recorded if feeding buzzes were heard or bats were observed catching or attempting to catch prey. Single bat passes were defined as bat calls that separated from other bat calls by at least one second.

Recordings made were subsequently analysed using computer software (Kaleidoscope) to confirm bat species recorded.

Table Ct2 below provides the survey dates, timings, personnel and weather details for each of the activity transect surveys.

Table Ct2: Activity Transect Survey Details

Date	Surveyors	Sunset Time	Survey Start/End Time	Weather Conditions at Start	Weather Conditions at End	Stopping Point at Start
18.05.2023	Henry Sturgess Miranda Jones	20:59	20:59 – 22:59	Temp = 15°C, Wind = 1/12, Cloud = 8/8, Dry	Temp = 12°C, Wind = 1/12, Cloud = 8/8, Dry	1
12.07.2023	Molly Brown Alfie Dickens	21:22	21:22 – 23:22	Temp = 16°C, Wind = 1/12, Cloud = 3/8, Dry	Temp = 14°C, Wind = 0/12, Cloud = 5/8, Dry	1
05.09.2023	Sarah Richards Alfie Dickens	19:47	19:47 – 21:47	Temp = 25°C, Wind = 1/12, Cloud = 0/8, Dry	Temp = 23°C, Wind = 0/12, Cloud = 0/8, Dry	1

Static Detector Surveys

Six automated static detectors (Anabat Swift or SM Minis) were deployed once per season for a minimum period of seven consecutive nights to record bat activity at the selected locations. The deployment dates are detailed in Table Ct3 and the detector locations are shown in Figure Cf3 below. These locations were selected to focus on key habitat features identified during prior surveys, namely field boundaries. All detectors were programmed to begin recording from 30 minutes before sunset and end recording 30 minutes after sunrise.

Recordings made were subsequently analysed using Kaleidoscope software and bat species and the number of bat passes was identified.

Table Ct3: Static Detector Survey Details

Date Deployed	Surveyor(s)	Date Collected	Surveyor(S)	No. of Nights Surveyed	Weather Conditions
18.05.2023	Miranda Jones	25.05.2023	Molly Brown Bryan Tan	7/7	Min. Overnight Temp = 4-9°C, Avg. Wind Speed = 7-11mph, Dry
12.07.2023	Molly Brown Alfie Dickens	19.07.2023	Alfie Dickens	7/7	Min. Overnight Temp = 9-16°C, Avg. Wind Speed = 3-20mph, Dry
05.09.2023	Sarah Richards Alfie Dickens	12.09.2023	Bryan Tan	7/7	Min. Overnight Temp = 7-15°C, Avg. Wind Speed = 3-12mph, Dry

