

[REDACTED]

From: hannah [REDACTED] >
Sent: 28 January 2022 13:58
To: Planning
Subject: Comment 21/2527/FH Cold Harbour CT21 5UT
Attachments: Cold Harbour PLanning Application .docx; Magic Woodland layers for Cold Harbour and environs and Google Earth aerial.docx; Screen shots from Shepway Interactive Map.docx

Dear Chief Planning Officer

Please find attached my comment and supporting documents for planning application 21/2527/FH, the copies of the EIA's referenced in my comment will follow under separate cover (the files are too big for the server to send all together)

With many thanks,

Hannah Epps

Sent from [Mail](#) for Windows 10

[REDACTED]
[REDACTED]
25th January 2022

Chief Planning Officer
Civic Centre
Castle Hill Avenue
Folkestone
CT20 2QY

Planning application 21/2527/FH

Thank you for inviting my representations about this application. The proposals do not affect me materially in any way, however I am concerned about their possible negative effects on bats, and ask that the relevant environmental authorities be consulted in the determination of the application.

The site and residential dwelling of Cold Harbour have a number of key features from Natural England's Standing Advice (<https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications>) a BCT trigger list, (<https://smartecology.co.uk/downloads/BCT%20Trigger%20List.pdf>) and The Wildlife Assessment Check, signposted from the UK planning portal. (<https://www.biodiversityinplanning.org/wildlife-assessment-check/#:~:text=The%20Wildlife%20Assessment%20Check%20considers%20whether%20there%20are,application%20stage%2C%20before%20a%20planning%20application%20is%20submitted>).

- a) The property predates the 20th Century
(http://hythehistory.org/Oral%20History/Bridget%20Wight/Bridget%20Wight_Mrs%20Wight.pdf)
- b) has been unoccupied since the previous owners' passing in March 2019
(<https://www.legacy.com/obituaries/thetimes-uk/obituary.aspx?pid=192183652>)
- c) It has been completely unlit during that time until a couple of months ago when external security floodlighting was installed.
- d) The residential dwelling has a slate roof that warms in the sun, (see attached) and submitted plans appear to show a large roof space for flying.
- e) The proposals will involve works to the roof covering or loft space and external features.
- f) The garden, which was overgrown, borders deciduous woodland and has mature hedgerows at its boundaries.
(<https://magic.defra.gov.uk/MagicMap.aspx>, Google Earth, see attached)

g) Bats have previously been recorded in the area. (*Environmental Assessment reports attached*)

Bat surveys have been conducted for adjoining land to the west and north of the application site. These were included in two different Ecological Impact Assessments dated October 2020 (EIA 2020) and May 2021 (EIA 2021), for planning application no.'s 20/047/FH and 21/1160/FH respectively. Full results from the bat surveys can be found in their Appendices.

EIA 2020 included surveys on external built structures which are now under the same ownership of Cold Harbour. These are referred to as "B1" in EIA 2020. (*EIA 2020; 4.3.9.2. Roosting (Buildings) Building B1; pg 34, 35*).

B1 was confirmed as a maternity roost for brown long eared bats with county level importance and two common pipistrelle days roosts of site level importance (*EIA 2020; 4.3.10 Evaluation of Bat Roosts: pg 41,42*) and the EIA states "Should any future works outside of the remit of this application require impacts to Building B1, updated surveys and a mitigation licence from Natural England will be required. (*EIA 2020; 3.5.3 Bat Surveys; pg 12, last para*)

The EIA 2020 also found that "Foraging and commuting activity was focussed around Building B1, along the access track,.....and within the garden area associated with the Cold Harbour residential dwelling situated to the south of Building B1, which is(was) outside the development boundary" (*EIA 2020; 4.3.10.3. Foraging and commuting; pg 42*)

EIA 2021 covered land adjoining Cold Harbour's western border. And concluded that "The site is therefore used throughout the year in a manner typical of bat lifecycles in south-east England, with the same species range broadly using the site throughout the entirety of the recording period" Both common and rarer species were recorded, greater numbers in the summer as expected for a resident population (*EIA 2: 4.3.6.8. Bats: Evaluation of foraging and commuting habitat; pg 46*)

The vegetation along Cold Harbours western boundary was flagged as being "of particular importance" for foraging and commuting. (referred to as Eastern boundary vegetation in EIA 2021) (*5.11 Bats: Foraging and Commuting 5.11.1 Potential Impacts; pg 59*) Cumulative effects of the new developments and change in ownership of Cold Harbour may need to be considered.

I note on the plan provided for this application that the boundary, marked in red, of the North Western corner of the plan is not accurate, following a change in boundaries with the new development Pilgrims Mews. I am also of the understanding that the access track is now under the same ownership of Cold Harbour, although I have not seen evidence of that.

The access track is unlit and serves as a dark corridor for foraging and commuting bats (*EIA2020; Appendix 10 pgs: 83-89*). The end of the access track leads to treescape with linear features, hedge, fields, mature trees, Mill Leese, LWS's and streams. (see attached screenshots from Shepway's Interactive Map)

A rich bat diversity at Mill Leese was confirmed in February 2021 in a report undertaken by the Environmental Agency (attached) "Comments by our Ecologist, Lesley Mason, Environment Agency, FBG Team 17th February 2021
.....To summarise there is a very high diversity of bats using the embankment, indeed it is likely that 11 bat species are present and this is actually all the bat species that could realistically be expected to be there as the absent species are either not commonly found in Kent or don't use this type of habitat." (*Mill Leese Flood Storage Area Vegetation Management Plan; Version 3, 14th June 2021; Appendix 3 pg 9*)

In alignment with paragraph 99 of the ODPM 06/2005, it is my understanding that protected species considerations are to be made clear prior to the determination of the application, and where appropriate, licencing must be in place before the commencement of works, as bats and their roosts are strictly protected under the Wildlife Countryside Act 1981 (as amended) and the European Conservation of Habitats and Species Regulations (2017), and it is therefore illegal to impact a known roost without a licence from Natural England. However, there is no information relating to bats available to view with this application.

The archway of B1 (*EIA 2020; 4.3.9.2. Roosting (Buildings) Building B1; pg 34, 35*), along with some roof members, timber boards, battens, and tiles, from the eastern garage of B1 were taken down without a licence at the end of December 2021 and beginning of January 2022 (CAD 30-0430), following accidental damage by a third party in November. This has enabled the access and parking for construction vehicles, and work has since begun removing the chimneys.

I really hope under the directive of the NERC Act 2006 and in line with the NPPF 2021, any further unnecessary damage can be prevented, appropriate mitigations, compensations and enhancements be introduced, and licences obtained where necessary.

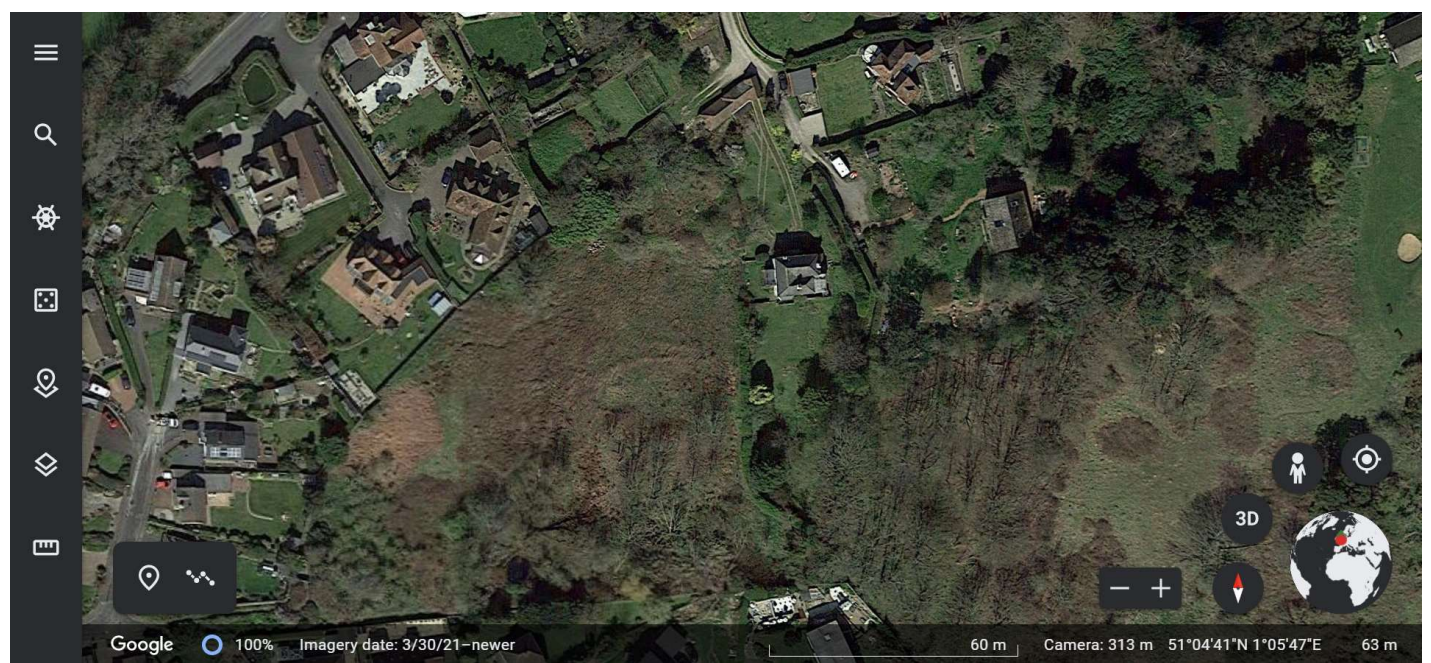
Yours faithfully

Hannah Epps

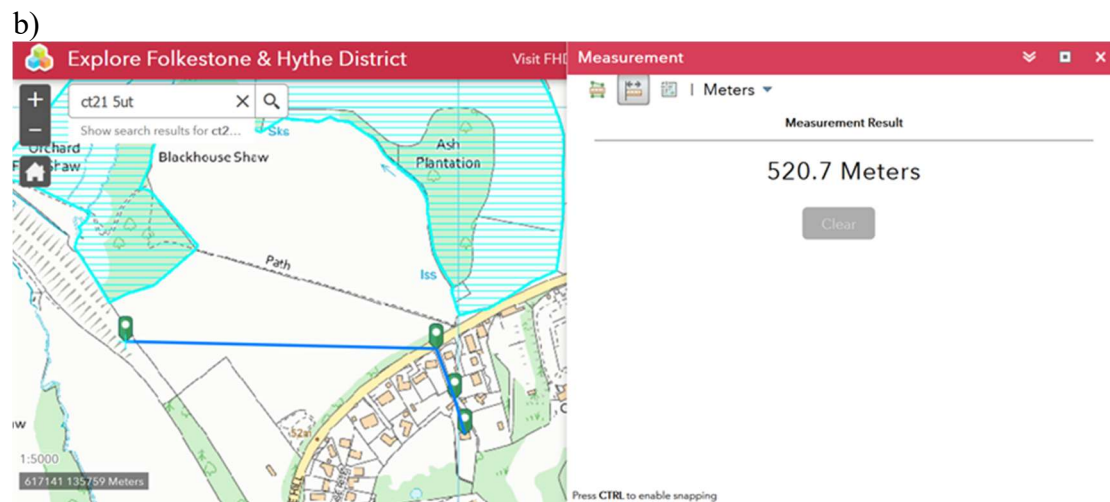
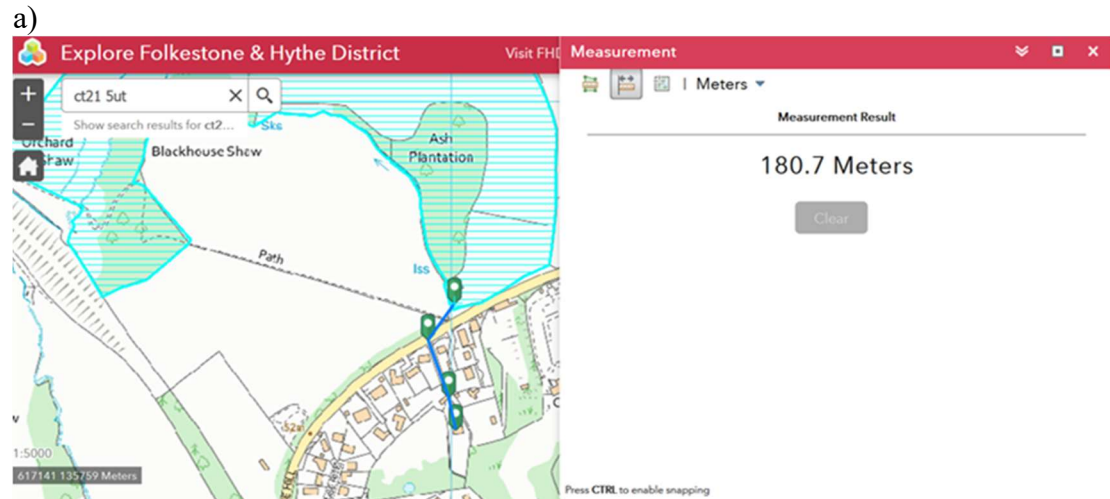
Screenshots from <https://magic.defra.gov.uk/MagicMap.aspx> with woodland layers highlighted in Green



Screenshot from Google Earth showing mature hedgrows to the west and east of the residential dwelling Cold Harbour (located in the middle of the picture), deciduous woodland adjoining the garden, and the slate roof that warms in the sun.



Screen shot from Shepways' interactive map indicating connectivity from the access lane to a LWS (a) and Mill Leese embankment (b).
(<https://folkestone-hythe.maps.arcgis.com/apps/webappviewer/index.html?id=95f9db5c8443496aa543e7d4193717c8>)





Ecological Impact Assessment

Land at Cold Harbour (Vegetable Garden)

Blackhouse Hill

Hythe, CT21 5UZ

Date: October 2020

1 Summary

Site	Land at Cold Harbour, Blackhouse Hill, Hythe, CT21 5UZ
Central OS Grid Reference	TR 16969 35620
Report Commissioned by	Hobbs Parker on behalf of Mr McClure
Report Purpose	To inform a full Planning Application for the construction of two residential units, two parking barns and associated infrastructure and landscaping.
Authors	Emily Sullivan BSc (Hons) GradCIEEM, Senior Ecologist Claire Munn BSc (Hons) MSc MCIEEM, Principal Ecologist
Reviewed & Approved by	Claire Munn BSc (Hons) MSc MCIEEM, Principal Ecologist

EclA Summary	Description	Dates / Details
Surveys / Assessments Conducted	Preliminary Ecological Appraisal	Extended Phase 1 survey: 9 th July 2019 & 7 th January 2020 Web-based desk-study: 4 th August 2019 Detailed desk-study: 4 th August 2019
	Preliminary Roost Assessment for bats	Buildings: 9 th July 2019 Trees: 9 th July 2019 & 27 th April 2020
	Bat roost emergence / re-entry surveys	Dusk emergence survey 1: 29 th July 2019 Dusk emergence survey 2: 30 th July 2019 Dawn re-entry survey: 15 th August 2019 Dusk emergence survey 3: 2 nd September 2019
	Great crested newt HSI surveys	7 th January 2020 (Ponds 1 and 4) 17 th January 2020 (Ponds 2 and 3) 19 th March 2020 (Pond 4)
	Reptile survey	29 th August 2019 – 26 th September 2019
	Dormouse survey	Nest tube survey: 21 st April – 17 th September 2020
Key Impacts and Avoidance / Mitigation Proposed	Trees and hedgerow	Protect these boundary features and replant any trees lost to development with native species of local provenance.
	Reptile Mitigation Strategy	The Reptile Mitigation Strategy and Method Statement will be followed to avoid impacts on reptiles and comply with wildlife legislation and policy.
	Birds	Clear the buildings, the northern partition wall, tall ruderal habitat and woody vegetation outside the nesting bird season, or after a nesting bird check if clearance is scheduled between March and August (inclusive).

EclA Summary	Description	Dates / Details
	Bats: Trees	If Trees 1, 2 (as noted within Appendix 2) are to be removed, they are to be soft-felled in sections and then left on the ground overnight before being removed or put through a chipper. Tree 2 will be soft-felled under supervision of a bat licensed ecologist. In the event cracks or holes are noted within Tree 1 whilst the tree is being felled, stop works and contact an ecologist for advice.
	Bats: Building B1	A 4m buffer will be maintained around Building B1. Site workers will be made aware of the bat roosts on site and legislation. The landscaping plan will facilitate foraging and commuting habitat connectivity across the site from Building B1. Building B1 must be not illuminated.
	Hedgehog	Provide hedgehog links within any new fencing.
	Lighting – nocturnal species using the site.	Minimise artificial lighting and do not illuminate Building B1, boundary habitat or scrub/scattered trees adjacent to the southern border of the site.
	General measures	Cover trenches or provide planked escape routes to allow any animals that fall in to escape. Include pollen / nectar-rich plants within the landscape design to mitigate the loss of suitable habitat for widespread invertebrates.
Enhancements	To increase the ecological value of the site.	Plant a native hedgerow on the northern boundary, install wildlife boxes for birds, create a swathe of uncut grassland and grass / compost heap.
Conclusion	The development can proceed with minimal impact to habitats and protected / notable species following the avoidance and mitigation measures above. There is the opportunity to enhance the development for local wildlife in the long-term by implementing the enhancement measures.	

Contents

1	Summary.....	1
2	Introduction.....	5
2.1	Background.....	5
2.2	Site Location and Description.....	5
2.3	Development Proposal.....	5
2.4	Assessor Experience	7
2.5	Scope of Assessment	7
2.6	Objectives	7
3	Methodology	8
3.1	Scope of the Assessment.....	8
3.2	Desk Study	8
3.3	Field Survey	9
3.4	Evaluation	9
3.5	Limitations	10
4	Baseline Ecological Conditions	13
4.1	Designated Sites	13
4.2	Habitats	15
4.3	Protected and Notable Species	23
4.4	Summary of Baseline Ecological Conditions.....	44
5	Assessment of Effects and Mitigation Measures	45
5.1	Scattered Trees and Hedgerows	45
5.2	Reptiles.....	46
5.3	Nesting Birds.....	50
5.4	Bats - Buildings	50
5.5	Bats - Trees	52
5.6	Bats – Foraging and Commuting	52
5.7	Hedgehog	53
5.8	General Site Measures	53
5.9	Summary of Effects and Avoidance and Mitigation Measures	55
5.10	Cumulative Effects.....	55
6	Enhancements	56
7	Conclusions.....	57
8	References.....	58
1	Methodology	65
1.1	Amphibians.....	65
1.2	Reptiles	66

1.3	Reptiles – Presence / Likely Absence	66
1.4	Badgers	67
1.5	Bats	67
1.6	Hazel Dormouse	70

Appendix 1 Legislation and Planning Policy

Appendix 2 Phase I Habitat Map

Appendix 3 Methodology

Appendix 4 HSI Results

Appendix 5 Reptile Survey Results

Appendix 6 Reptile fencing plan

Appendix 7 Enhancements of Reptile Receptor Site

Appendix 8 Bat DNA Analysis Results

Appendix 9 Bat Dropping Location Map

Appendix 10 Bat Roost Survey Results

Appendix 11 Evaluating Bats in the Wider Ecological Context

Appendix 12 Dormouse Survey Plan

Appendix 13 Wildlife Friendly Planting

2 Introduction

2.1 Background

David Archer Associates was commissioned by Hobbs Parker on behalf of Mr McClure to undertake an Ecological Impact Assessment (EclA) at Land at Cold Harbour, Blackhouse Hill, Hythe, CT21 5UZ, herein referred to as 'the site'. This report will support a planning application for the construction of two residential units, two parking barns and associated infrastructure and landscaping.

2.2 Site Location and Description

The site is located to the north-east of Hythe, c. 1.2km north of the coastline and c. 1.5km south of the M20 at central Ordnance Survey Grid Reference TR 16969 35620, as shown in **Appendix 2**. The site totals c. 0.2ha, comprising hard standing, poor semi-improved grassland, hedgerows, scattered trees, tall ruderals, amenity grassland, introduced shrubs and scrub habitats. The site and area immediately adjacent to the site includes four buildings and additional structures such as dividing walls, compost/brash/log piles and piles of building materials.

The site is situated within a suburban location and surrounded by residential land to the north, east, south and west. A field dominated by tall ruderals within the central areas and containing poor semi-improved grassland, marshy grassland, scrub and scattered trees within the margins of the site is adjacent to the southern border of the site. The tall ruderal habitat present within the application site continues into the northern boundary habitat of the field below. The field to the south was previously grazed by ponies and has now become overgrown. The field is part of a separate planning application, as shown by the blue boundary line in **Figure 2.1**. The wider area comprises urban settlement, agricultural land, hedgerows, a large golf course, watercourses and pockets of deciduous woodland.

2.3 Development Proposal

The proposed development includes construction of two residential units, two car parking barns and associated infrastructure and landscaping, as shown in **Figure 2.2**. The garage building (B1, **Appendix 2**) immediately south-east of the site boundary will not be impacted as part of the proposals. The proposals will result in the removal of three outbuildings, amenity grassland, poor semi-improved grassland, tall ruderals, scrub, introduced shrubs, scattered trees, hedgerows, hard standing and the piles of brash / compost / construction materials.