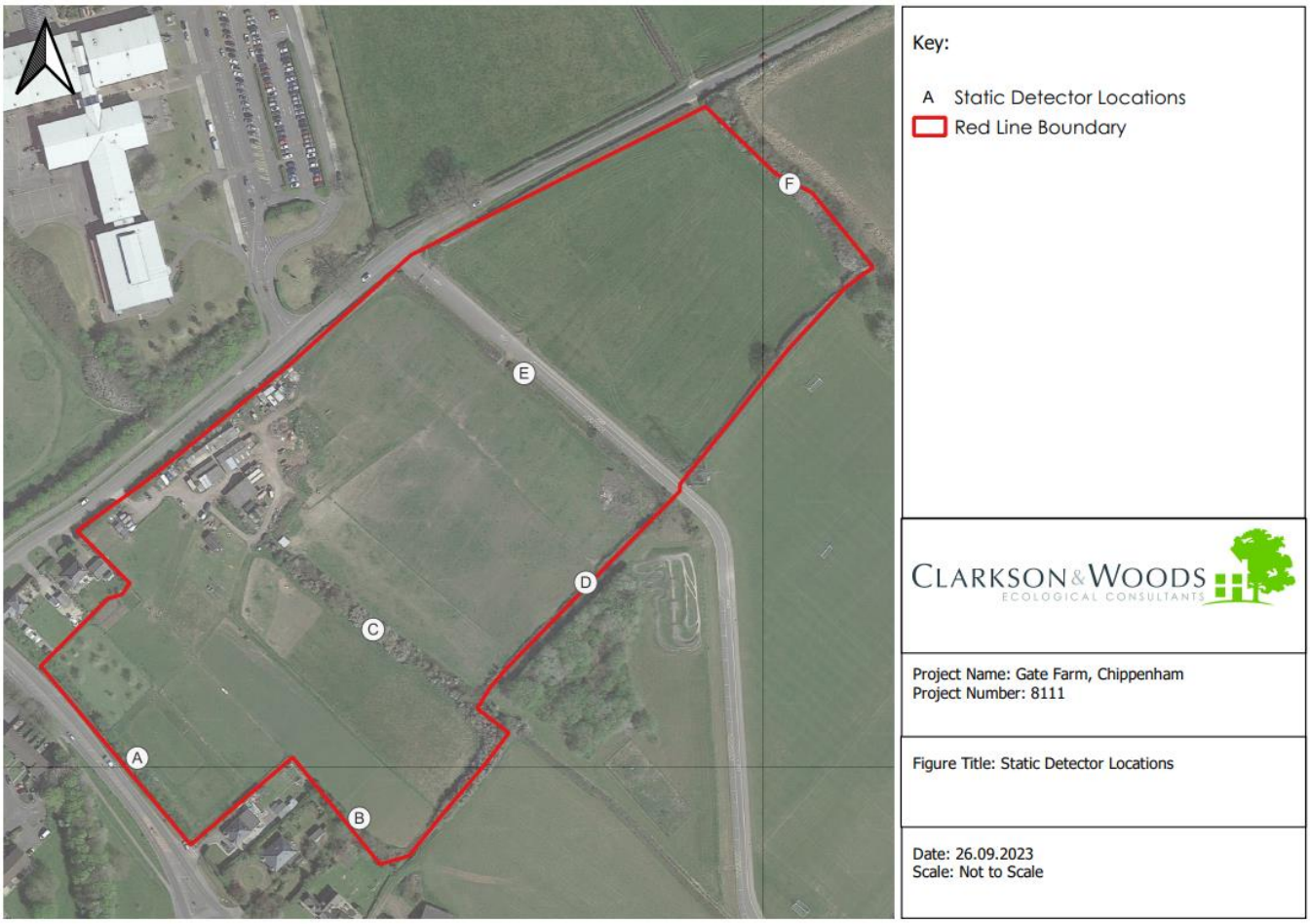


Figure Cf3: Static Detector Survey - Detector Locations

C2: Limitations

Bat detectors are known to be more sensitive to certain bat calls than to others for reasons such as varying bat call loudness and directionality of certain calls. This can result in certain bat species (notably horseshoe, barbastelle and long-eared bats) being under-recorded due to the limitations of the current bat detectors. The difference in recording efficiency may therefore bias any results and this has been taken into account where possible during any assessment of the results.

Kaleidoscope Pro automatically identifies bat calls using various algorithms and provides statistical levels of confidence associated with each classified call. The confidence levels reflect the fact that there will be certain classification errors related to every classified bat call. With experience of using the software it is, on the whole, reliable when identifying certain bat calls, especially horseshoe bat calls due to their simple and unmistakeable parameters. Other straightforward species are common pipistrelle, soprano

pipistrelle, noctule and serotine. However, the software has been found to be less reliable when identifying other species (long-eared, Leisler's and barbastelle bat species).

The software does not accurately distinguish between the various Myotis species and simply classifies them to genus level (i.e. Myotis sp.). This is in line with classification that would be achieved by manual identification due to the similar nature of Myotis calls making species classification subject to a high degree of error. The on-board software used by the Echo Meter Touch does, however, distinguish between Myotis species but this has been found to be inconsistent.

Due to the software limitations a percentage of calls are manually verified to confirm the identification made by the software is accurate. Furthermore, where the software is unsure of a bat call, it will classify the call as 'NoID'. For completeness, all NoID files were classified, where appropriate. Noise files were not checked as the vast majority of these cannot be analysed or attributed to bats or their calls.

Additionally, automated detectors are triggered to record when suitable ultrasound is detected and will not cease recording until either a window of 1 second of silence is recorded (or if 30s elapses since the trigger, whichever is sooner). If more than one species is present within a trigger, the software is only able to classify one species per trigger and so is forced to decide which species is 'dominant'. This potentially results in an under-recording of species which are quieter (such as horseshoe bats) or species which have a longer pulse repetition rate.