Figure 2.1: Development proposals of the current site application (red outline) and ownership site boundary (blue outline) (APX Architecture, Jan 2020)

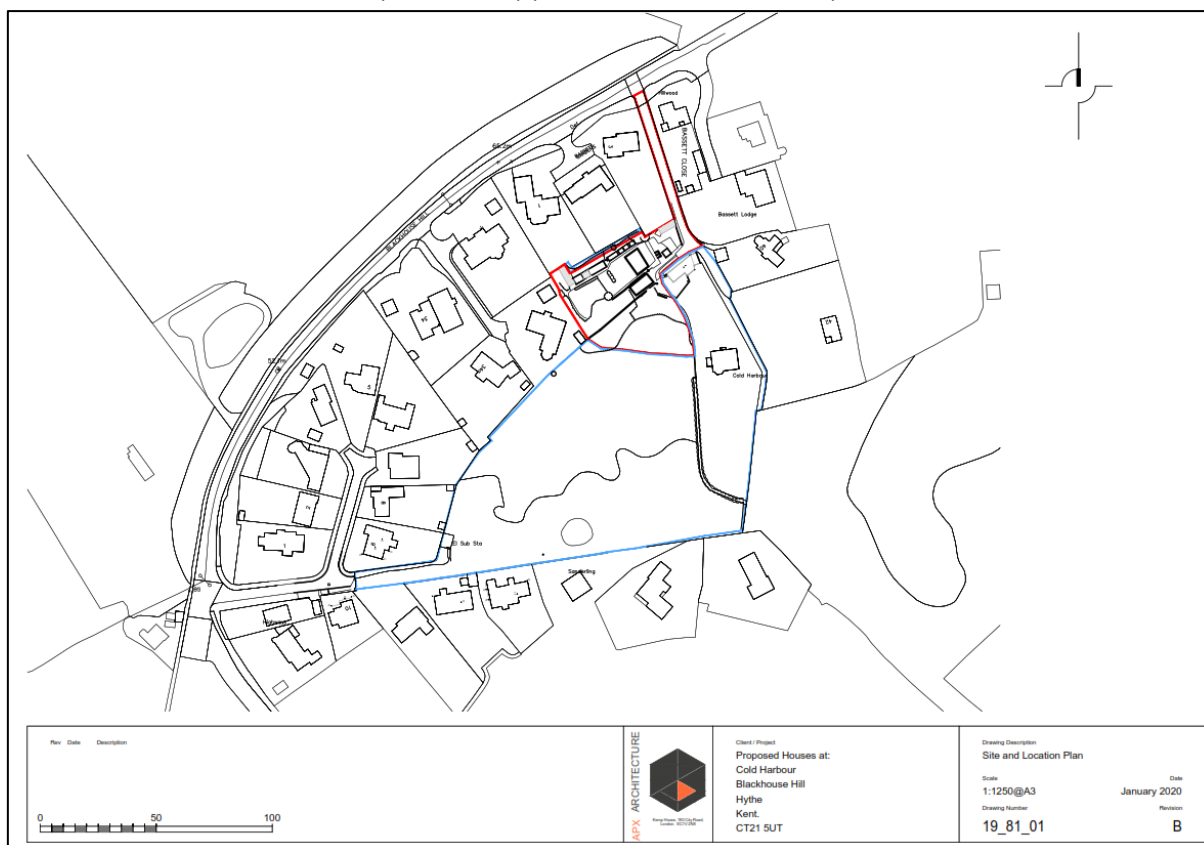


Figure 2.2: Development proposals of the current site application (APX Architecture, Feb 2020)



2.4 Assessor Experience

This report has been prepared by Emily Sullivan BSc (Hons) GradCIEEM and Claire Munn BSc (Hons) MSc MCIEEM. Emily is a Senior Ecologist with 8 years' industry experience, including extensive experience of PEA, Phase 2 species/habitat-specific surveys and EclA. Emily is licensed to survey for bats (level 2), great crested newts and hazel dormice. Claire is a Principal Ecologist with 12 years' industry experience, including extensive experience of PEA, Phase 2 species/habitat-specific surveys and EclA. Claire is licensed to survey for bats (level 2), great crested newts, hazel dormice and white-clawed crayfish. Licence numbers can be provided on request. Where other surveyors have contributed to the EclA, their experience is outlined in the relevant methodology sections.

2.5 Scope of Assessment

This EclA pulls together all ecology work completed to fulfil the requirements of national and local planning policies and to advise on compliance with European and UK wildlife legislation (Appendix 1). This EclA combines the methods, results, evaluation and recommendations of the following surveys and assessments:

- Preliminary Ecological Appraisal (PEA), including:
 - Extended Phase 1 Habitat Survey;
 - Web-based desk study of relevant nearby designated sites and priority habitats, and granted European Protected Species Mitigation (EPSM) licences; and
 - Detailed desk study, including analysis of nearby biological records and non-statutory site data.
- Preliminary bat Roost Assessment (PRA) of the buildings and trees to be impacted;
- Bat emergence / re-entry surveys of the buildings and trees identified during the PRA to have bat roost potential;
- Reptile surveys of the habitats identified as suitable during the PEA; and
- Dormouse nest-tube surveys of the habitats identified as suitable during the PEA.

2.6 Objectives

The objectives of this EclA are to:

- Identify and describe all potentially significant ecological effects associated with the proposed development;
- Set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects;
- Identify how mitigation measures will / could be secured;
- Provide an assessment of the significance of any residual effects;
- Identify appropriate enhancement measures; and
- Set out requirements for post-construction monitoring.

3 Methodology

3.1 Scope of the Assessment

3.1.1 Zone of Influence

Aerial photographs, maps and field observations were used to identify habitats in the wider landscape which could be impacted by the proposed development of the site. By using these tools, the Zone of Influence of the development is defined as being of the following distances for each feature considered:

- 10km for statutory designated sites for nature conservation of European and international importance;
- 2km for statutory designated sites for nature conservation of local and national importance;
- 2km for non-statutory designated sites for nature conservation of local importance;
- 2km for Priority Habitats;
- 2km for protected and notable species;
- 500m for water-bodies (in relation to great crested newts); and
- 30m for badger setts.

3.1.2 Consultation

Pre-app advice was received from Luke Wallace, Biodiversity Officer at Kent County Council on 4th June 2020 regarding the development proposals, which was based on the original PEA and Phase II reports for bats and reptiles. The comments received agreed with the conclusions and recommendations of the reports provided and stated that completion of the dormouse survey and recommendations for appropriate dormouse mitigation would be required to enable a full planning decision to be reached. This report pulls together those previous reports and the information relating to the completed dormouse surveys, as advised.

3.2 Desk Study

Natural England's Multi-Agency Geographic Information for the Countryside (MAGIC) database was accessed on 4th August 2019 for information on statutory sites designated for nature conservation within a 2km radius of the site. Consideration for Natura 2000 sites was extended to a 10km radius where the potential risk of impact to interest features of such sites may extend over a wider area. Such sites include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites as well as those currently under public consultation for future designation as SACs, SPAs and Ramsar sites.

The MAGIC Impact Risk Zones (IRZs) were used to assess whether the proposed development may impact on any Sites of Special Scientific Interest (SSSI), and thus whether consultation with Natural England is needed to discuss how impacts might be avoided or mitigated.

The Kent and Medway Biological Record Centre (KMBRC) was also consulted on 24th July 2019 for the following information for a 2km radius around the application site:

- Non-statutory nature conservation designations, such as Local Wildlife Sites (LWS);
- Legally protected species, such as great crested newts, reptiles, birds and bats; and

-
- Notable / priority species, such as those listed under Section 41 of the NERC Act, 2006.

MAGIC was also accessed on 4th August 2019 to identify any European Protected Species Mitigation (EPSM) licences granted by Natural England within a 2km radius of the site.

The following reports have been reviewed as part of this assessment:

- Preliminary Ecological Appraisal for Coldharbour North Site (David Archer Associates, 2020)
- Phase II Report for Coldharbour North Site (David Archer Associates, 2020)

3.3 Field Survey

The Phase 1 survey involved a site visit on 9th July 2019 and 7th January 2020 by Emily Sullivan BSc (Hons) GradCIEEM, Senior Ecologist, to record and map habitat types and ecological features within the site and those within the defined Zone of Influence for badgers, where access was possible. The survey was undertaken in accordance with *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017), and the general principles and methods outlined in the *Handbook for Phase I Habitat Survey* (JNCC, 2010). Features of interest were identified as target notes on the Phase I Habitat Map (**Appendix 2**). Hedgerows on site were also evaluated for their importance with reference to the *Hedgerows Regulations 1997*.

Weather conditions during the 9th July 2019 survey were 20°C, no breeze (Beaufort 0), 100% cloud cover and dry. Weather conditions during the 7th January 2020 survey were 8°C, a light breeze (Beaufort 2), 100% cloud cover and dry.

The Phase 1 survey was extended to look for evidence of and assess the potential for the site to support protected, notable and invasive species. This included species listed under the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*, the *Wildlife and Countryside Act 1981 (as amended) (WCA)*, and those given extra protection under the *Natural Environment and Rural Communities (NERC) Act 2006*, *Countryside and Rights of Way (CROW) Act 2000*, and the *Protection of Badgers Act 1992*.

The protected, notable and invasive species considered within the assessment are: invertebrates, great crested newts, reptiles, nesting birds, badgers, bats and dormice. The species assessment methodologies applied can be found in **Appendix 3**.

3.4 Evaluation

Ecological effects have been characterised using the following impact parameters, where relevant:

- Direct or indirect
- Positive or negative
- Extent
- Magnitude
- Duration
- Reversibility
- Frequency
- Timing

The above factors have been used to guide the thought process to show how each impact will occur as a result of the proposals, thus enabling a conclusion to be reached as to the likely significance of each impact as per the parameters explained below.

Designated sites, habitats and species (where presence has been identified) have been evaluated in accordance with the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), with the addition of 'site' level importance.

These guidelines aim to give consistency in evaluating the importance of the ecological features within and around a site, which help inform any effects or impacts a scheme will have upon them.

A value of the ecological features (designated sites, habitats or species) has been assigned according to their level of importance using the following terms:

- International
- National
- Regional
- County
- Local
- Site
- Negligible

3.5 Limitations

3.5.1 PEA

Access was available to the entire site and the baseline conditions reported represent those identified at the time of the survey. The survey was completed during the optimal time of year for recording vegetation. Although a reasonable assessment of the site can be made during a single survey, seasonal variations are not observed.

This PEA provides an overview of the likelihood of protected / notable species occurring on the site (negligible, low, moderate, or high). Absence of a species cannot be presumed where no evidence was found. Further surveys have been recommended where there is reasonable likelihood of a protected species being present and impacted by the development proposal. This is based on the suitability of the habitat and any evidence observed.

This PEA does not constitute a full botanical survey or a Phase 2 pre-construction survey for Japanese knotweed.

It was not possible to survey the northern aspect of Building B4 due to its position immediately adjacent to neighbouring properties and boundary vegetation. However, it is considered that the boundary vegetation is so dense that it is unlikely to support any access features for roosting bats. In addition, during the recommended nocturnal bat surveys, a surveyor was situated within a position to allow best coverage of this aspect of the building as possible under the constraints. This restriction is therefore not considered a limitation to the proposals.

Follow-up surveys have been taking place within the site until September 2020, which enabled us to confirm that the habitats remained the same with the same maintenance regime in the interim period

between the original PEA survey taking place and the EclA report being produced. As such, the conclusions reached in the PEA remain valid for 12 months from the last site visit, i.e. until September 2021.

3.5.2 Reptile Surveys

The reptile surveys were undertaken in suitable weather conditions between August and September 2019. The sixth reptile survey was undertaken when wind levels were above a gentle breeze and the first and third surveys were undertaken when temperatures were slightly above the recommended temperature range for reptiles. This is not considered a limitation as the site (and adjacent field) provide a variety of microclimates, some of which benefit from slightly warmer temperatures/sun. In addition, the sheltered nature of the site within certain areas indicates that the moderate breeze recorded on one occasion was unlikely to significantly impact reptile behaviour. The conditions on site were therefore considered to be suitable for reptiles on these surveys.

During one of the surveys, it was observed that a small number of the artificial refugia had been moved. These mats were replaced on the following survey. As a higher density of refugia was used during the reptile surveys than the minimum recommended in the standard guidance (Froglife 1999), this is not considered a constraint.

On the assumption that site conditions and habitats remain unchanged, the reptile surveys will remain valid for two years i.e. until August 2021 and should be updated if the works have not yet commenced within this timeframe.

3.5.3 Bat Surveys

Brown long-eared *Plecotus auritus* bats are known to be challenging to differentiate from grey long-eared bats *Plecotus austriacus* without either being able to analyse the animal in the hand or undertake DNA analysis of the droppings. Where some of the echolocation calls could only be confidentially identified down to genus level (long-eared species *Plecotos* sp.) during the nocturnal surveys, it has been assumed that these bats are likely to be brown long-eared bats. This assumption is based on the DNA analysis confirming the droppings within Building B1 are brown long-eared, the location of the site outside the known distribution of grey long-eared bats across the UK (Razgour *et al.*, 2013) and the majority of the long-eared echolocation calls that could be identified to species level as being brown long-eared bats. It is therefore considered highly unlikely that the long-eared bats recorded during the nocturnal surveys were grey long-eared bats.

The dusk survey undertaken on 30th July 2019 experienced wind speeds that are likely to be at the top of the threshold of wind speed that is considered to be suitable for bats (Collins, 2016). A number of bats were still recorded during this survey, which demonstrates the conditions were still suitable for bats to emerge from their roosts. Although activity was decreased on-site, bats are able to move through the landscape to suitable areas for foraging even when wind strength levels are moderate as alternative sheltered areas are present within the local landscape. This is therefore not considered to be a constraint to the surveys on site.

Due to technical difficulties with the bat detector used to survey Building B2 during the emergence survey undertaken on the 29th July 2019 the surveyor had to leave their position for approximately 5 minutes. The survey of Building B2 was repeated on 30th July 2019 in order to ensure the building was sufficiently surveyed and the likely absence of bats was confirmed accurately.

Due to technical difficulties with the bat detector used by one of the surveyors surveying Building B1 on 29th July 2019, it was not possible to analyse the echolocation call emitted by the common pipistrelle bat that emerged from the building at 21:25. This is not considered to be a limitation as the surveyor at this position saw the bat, heard the echolocation call through the bat detector, recorded the frequency of the call as 45kHz and is suitably experienced to identify common pipistrelle bats. It was therefore possible to establish accurately on site what the species of bat was at the time of the survey, without the need for further analysis of the call in this instance.

Some of the roosting locations identified during the nocturnal surveys were recorded as likely rather than confirmed as the bat was not seen to clearly enter or emergence from the building but based on all the factors assessed (time, position, flight path, behaviour etc.) it was considered that these bats were most likely roosting. This is not considered to be a constraint as the surveys were completed at an appropriate time of year and enough surveys were completed to determine the different roosting locations and access points of the roosts noted within Building B1.

The nocturnal surveys were undertaken at a suitable time of year and within suitable weather conditions. The survey results are therefore not significantly limited and are considered to represent a valid assessment of the roosting bats on site.

Bat surveys generally remain valid for one year, in this case therefore until September 2020, which has now passed. However, as no direct or licensable impacts are proposed to Building B1 and the condition of the building and immediate surrounds remain the same (based on the latest site survey conducted in September 2020), this is not considered a significant limitation with regards to assessing the impacts to roosting bats in the planning context. Should any future works outside of the remit of this application require impacts to Building B1, updated surveys and a mitigation licence from Natural England will be required.

3.5.4 Dormouse Surveys

Access was available to the entire site and adjacent land included in the survey, which spanned the optimal season for dormouse nest tube surveys.

The survey results are therefore not significantly limited and are considered to represent a valid assessment of hazel dormice within the site and connecting habitat.

On the assumption that site conditions and habitats remain unchanged, the dormouse surveys will remain valid for two years, i.e. until September 2022, and may need to be updated if works have not yet commenced within this timeframe.

4 Baseline Ecological Conditions

The following section presents the results, evaluation and discussion of the designated sites, habitats and protected / notable species, which may be impacted by the proposed development.

4.1 Designated Sites

4.1.1 Statutory Sites

Statutory sites designated for nature conservation within the vicinity of the site are provided in Tables 4.1 and 4.2. SACs are of European importance and SSSIs are of national importance.

The site falls within the Seabrook Stream SSSI Impact Risk Zone (IRZ), however the development does not meet criteria for impacts that would likely lead to a significant effect on this SSSI. Therefore, no consultation with Natural England and no mitigation is required for this SSSI.

There are no habitats or species within the site that serve as qualifying features of the nearby SAC or SSSI.

The application site is not ecologically linked to Folkestone to Etchinghill Escarpment SAC due to the intervening land being extensive open farmland and the M20 motorway between the sites (OS, 2019). The development is also highly unlikely to significantly impact the SAC through increased visitor pressure due to its small-scale size and number of residential dwellings proposed. In addition, several alternative recreational sites are available within the area, which will help with any small increase in visitor pressure.

It is considered that the development is small enough and located far enough from the SSSIs for there to be any direct or indirect impacts on their habitats. There does not appear to be any direct hydrological link or other habitat connectivity between the SSSIs and the application site (OS, 2020). Whilst public footpaths within the local area provide connectivity to Seabrook Stream SSSI, as above, the small increase in residential housing on-site is unlikely to significantly impact upon the SSSI (OS, 2020)

No significant impacts on statutory sites are expected. No further action is recommended.

Table 4.1: Statutory designated sites of international importance within 10km of the application site.

Site Name	Distance & Direction from Site	Area (ha)	Reasons for Designation
Folkestone to Etchinghill Escarpment SAC & SSSI	3km NE	187 (ha)	This site is designated for the presence of semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>), which is an Annex I Habitat. The site is also an important orchid site. The site contains the priority habitat type 'orchid rich site', which includes an important collection of rare and scarce orchids. These include early spider-orchid <i>Ophrys sphegodes</i>, late spider-orchids <i>O. fuciflora</i> and burnt orchid <i>Orchis ustulata</i>.

Table 4.2: Statutory designated sites of national and local importance within 2km of the application site.

Site Name	Distance & Direction from Site	Area (ha)	Reasons for Designation
Seabrook Stream SSSI	875m NE	24.13 (ha)	The site is designated for the presence of alder wet woodland (carr) and fen communities that together support a high number of crane fly species (67 known). The formation of the stream provides a range of different conditions that support various habitats near its course. The site supports breeding reed warblers <i>Acrocephalus scirpaceus</i>, sedge warblers <i>Acrocephalus schoenobaenus</i>, grey wagtails <i>Motacilla cinerea</i> and sand martins <i>Riparia riparia</i>.

4.1.2 Non-Statutory Sites

Non-statutory sites designated for nature conservation that are located within 2km of the application site are provided in **Table 4.3**. LWSs are of **local importance**.

It is considered that the development will be small enough and located far enough from the eight Local Wildlife Sites within 2km of the site, for there to be any significant impacts on their habitats. There does not appear to be any direct hydrological link or other habitat connectivity between the LWSs and the application site (OS, 2019). Although the site is situated near Saltwood Valley, the site access road, which is already in use, is separated from the LWS by an existing road, Blackhouse Hill.

Whilst public footpaths within the local area provide connectivity to some of the LWSs, the small increase in residential housing on-site is unlikely to significantly impact upon these LWS (OS, 2019). No significant impacts on non-statutory sites are expected.

No further action is recommended.

Table 4.3: Non-statutory sites within 2km of the application site.

Site Name (LWS)	Distance & Direction from Site
Saltwood Valley	60m NE
Paraker Wood and Seabrook Stream, Shorncliffe	610m NE
Royal Military Canal	890km S
Asholt Wood Pasture and Pond	1.8km NE
Brockhill Country Park, Saltwood LWS	1.8km W
Tolsford and Summerhouse Hills	1.9km N
Hythe Ranges	1.9km SW
Postling Wents Woods	2.0km NW

4.1.3 Ancient Woodland

Five small pockets of ancient semi-natural woodland are situated within the surrounding landscape within 1km of the development site. The closest area of ancient woodland is situated 350m north-east of the site beyond a road and residential housing.

There will be no significant impact to any of these areas of ancient woodland as the distance from the site and construction works are far enough away to avoid any impacts to root damage and potential pollution impacts.

Although public footpaths and roads are present within the local landscape that could provide access from the site to areas of ancient semi-natural woodland, the small-scale proposals are unlikely to have any impact on these habitats. As the development involves the construction of a small numbers of dwellings on-site, the development is considered unlikely to lead to a significant increase in visitor pressure.

No further action is recommended.

4.1.4 Priority Habitats

The MAGIC database indicates that the priority habitats of Deciduous Woodland and Traditional Orchard are found within 1km of the site. The closest area of priority habitat is an area of Deciduous Woodland situated 30m to the south of the site, beyond residential land. The ground level assessment has confirmed that the southern portion of the field connected to the site does not contain the priority habitat Deciduous Woodland. The confidence of this main habitat classification is 'Low' on MAGIC, which indicates it was likely determined through aerial imagery assessment alone and not a ground level assessment. The scattered trees and areas of dense/scattered scrub do not form a woodland complex but instead include a mosaic of scattered trees and scrub habitat, which has likely expanded over the years through self-seeding (Google Earth, 2020).

There will be no significant impact to any of these priority habitats within 1km of the development site as there are no physical pathways for impacts from construction. The development is unlikely to lead to a significant increase in visitor pressure on areas where priority habitats are present.

No further action is recommended.

4.2 Habitats

The habitats below were recorded within the site and relevant Zones of Influence during the Phase 1 survey. No protected, Habitats of Principal Importance (HPIE) or locally important floral species or habitats were recorded during the survey. Habitat types are described below and shown on the Phase I Habitat Map (**Appendix 2**).

- Buildings
- Amenity grassland
- Poor semi-improved grassland
- Hedgerows
- Scattered trees
- Introduced shrub
- Tall ruderals
- Scrub
- Compost heaps, piles of logs and piles of construction materials.

4.2.1 Buildings

A description of the buildings within the site is provided in relation to their bat roosting suitability in **Section 4.3.9.2**.

4.2.2 Amenity Grassland

Mown amenity grassland was recorded within the site (**Photo 1**). The species composition is dominated by grass species such as cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and perennial rye grass *Lolium perenne*. This indicates the sward composition is similar to improved grassland and managed as amenity. Additional species within the sward include dandelion *Taraxacum officinale* agg., black medic *Medicago lupulina*, wild strawberry *Fragaria vesca*, prickly sow-thistle *Sonchus asper*, creeping buttercup *Ranunculus repens*, common hogweed *Heracleum sphondylium*, yarrow *Achillea millefolium*, greater plantain *Plantago major*, spear thistle *Cirsium vulgare*, white clover *Trifolium repens*, dove's-foot cranesbill *Geranium molle*, ribwort plantain *Plantago lanceolata*, mares tail *Hippuris vulgaris*, common ragwort *Jacobaea vulgaris*, fleabane *Erigeron* sp., red fescue *Festuca rubra*, scarlet pimpernel *Anagallis arvensis* and sweet vernal grass *Anthoxanthum odoratum*. Sedum species were also found around the edge of the grassland habitat between the amenity grass and the hard standing. The forb to grass species ratio increased within the central areas of the grassland.

The grassland lacks species diversity and structure and is therefore of **negligible** importance. No further action is recommended.

Photo 1: Amenity grassland, facing north-west
(photo taken 9th July 2019)



4.2.3 Poor Semi-Improved Grassland

The site contains a small area of tussocky poor semi-improved grassland within an earth mound along the southern border of the site (**Photo 2**). The grassland exhibits evidence of rabbit grazing with an average sward height of approximately 1-5cm, with tall forb species interspersed. It is likely that the grazing from rabbits has maintained this area of habitat as grassland and prevented the more dominant forb species present within the tall ruderal habitat taking over. The semi-improved grassland was dominated by false oat-grass *Arrhenatherum elatius*. Other species present include cocksfoot *Dactylis glomerata*, *Festuca* sp. (likely *Festuca rubra*), sedges *Carex* sp., ground ivy *Glechoma hederacea*, creeping thistle *Cirsium arvense*, dwarf thistle *Cirsium acaule* and yarrow *Achillea millefolium*. Tall forb species are interspersed throughout the short grassland, including great willowherb *Epilobium hirsutum* and bramble *Rubus fruticosus* agg. shoots.