In conclusion, the classification data produced from Kaleidoscope Pro, along with manual verification of records is considered to provide an acceptably accurate record of bat species recorded by a static bat detector and as such has been used within this report.

C3: Detailed Results

Static Detector Surveys

Table C4 below provides a detailed breakdown of the static detector survey data for each species across the three deployments (spring, summer and autumn), in relation to detector location.

Table Ct4: Summary of Static Detector Survey Data

Month	Location	Barbastelle	Serotine	Myotis sp.	Nyctalus sp.	Nathusius' Pipistrelle	Common Pipistrelle	Soprano Pipistrelle	Brown Long-eared	Lesser Horseshoe	Greater Horseshoe	Total Passes	
May	A	0	84	6	881	0	168	23	2	0	1	1165	3656
	B	1	71	8	236	0	112	25	5	0	0	458	
	C	0	14	6	258	22	134	68	0	0	0	502	
	D	0	5	6	126	0	455	109	4	0	2	707	
	E	0	5	2	128	0	137	168	9	0	0	449	
	F	4	10	17	22	0	189	120	12	0	1	375	
July	A	0	93	2	1454	12	1686	215	4	0	0	3466	5800
	B	0	39	4	71	0	87	14	1	0	0	216	
	C	0	9	0	83	1	534	24	4	0	0	655	
	D	0	6	1	5	0	59	5	0	0	1	77	
	E	0	28	2	120	0	384	41	3	0	0	578	
	F	1	6	15	188	0	158	432	8	0	0	808	
September	A	2	63	100	167	0	4169	780	26	5	0	5312	11199
	B	8	12	134	53	0	286	102	39	1	2	637	
	C	1	5	35	245	0	1497	133	15	0	2	1933	
	D	2	33	90	88	1	883	325	19	3	1	1445	
	E	2	29	65	104	0	695	234	21	7	0	1157	
	F	12	20	89	51	0	365	159	15	2	2	715	

APPENDIX D: DETAILED REPTILE SURVEY METHODOLOGY

A total of 50 artificial refuges comprising 0.5m x 0.5m squares of roofing felt and corrugated tin sheets were deployed around the margins of the Site in habitats suitable for basking reptiles and in areas least likely to be disturbed. These materials rapidly heat up in even in relatively low levels of sun to temperatures higher than the current ambient or ground temperatures: making them attractive to basking reptiles. The function of these artificial refuges was to provide discrete areas for basking so that reptiles may be recorded more efficiently.

Refuges were deployed across the Site on 18th May 2023 and subsequently allowed to 'bed in' for at least 10 days so that reptiles could become accustomed to their presence, locate and use them. Figure Df1 shows the location of refuges deployed.



Figure Df1: Reptile Survey – Refugia Locations

Seven survey visits were then conducted between 01.06.2023 and 03.07.2023. During the survey visits, experienced and trained surveyors carefully inspected all refuges, walking slowly between refuges to avoid disturbing reptiles prior to checking them. Surveys were only carried out during suitable weather conditions (mostly dry and between 9 - 18°C) in accordance with best practice guidelines. This methodology is in line with the Froglife Reptile Survey Guidance (1999) and the Herpetofauna Workers' Manual.

Table Dt1: Reptile Survey Dates, Personnel and Weather Conditions

Survey No.	Survey Date	Surveyors	Weather Conditions	Timings
1	01.06.2023	Alfie Dickens	Temp = 14°C; Wind = 1/12; Cloud = 4/8; Dry	11:30 – 13:00
2	06.06.2023	Alfie Dickens	Temp = 14°C; Wind = 2/12; Cloud = 4/8; Dry	14:00 – 15:30
3	07.06.2023	Rebecca Sandey	Temp = 13-15°C; Wind = 1/12; Cloud = 8-1/8; Dry	10:30 – 12:00
4	12.06.2023	Bryan Tan	Temp = 17°C; Wind = 0/12; Cloud = 7/8; Dry during survey but had rained overnight.	07:15 – 08:20
5	20.06.2023	Miranda Jones	Temp = 16°C; Wind = 0/12; Cloud = 1/8; Dry	11:00 – 12:30
6	22.06.2023	Miranda Jones	Temp = 18°C; Wind = 0/12; Cloud = 1/8; Dry	09:15 – 10:30
7	03.07.2023	Alfie Dickens	Temp = 16°C; Wind = 2/12; Cloud = 3/8; Dry	10:00 – 11:30

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