The semi-improved grassland lacks species diversity and structure. It is therefore of **negligible** importance. No further action is recommended.

Photo 2: Poor semi-Improved grassland along the southern border of the site, facing east
(photo taken 7th January 2020)



4.2.4 Hedgerows

Intact and defunct hedgerows containing non-native and native species were recorded along the northern, eastern and western boundaries, as well as within the more central areas of the site. The hedgerows are of **site** importance. These hedgerows are not considered to be important under the *Hedgerow Regulations Act 1997* due to their lack of native species and associated features.

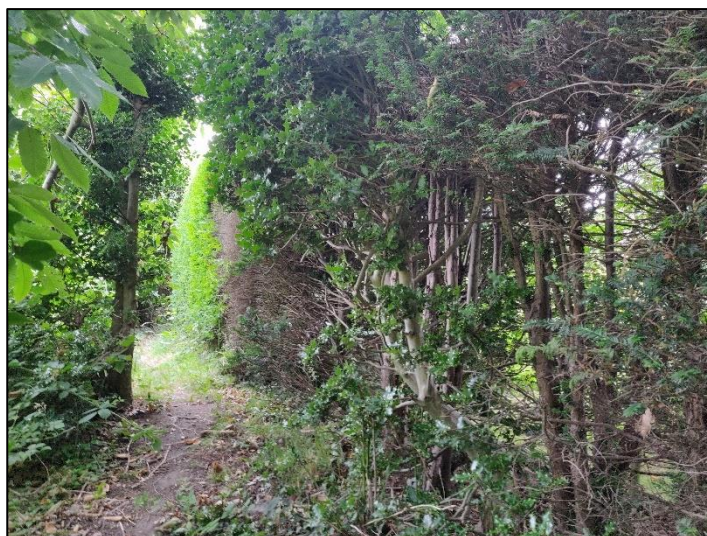
Further action has therefore been recommended in **Section 5**.

4.2.4.1 Hedgerow 1 (H1)

Hedgerow H1 is defunct, well-managed and located on the north-western boundary of the site (**Photo 3**). Part of H1 lies outside the development boundary. H1 is c. 2.5m tall and c. 1.5m wide. Woody species comprise yew *Taxus baccata* and a small amount of holly *Ilex aquifolium*. The ground flora comprises patchy tall ruderal species which surround the hedgerow. Some of the tall ruderal habitat was worn from footfall movement down this section of the site.

The development proposals indicate that Hedgerow H1 will be retained.

Photo 3: Hedgerow 1 (H1), facing south-west
(photo taken 9th July 2019)



4.2.4.2 Hedgerow 2 (H2)

Hedgerow H2 is intact, well-managed and located within the central area of the site adjacent to Building B3 (**Photo 4**). H2 is c. 1.5m tall and c. 1m wide. The hedgerow is comprised of an ornamental honeysuckle shrub species, likely *Lonicera nitida*.

Hedgerow H2 will be removed as part of the development proposals.

Photo 4: Hedgerow 2 (H2), facing north-east
(photo taken 9th July 2019)



4.2.4.3 Hedgerow 3 (H3)

Hedgerow H3 is intact, mostly well-managed and located along the south-western border of the site (**Photo 5**). Woody species comprise garden privet *Ligustrum ovalifolium* and Leyland cypress *Cupressus × leylandii*. H3 is c. 3.5m tall and c. 2m wide.

The development proposals indicate that Hedgerow H3 will be retained.

Photo 5: Hedgerow 3 (H3), facing south
(photo taken 9th July 2019)



4.2.4.4 Hedgerow 4 (H4)

Hedgerow H4 is intact, managed and located on the eastern boundary of the site (**Photo 6**). H4 is c. 2.5m tall and c.1.75m wide and comprises garden privet *Ligustrum ovalifolium*. H4 comprises only a short section of hedgerow approximately 4m in length.

The development proposals indicate that Hedgerow H4 will be retained.

Photo 6: Hedgerow 4 (H4), facing north
(photo taken 9th July 2019)



4.2.5 Scattered trees

Scattered trees are present, most of which are concentrated around the borders of the site (**Photo 7**). Species comprise cherry *Prunus sp.*, bay laurel *Laurus nobilis*, apple *Malus domestica*., hazel *Corylus avellana*, pear *Pyrus sp.*, yew, *Laburnum sp.*, elder *Sambucus nigra*, sycamore *Acer pseudoplatanus*, holly, sweet chestnut *Castanea sativa*, Indian bean tree *Catalpa bignonioides*, weeping willow *Salix babylonica* and hawthorn *Crataegus monogyna*.

The mature trees scattered on site provide wildlife value for local bird species and invertebrates and are considered to be of **site importance**.

Further action has been recommended in **Section 5**.

Photo 7: Scattered trees, including Laburnum sp. and yew
(photo taken 9th July 2019)



4.2.6 Introduced shrub

Introduced shrubs are present within the site which comprise ornamental species (**Photo 8**). The shrubs themselves are considered to be of **negligible** intrinsic value, however, the complex, mature structure of some of the introduced shrubs on site has the potential to support protected species, such as nesting birds, which is addressed in **Section 4.3**.

No further action is required.

Photo 8: Introduced shrub
(photo taken 9th July 2019)



4.2.7 Tall Ruderals

Tall ruderal habitat is present, which is mostly concentrated along the northern and western borders (**Photo 9**) and within the southern area of the site (**Photo 10**). The tall ruderal habitat present within

the vegetable garden, within the northern portion of the site, comprises common nettle, bramble, red valerian *Centranthus ruber*, wild strawberry, bittersweet *Solanum dulcamara*, smooth sowthistle *Sonchus oleraceus*, willow herb *Epilobium* sp., common ragwort, common hogweed, nipplewort *Lapsana communis*, garden escape ornamental plants, common cleavers *Galium aparine*, hedge bindweed *Calystegia sepium*, pendulous sedge *Carex pendula*, hazel and sycamore saplings, horsetail *Equisetum arvense*, *Iris* sp., *Hypericum* sp., hart's tongue fern *Asplenium scolopendrium* and false oat grass *Arrhenatherum elatius*. Similar grass species present within the amenity grassland are also present within the tall ruderal habitat.

The tall ruderal habitat present within the southern portion of the site, (within the northern section of the field), is dominated by great willowherb *Epilobium hirsutum*. Other species include common fleabane, common sorrel *Rumex acetosa*, pendulous sedge *Carex pendula*, common nettle, common hogweed, Yorkshire fog, ground ivy, mosses *Cirriphyllum* sp., white dead-nettle *Lamium album*, male fern *Dryopteris filix-mas*, hard rush *Juncus inflexus*, soft rush *Juncus effusus*, primrose *Primula vulgaris*, ornamental bulbs, hedge bedstraw *Galium mollugo*, red campion *Silene dioica*, water figwort *Scrophularia auriculata*, broad-leaved dock *Rumex obtusifolius* and cocksfoot grass.

The tall ruderal habitat is of **negligible** intrinsic importance as the habitat is common and likely to be locally abundant, however, the complex, mature structure of this habitat type has the potential to support protected species, such as reptiles, which is addressed in **Section 4.3**.

No further action is required.

Photo 9: Tall ruderals situated adjacent to the western border of the site.
(photo taken 9th July 2019)



Photo 10: Tall ruderals situated within the southern area of the site
(photo taken 7th January 2020)



4.2.8 Scrub

Dense and scattered areas of scrub are present within the central areas (**Photo 11**) and along sections of the western and eastern borders of the site. The scrub continues into the southern areas of the field, situated immediately south of the site. Species comprise hawthorn *Crataegus monogyna*, garden privet, common dogwood *Cornus sanguinea*, bramble, bamboo *Bambusoideae sp.*, buddleia *Buddleja davidii*, elder and hazel. The scrub within the south-western corner of the site is dominated by bamboo, whereas, the other areas of scrub contain a mixture of species. The understorey within the scrub is mostly comprised of a mat of ivy, however, the dense areas of bamboo contains leaf litter.

The scrub is of **negligible** intrinsic importance as the habitat is common and likely to be locally abundant, however, the complex structure of scrub on site has the potential to support protected species, such as nesting birds, which is addressed in **Section 4.3**.

No further action is required.

Photo 11: Scrub habitat along the central areas of the site.
(photo taken 9th July 2019)



4.2.9 Compost heaps, brash piles, piles of logs and piles of construction materials.

A compost heap was noted within and adjacent to the site (**Photo 12 and Target Note 4**). In addition, piles of brash, a pile of construction materials and scattered logs are also present within the site (**Target Notes 1, 3, 5, 6 and 7**).

The various piles are of **negligible** intrinsic value but may provide suitable sheltering habitat for protected species, which is addressed in **Section 4.3**.

No further action is required.

Photo 12: Compost heap within the site (**Target Note 4** within **Appendix 2**).

(photo taken 9th July 2019)



4.3 Protected and Notable Species

Records of protected / notable species for the last ten years have been considered within the assessment below. Older records have been considered where appropriate. None of the records pertain to the site.

4.3.1 Invertebrates

The KMBRC returned one record of swallowtail *Papilio machaon*, one record of large tortoiseshell butterfly *Nymphalis polychloros* and 12 records of Sussex Emerald butterfly *Thalera fimbrialis*, which are listed on *Schedule 5* of the *WCA*. These records pertain to Seabrook (at least 1.1km SE), Saltwood (at least 1km W) and St. Hilda's Road, Hythe (at least 1.8km SW). Numerous records of Section 41 (NERC Act, 2006) moth and butterflies were also returned within 2km of the site. The majority of these records of Section 41 species pertain to Seabrook, Saltwood, St. Hilda's Road, Hythe and Lynton Road, Hythe, approximately 1.2km SE, 1.2km NW, 1.8km SW and 1.7km SW respectively.

Cinnabar moth *Tyria jacobaeae* larvae were noted on a small number of the common ragwort plants situated within the tall ruderal habitat on site (**Photo 13**). Cinnabar moths are a Section 41 (NERC Act, 2006) species, which as well as being recorded on site, have also been recorded locally within 2km of the site.

Photo 13: Cinnabar moth larvae on common ragwort plant on site
(photo taken 9th July 2019)



Habitats to be significantly impacted by the proposals (likely to include amenity grassland, tall ruderals, scrub and possibly hedgerows and scattered trees) are unlikely to support significant numbers of rare or notable species. Whilst it is possible that small areas of tall ruderal habitat may support these species in small numbers and is currently known to support one Section 41 moth species, the area of habitat to be lost is very small (0.07ha), particularly in the context of abundant suitable off-site habitat in the wider area. This includes areas of open grassland and suitable habitat along the coastline. Common ragwort is a very common species of plant that is likely present in abundance within the local area and therefore the small loss in plants within the site is unlikely to impact upon cinnabar moths found within the local area. Limited pollen and nectar opportunities are available for butterflies and no suitably decomposed deadwood is present to support stage beetle larvae. The site therefore holds **negligible** importance for rare / notable invertebrates.

No further surveys or mitigation are recommended. In order to ensure there is no net loss of suitable forage species for moths and butterflies, including during their larval stage, suitable wildlife-friendly planting is recommended within **Section 5**.

4.3.2 Amphibians

KMBRC returned two records of great crested newt and 15 records of common toad. The great crested newt records were returned from 2012 approximately 1.6km to the north-east, close to the M20 near Newington. In addition, a Natural England Mitigation Licence to destroy a resting place for great crested newts was also granted in 2009 for the same location, which extended from March - April 2019 (MAGIC, 2019). The water-body that likely pertains to these records is situated to the north of a railway line. No ponds are located within the site and four ponds are located within 500m (OS, 2019). Refer to **Figure 4.1** and **Table 4.4** below for pond locations.

The site comprises tall ruderals, scrub and hedgerow bases that represent good quality terrestrial habitat for foraging, sheltering and commuting great crested newts. It is understood that the majority of scrub and tall ruderal habitat and some of the hedgerows are likely to be removed. The site also contains small piles of dead wood, compost heaps, brash piles and piles of construction materials (**Target Notes 1, 3, 4, 5, 6 and 7**) that provide possible places of shelter and hibernation for amphibians, including great crested newts.

Figure 4.1: Water-bodies (blue circles) within 500m (red circle) of the site (red-line).

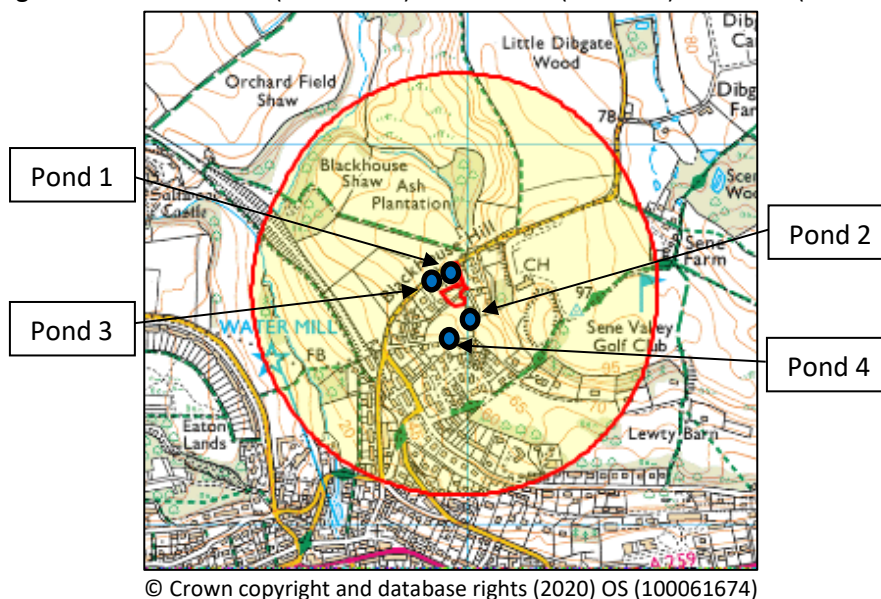


Table 4.4: Location and description of waterbodies on and within 500m of application site.

Waterbody Number	Distance & Direction from Site	HSI Score	Connectivity to the Site	Further Surveys Required?
1	9.5m NW	0.35	Separated by a residential plot	No
2	28m SE	0.50	Directly connected to the site	No
3	54m W	0.39	Separated by a residential plot	No
4	75m SW	0.63	Within the lower portion of the field adjacent to the site, directly connected to the site by tall ruderal habitat.	No

A small water trough was noted within the tall ruderal habitat adjacent to the southern border of the site, which has been assessed as providing negligible suitability for great crested newts.

Ponds 1 (**Photo 14**) and 3 (**Photo 15**) are both ornamental ponds that contain high numbers of fish. Both ponds were assessed as providing negligible suitability for great crested newts. This is supported by their HSI results, which indicate they provide poor suitability for great crested newts. The homeowner of Pond 3 indicated that both frogs and toads utilise Pond 3. Whilst the presence of great crested newts is unlikely, it is possible that other amphibians, if present within Pond 3, migrate across the site between their breeding, foraging and hibernating grounds.

Photo 14: Pond 1, facing north-east
(photo taken 17th January 2020)



Photo 15: Pond 3, facing west
(photo taken 7th January 2020)



The HSI calculation for Pond 2 indicates that the water-body holds below average suitability for great crested newts (**Appendix 4**). However, the visual inspection confirmed Pond 2 was of negligible suitability for great crested newts. The lack of management of this very small pond has led to almost all of the body of water becoming choked by vegetation (**Photo 16**). In particular grass species, such as false oat grass and cocksfoot and New Zealand pygmyweed *Crassula helmsii* dominate the pond area. Over half of the water-body has become completely dry as a result of the dense vegetation growth. The water that remains within the pond contains dense mats of New Zealand pygmyweed, dominating the reduced water availability left present. New Zealand pygmyweed is a Schedule 9 invasive species.

Photo 16: Pond 2, facing west
(photo taken 7th January 2020)



Pond 4 is situated approximately 75m south-west of the site, within the field connected to the southern portion of the site. The visual inspection conducted in September 2019 (**Photo 17**) found the water-body to be dry. During the following HSI assessments undertaken on 7th January 2020 and 19th March 2020 (**Photos 18 and 19**), Pond 4 was confirmed to be highly ephemeral, supporting only a very shallow body of water after a prolonged period of heavy rainfall during winter 2019-2020. The water levels within the breeding season were checked to confirm the suitability of the water-body to support great crested newts.

The HSI assessment of Pond 4 undertaken in mid-March 2020 confirmed the presence of a shallow body of poor quality water less than 1 inch deep, with a seemingly heavy nutrient load due to sediment and leaf litter. These findings are very similar to the conditions noted in January 2020. Very little vegetation was noted within the water-body that could be used for egg laying, with yellow iris *Iris pseudacorus* being the dominant species. In addition to the field assessment, the HSI results from within the breeding season (19th March 2020) indicate Pond 4 provides **below average** suitability (**Appendix 4**) for great crested newts. With no known great crested newt populations within the local area and the visual and HSI assessments indicating the pond is unsuitable for great crested newts, the combined evidence indicates that Pond 4 is of **negligible suitability** for this species.

Photo 17: Pond 4 on 19th September 2019, facing south



Photo 18: Pond 4 on 7th January 2020, facing south



Photo 19: Pond 4 on 19th March 2020, facing south



The site therefore holds **negligible** potential for great crested newts as no suitable water-bodies are present within 500m of the site. As per the anecdotal evidence from the owner, it is possible that other common and widespread amphibians from Pond 1 could be present on site, due to the close proximity to the site.

Further general recommendations for **other amphibians**, such as common toads, are provided within **Section 5**.

4.3.3 Reptiles: PEA

KMBRC returned records of common lizard, grass snake and slow-worm *Anguis fragilis*. The tall ruderal habitat, scrub and hedgerow base interface provides suitable habitat structure that slow-worms and grass snakes typically require. The site contains small piles of dead wood, compost heaps, brash piles and piles of construction materials (**Target Notes 1, 3, 4, 5, 6 and 7**) that provide possible places of shelter and hibernation for reptiles, as well as potential egg laying sites for grass snakes. In addition, the site is well connected to the southern portion of the field adjacent to the site and wider landscape, allowing dispersal from surrounding areas into the site, particularly from the south. The site therefore holds **high** potential for reptiles.

4.3.4 Reptiles: Presence / Likely Absence Survey

During the reptile surveys common lizards and grass snakes were recorded within the tall ruderal habitat within the western and central areas of the site (refer to **Table 4.5** and **Appendix 5** for plan of reptile results and refugia locations). In addition, grass snakes and common lizards were found throughout the field connected to the southern portion of the application site, which indicates the individuals found on site are part of a larger population immediately to the south.

Table 4.5: Reptile survey results

Survey Visit	Date	Location of Reptiles		Reptile Records	
		Adjacent site	Application site	Adjacent site	Application site
1	29 th August	-	-	-	-
2	3 rd September	Refugia 92 Refugia 86 Refugia 54, 55, 57, 59	-	1 adult common lizard. 1 sub-adult common lizard. 4 juvenile common lizards.	-
3	5 th September	Refugia 85	-	1 adult common lizard.	-
4	17 th September	-	-	-	-
5	19 th September		Refugia 3		1 juvenile common lizard.

Survey Visit	Date	Location of Reptiles		Reptile Records	
		Adjacent site	Application site	Adjacent site	Application site
		Refugia 73 Refugia 102 Free roaming within Area 5 in field Refugia 86 Refugia 85	Refugia 29	1 adult common lizard 2 adult common lizards (1x female). 1 juvenile common lizard. Sub-adult grass snake. 1 adult female grass snake.	1 sub-adult common lizard.
6	24 th September	Refugia 72, 73, 103 Refugia 42 Refugia 42, 57, 77, 85	Refugia 8 Refugia 9 Refugia 9 Refugia 28	3 adult lizards. 1 sub-adult common lizard. 5 juvenile common lizards.	3 adult grass snakes. 1 adult lizard. 1 juvenile common lizard. 1 juvenile common lizard.
7	26 th September		Refugia 8 Refugia 9 Refugia 28		3 adult grass snakes. 1 adult common lizard. 1 adult common lizard.

Survey Visit	Date	Location of Reptiles		Reptile Records	
		Adjacent site	Application site	Adjacent site	Application site
		Refugia 85		1 adult grass snake.	
		Refugia 42, 72, 73, 102		4 adult common lizards.	
		Refugia 28, 77, 86		3 sub-adult common lizards.	
		Refugia 54, 57, 94, 100		5 juvenile common lizards.	
Peak Adult Count Within Site				2 Common lizards	3 Grass snakes
Total Combined Peak Adult Count (across this development site and wider ownership site boundary to the south)				6 Common lizards	4 Grass snakes

4.3.5 Reptiles: Population Size Class Assessment

The maximum number of adult common lizards and grass snakes recorded during any one survey visit within the site was 2 and 3 respectively. This equates to a **low population** of common lizards and grass snakes present within the site based on a density of 150 refugia / ha (**Table 3.1, Section 3**).

The maximum number of adult common lizards and grass snakes recorded within both sites combined during any one survey visit was 6 and 4 respectively. This equates to a **good population** of common lizards and a **low population** of grass snakes present within both the site and the remaining portion of the field south of the site, based on a density of 96.4 refugia / ha (**Table 3.1, Section 3**).

When assessing the site itself or the two combined sites as a whole, neither of these sites qualify as a Key Reptile Site (Froglife, 1999). The population on site is considered to be of **local importance**.

4.3.6 Reptiles: Impact assessment

In the absence of mitigation, impacts to reptiles arising from the development proposal are expected to be **significant**.

Construction phase impacts: may arise from inappropriate timing of works and use of unsuitable methods to clear vegetation, which may harm reptiles. Further, loss of up c. 0.17ha of foraging habitat (tall ruderals / scrub / hedgerow bases), hibernacula (construction materials piles / hedgerow bases), breeding and sheltering sites (compost heaps) and potential habitat fragmentation and isolation of reptiles may also result from the development.

Operational phase impacts: it is unlikely that there will be a significant increase in disturbance on any local reptile population via human recreation or predation by domestic cats. This is due to the

relatively small number of residential units proposed, and the development's location within a town in which these pressures are already likely to exist.

Appropriate mitigation and avoidance measures have been recommended in **Section 5**.

4.3.7 Birds

KMBRC returned records of 65 bird species listed as Annex I (Birds Directive) and / or Schedule 1 (WCA), including red-throated diver *Gavia stellata*, purple heron *Ardea pupurea*, goldeneye *Bucephala clangula*, hen harrier *Circus cyaneus*, avocet *Recurvirostra avosetta*, little gull *Larus minutus*, barn owl *Tyto alba*, fieldfare *Turdus pilaris* and snow bunting *Plectrophenax nivalis*. The majority of these records are associated with the coastline or surrounding watercourses and riparian habitat. Some of these species include birds of prey that may on occasion utilise the site to forage. The records also included 45 species of Birds of Conservation Concern (BoCC) Red-listed and 76 species of Amber-listed birds.

A robin *Erithacus rubecula* and blackbird *Turdus merula* were recorded on site during the survey. In addition, several disused nests were noted within the buildings present on site and a likely little owl *Athene noctua* pellet was noted beneath the external archway within Building B1. Identification was less clear as the pellet was no longer whole, but the positioning below a timber beam within the external archway structure and the indication of beetle shells within the remains, indicate little owl, as shown in **Photo 20**. The owl pellet was noted during the first bat survey on 29th July 2019.

Photo 20: Crushed little owl pellet on vehicle track, below archway within Building B1.
(photo taken 9th July 2019)



Breeding bird surveys were undertaken of the adjacent field site to the south in 2020, which also incorporated the majority of this application site (c. two-thirds). The surveys indicate that both red-listed and amber-listed BoCC species were recorded generally across both sites. These included two red-listed species, song thrush *Turdus philomelos* and green finch *Chloris chloris* and three amber-listed species, stock dove *Columba oenas*, dunnoek *Prunella modularis* and bullfinch *Pyrrhula pyrrhula*. These species were seen utilising the scrub, scattered trees and hedgerows within the site.

Bird interest (nesting / foraging) is therefore likely to be confined to the hedgerows, introduced shrub, dense ivy growth, scrub, trees and buildings. In addition, there is a risk of nesting birds in the tall

ground cover, particularly in the interface between the scrub habitat and the tall ruderal habitat. The site therefore holds **high** potential for widespread species of nesting bird, including two red-listed BoCC and three amber-listed BoCC. The site overall is, however, considered to hold **negligible** potential for significant bird species and assemblages.

Further action for nesting birds is recommended in **Section 5**.

4.3.8 Badgers

KMBRC returned 10 records of badgers. The closest record was approximately 720m south-east, close to Cliffe Road, Hythe in 2019. No badger setts were recorded on or within 30m of the site boundary.

A number of mammal burrows were noted within the site, however, upon closer inspection the tunnels were found to be too narrow to allow access to a badger. The mammal burrows were therefore likely created by rabbits (**Appendix 2; Target Note 10**).

Mammal paths were recorded within and adjacent to the site. Some of these paths could be used by both humans and mammals, due to the level of human activity noticed within these areas (**Appendix 2, Target Note 10**). The area of dense bamboo within the south-eastern area of the site (**Appendix 2, Target Note 8**) contained a badger latrine (**Appendix 2, Target Note 9; Photo 21**). A single badger hair was also noted within the vicinity of the latrine. In addition, a fox scat was noted within the earth mound along the southern boundary of the site (**Appendix 2, Target Note 11**). The mammal paths could therefore have been created by badger and/or fox.

The site provides potentially suitable foraging and commuting habitat for badgers in the form of poor semi-improved grassland, tall ruderals and scrub. An earth bank suitable for digging was also noted on site. The site does not appear to support badger setts, although badger setts can appear at any time.

A pre-construction badger survey has therefore been recommended in **Section 5**.

Photo 21: Badger latrine present within the land north of the application site
(photo taken 7th January 2020)



4.3.9 Bats

KMBRC returned records for eight bat species: long-eared species *Plecotus sp.*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*,

Nathusius' pipistrelle *Pipistrellus nathusii*, Natterer's *Myotis nattereri*, serotine *Eptesicus serotinus* and Daubenton's *Myotis daubentonii*. These records comprised one soprano pipistrelle maternity roost, one hibernation roost and four roost records of unknown type. The nearest roost record was of a pipistrelle bat approximately 450m south-west of the site in 2010.

The table below provides a list of bat Mitigation Licences granted by Natural England within 2km of the site (MAGIC, 2019).

Table 4.6: Granted bat mitigation licence applications within 2km of the site.

Case Reference	Bat Species	Type of Roost	Distance & Direction	Licence Start & End Dates
2014-3777-EPS-MIT	Daubenton's and whiskered <i>Myotis mystacinus</i>	Resting place / non-breeding	1km SE	09/10/2014 -10/10/2019
EPSM2010-2295	Common pipistrelle and Nathusius' pipistrelle	Resting place / non-breeding	1.5km SW	07/10/2010 - 06/10/2012

4.3.9.1 Roosting (Trees)

All trees within the site were surveyed for bat roosting features. Mature trees with **low** suitability for roosting bats during the active season were recorded on the northern boundary and within the central areas of the site due to a crack present on one of the limbs (**Tree 2, Appendix 2**) and ivy covering that could obscure potential roosting features (**Tree 1, Appendix 2**). As a precaution, low hibernation potential should be assumed for these two trees.

Other trees surveyed on site are of **negligible** suitability for roosting bats during the active and hibernation season, as they lack suitable features.

Precautionary measures have therefore been recommended in **Section 5** should **Tree Numbers 1 and 2** (as shown in **Appendix 2**) require felling.

4.3.9.2 Roosting (Buildings)

The relevant buildings on and immediately adjacent to the site have been described below. Refer to **Appendix 2** for the building locations.

Building B1

Building B1 is comprised of two attached single-storey garages and an archway that extends over the driveway to the adjacent property (**Photo 22**). The building is constructed of stone and brick walls, a clay tile roof and a timber frame. The clay tile roof is pitched with a ridge line extending south-west to north-east along the two garage buildings and north to south over the archway. Unlined timber cladding is present within the northern and southern facing aspects of the archway structure. The eastern garage contains a small area of flat roof, likely bitumen, along its south-western aspect above the garage door.

An internal inspection of the building revealed two loft spaces within the two separate garage rooms. The western garage contains an open attic space which is not sealed off from the area below and therefore provides open flight access between the ground level and the attic space. The eastern attic contains an enclosed attic space with an open hatch, which allows direct flight access between the attic space and the ground floor. The eastern and western garage roofs are lined with bitumen roofing felt and the areas that connect each section of roof are lined with timber boards. The archway structure within the eastern end of Building B1 is unlined.

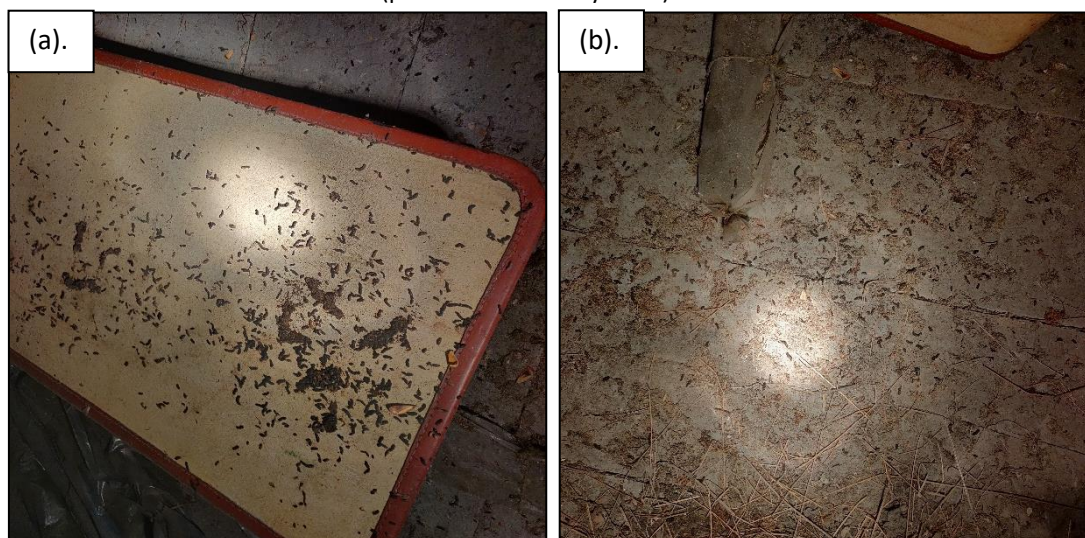
Both garage buildings are in use so would receive some disturbance from human presence, lighting and noise. However, this is mostly confined to the ground level areas and occasionally within the attic spaces, which are currently used for storage.

A large number of brown long-eared bat droppings, including one pile of 500+ droppings were found within the attic space of the eastern garage during the PEA, which measures roughly 4.5m (w) x 6.5m (l) x 2.5m (h). The droppings were concentrated below the ridge beam in piles and scattered droppings were noted throughout the attic structure (**Photo 23 (a) and (b)**). In addition, brown long-eared bat droppings were also found within the attic area of the western garage, on the car within the ground floor of the eastern garage, on the floor of the ground floor area of the eastern garage and one bat dropping was noted on the path situated under the archway structure. Further details are included within **Table 4.7** and the confirmed results of the DNA analysis are included within **Appendix 8**.

Photo 22: Building B1, double garage building with archway
(photo taken 9th July 2019)



Photo 23: Long-eared droppings within the attic space of the eastern garage
(photo taken 9th July 2019)



The internal and external inspection of Building B1 found a number of potential access and roosting opportunities that are available for bats, which are further discussed in **Table 4.7**. Due to the number of potential access points present, further surveys were undertaken to determine which access points are being used by bats. Building B1 was assessed as providing high suitability for bats and is a **confirmed roost**. Building B1 was originally assessed as being a likely brown long-eared maternity roost due to the number of droppings present, the spread of the droppings across the attic space and the various ages of droppings within the attic space. Building B1 was assessed as providing **low suitability** during the hibernation season. Although the structure is not regarded as a typical hibernation roost for bats, the potential for hibernation cannot be entirely ruled out. There is a low risk that small numbers of isolated bats could use some of the discrete features noted above over winter, due to the uncertainty around hibernation roosts in certain species (Korsten *et al.*, 2015).

Building B2

Building B2 is a dilapidated single-storey storage building (**Photo 24**). Building B2 is constructed of brick walls, a timber frame and a sloped slate tile roof that is connected to a partition wall along its northern aspect. The building is in a state of disrepair with broken windows, loose/raised lead flashing and an open doorway. Whilst the building is unlikely to experience high levels of disturbance, the open nature of the building would allow high levels of light ingress and would have limited protection from inclement weather. The internal inspection confirmed the roof was unlined and the internal space is used as a log/timber store.

Although no evidence of bats was noted in association with Building B2, a small number of suitable bat roosting features were noted within its structure, as shown in **Table 4.7**. Building B2 was originally assessed as providing **low suitability** for roosting bats during the active season and **negligible suitability** during the hibernation season. The construction of the building, dilapidated state of the building, the lack of insulated areas and light ingress, indicates the building is unlikely to provide suitable stable internal environmental conditions required for a hibernation roost.

Photo 24: Building B2, dilapidated storage building
(photo taken 9th July 2019)



Building B3

Building B3 is a greenhouse situated against a partition wall along the northern border of the site (**Photo 25**). Building B3 is of **negligible suitability** for roosting bats in both the active and hibernation seasons and no evidence of roosting bats was noted in association with Building B3.

Photo 25: Building B3, greenhouse
(photo taken 9th July 2019)



Building B4

Building B4 is a gardening shed in a dilapidated state situated within the north-western corner of the site (**Photo 26**). Building B4 is constructed of brick walls (some of which has pebbledash rendering), a timber frame and a sloped slate tiled roof. Hanging tiles are situated within the southern aspect of the building and the northern aspect and some of the western aspect of the building is heavily obscured by surrounding vegetation. The southern aspect of the building contains a corrugated plastic flat roof structure which is dilapidated and therefore creates additional access points within the building.

The internal inspection of the building confirmed the building does not contain an attic and the roof is lined with timber boarding. No evidence of roosting bats was noted in association with Building B4.

Photo 26: Building B4, gardening shed
(photo taken 9th July 2019)



The external and internal inspection identified a number of potential access and roosting opportunities within Building B4, as noted within **Table 4.7**. Building B4 was originally assessed as providing **moderate suitability** for roosting bats and **negligible suitability** during the hibernation season. The construction of the building, the dilapidated and open nature of the building, the lack of insulated areas and light ingress, indicates the building is unlikely to provide suitable stable internal environmental conditions required for a hibernation roost.

Northern Partition Wall

A brick and timber-built partition wall is situated adjacent to Building B4, along the northern border of the site (**Photo 27**). Although no evidence of roosting bats was noted in association with this area of wall, a small number of potential access and roosting opportunities are available for bats, as noted within **Table 4.7**. The wall structure was originally assessed as providing **low suitability** for roosting bats during the active season and **negligible suitability** during the hibernation season. The exposed nature of the structure, the lack of insulated areas and light ingress, indicates the wall is unlikely to provide suitable stable internal environmental conditions required for a hibernation roost.

Photo 27: Northern wall structure, situated along the northern border of the site
(photo taken 9th July 2019)



PRA - Overall Suitability for Roosting Bats in Buildings

The roost assessment originally concluded that buildings and the northern partition wall on-site contain the following bat roosting potential:

- Building B1 – **Confirmed bat roost**
- Building B2 - **Low suitability (active season); Negligible suitability (hibernation season)**
- Building B3 - **Negligible suitability (active and hibernation seasons)**
- Building B4 - **Moderate suitability (active season); Negligible suitability (hibernation season)**
- Northern Partition Wall - **Low suitability (active season); Negligible suitability (hibernation season)**

Further surveys for roosting bats were therefore undertaken.

Table 4.7: Potential access points and roosting opportunities for bats.

Building #	Evidence of Bats	Potential Access Points	Potential Roosting Opportunities	Bat Roosting Suitability
1	Various piles of brown long-eared droppings, as well as scattered droppings are present within the attic space of the eastern garage (as shown in Appendix 9). The age of the droppings ranges from recent to disintegrated very old droppings. The species of bat was confirmed through DNA analysis (Appendix 9). Fresh brown long-eared droppings were found on the bonnet of the car within the ground floor of the eastern garage. Based on the car's use, the droppings were deposited between 29th June 2019 and the 9th July 2019. A small number of scattered brown long-eared droppings were found within the open attic area of the western garage and a single brown long-eared dropping was found below the archway. A few yellow underwing moth wings were noted amongst the piles of droppings within the attic void of the eastern garage.	• Gaps under loose and raised roof tiles. • Gaps through broken windows. • Gaps through timber between the archway structure and the eastern garage.	• Crevices between tiles and bitumen felt. • On internal timber frames. • On internal rough stone walls. • Crevices between the internal stone walls. • Crevices between the roof structure and internal stone walls.	Confirmed roost.
2	None.	• Through open doorways and broken windows. • Gaps under raised lead flashing. • Gaps between loose brickwork.	• Crevices beneath raised lead flashing. • Potential crevices within brickwork. • On rough internal brick walls.	Low.
3	None.	N/A	N/A	Negligible.
4	None.	• Gaps under loose and raised hanging tiles. • Gaps in the timber boards lining the roof. • Through open doorways, broken windows and broken roof structure.	• Crevices between hanging tiles. • Crevices between the timber boarding and slate tiles. • Rough brick walls and timber frame.	Moderate.
Northern Partition Wall	None.	• Gaps within bricks. • Gaps between timber boards and brickwork.	• Crevices within the brickwork and between the timber panels and brickwork.	Low.

4.3.9.3 Nocturnal Surveys

A summary of the nocturnal surveys has been provided below. Refer to **Appendix 10** for the raw data tables, surveyor locations, results and photographs of a bat roost that was identified during the surveys.

4.3.9.4 Dusk Emergence Survey 29th July 2019

Two common pipistrelle bats were recorded emerging from a roof tile within the north-western aspect of Building B1 at 21:22 and 21:25. Once emerged, the bats were seen to fly through the site in a north-west direction.

A single non-echolocating bat, considered likely to be a brown long-eared bat, was observed emerging from a roof tile within the north-western aspect of Building B1 at 21:48. Once emerged, the bat was seen to fly through the site in a north-west direction.

The static detector left within the enclosed attic within the eastern garage of Building B1 did not record any bats. No bat droppings were noted on the sheet left within the same location.

No bats were recorded entering or emerging from Building B2 during the nocturnal survey.

Refer to **Appendix 10** for further details.

4.3.9.5 Dusk Emergence Survey 30th July 2019

No bats were recorded entering or emerging from Building B2, Building B4 or the Northern Partition Wall during the nocturnal survey.

The static detector left within the enclosed attic within the eastern garage of Building B1 did not record any bats. No bat droppings were noted on the sheet left within the same location.

Refer to **Appendix 10** for further details.

4.3.9.6 Dawn Re-entry Survey 15th August 2019

A single brown long-eared bat was seen to enter Building B1 through the eastern archway structure from the south at 04:53 and did not re-emerge. Based on the flight pattern and direction it is considered likely that the bat re-entered the building through a gap between the timber of the roof that provides access into the roof structure of the eastern garage.

A single brown long-eared bat was seen to likely enter the roof area within the south-eastern aspect of Building B1, above the garage door, through a raised roof tile at 04:59.

Two long-eared bats (likely brown long-eared bats) were seen to enter Building B1 through the eastern archway structure from the south at 05:00 and did not re-emerge. Based on the flight pattern and direction it is considered likely that the bats entered the building through a gap between the timber of the roof that provides access into the roof structure of the eastern garage.

A single brown long-eared bat was seen to enter Building B1 through the eastern archway structure from the north at 05:07 and did not re-emerge. Based on the flight pattern and direction it is considered likely that the bat re-entered the building through a gap between the timber of the roof that provides access into the roof structure of the eastern garage.

The static detector left within the enclosed attic within the eastern garage of Building B1 recorded long-eared (considered to be brown long-eared) and brown long-eared calls at intervals between 04:12 and 05:11. Based on the recordings and the times of the re-entries observed at least one additional brown long-eared bat is considered to be roosting within Building B1 during the survey. An echolocation call was recorded within the attic at 04:12, which is prior to the first re-entry observed at 04:53. It is likely that a brown long-eared bat re-entered the building prior to the survey commencing.

Approximately 20-30 brown long-eared droppings were recorded on the sheet within the enclosed attic space within the eastern garage of Building B1. This indicates 20-30 brown long-eared droppings were deposited between 30th July and 15th August 2019 (16 days).

Refer to **Appendix 10** for further details.

4.3.9.7 Dusk Emergence Survey 2nd September 2019

Two long-eared bats (likely brown long-eared bats) were seen to emerge from Building B1 through the northern opening of the eastern archway structure at 20:12. Based on the flight pattern and direction it is considered likely that the bats emerged from the building through a gap within the timber frame between the archway and the eastern garage.

Two brown long-eared bats were seen to emerge from Building B1 through a roof tile within the northern aspect of the eastern garage close to the ridge at 20:16.

The static detector left within the enclosed attic within the eastern garage of Building B1 did not record any bats. Approximately 50 brown long-eared droppings were recorded on the sheet within the enclosed attic space within the eastern garage of Building B1. This indicates that 20 brown long-eared droppings were deposited between 15th August and 2nd September 2019 (18 days).

Refer to **Appendix 10** for further details.

4.3.10 Evaluation of Bat Roosts

4.3.10.1 Building B1

Five-six brown long-eared bats were recorded roosting within the roof structure and attic space of the eastern garage of Building B1, utilising three separate access points. Based on the evidence found within the enclosed attic space of the eastern garage of Building B1 noted during the PEA and further attic inspections and the number of bats recorded roosting within Building B1 during the nocturnal surveys, the roost is considered to be a small brown long-eared maternity roost. The results indicate that the maternity roost uses the attic space of the eastern garage and the space between the roof tiles and bitumen felt for roosting. It is also likely that the bats utilise the attic space and ground level of the eastern garage for lighting sampling, due to the scattered droppings noted within these two locations. The small numbers of droppings noted within the western garage open attic space, suggests that this part of the building may be used on occasion. The small brown long-eared maternity roost recorded within Building B1 is given **county level importance** as the maternity roost comprises five-six bats that are of common prevalence both locally and across the UK (Bullion, 2009). Refer to **Appendix 11** for the process of evaluation.

Two male or non-breeding female common pipistrelles were recorded roosting within the roof tiles of the eastern garage of Building B1, utilising two separate access points. The two common pipistrelle

day roosts recorded within Building B1 are given **site level importance** as each roost comprises a single non-breeding bat that is of common prevalence both locally and across the UK (Bullion, 2009). Refer to **Appendix 11** for the process of evaluation.

Further recommendations with regards to lighting and replacement planting are included within **Section 5**.

4.3.10.2 Building B2, Building B4 and Northern Partition Wall

No evidence of roosting bats was recorded during any of the surveys. These buildings/structures are therefore of **negligible importance** for roosting bats. No further surveys or mitigation are recommended.

4.3.10.3 Foraging and Commuting

Suitable habitat for foraging and commuting bats was recorded within the site. Habitats include the scrub, scattered trees, hedgerows and interfaces of these habitats with tall ruderal growth. The surrounding landscape includes similar habitat adjacent to the site and alternative areas of highly suitable bat foraging and commuting habitat, such as mature tree lines, small pockets of woodland, scrub habitat and hedgerow corridors, which provide more optimal habitat for bats within the wider landscape. The site was therefore originally assessed as providing **low** suitability for foraging and commuting bats.

In addition to the PEA, the nocturnal surveys found that common pipistrelle bats were most frequently recorded, followed by brown long-eared bats and very occasional passes of soprano pipistrelles, *Myotis* species (likely whiskered / Brandt's *Myotis mystacinus* / *brandti* and Natterer's) and a single pass of a serotine. The dusk surveys indicate that the northern and central areas of the site are particularly well used by common pipistrelles with activity being recorded throughout the surveys. In addition, both common pipistrelles and brown long-eared bats were recorded throughout the dawn survey. Foraging and commuting activity was focussed around Building B1, along the access track, along the scrub habitat situated within the central area of the site, within the western area of tall ruderals and within the garden area associated with the Cold Harbour residential dwelling situated to the south of Building B1, which is outside the development boundary. Overall, the northern and central areas of the site are considered to be of **local importance** for foraging and commuting bats (refer to **Appendix 11** for the process of evaluation). The southern portion of the site, which includes scrub, tall ruderals, poor semi-improved grassland and scattered trees was not visible from the nocturnal bat surveys.

Further recommendations are included within **Section 5**.

4.3.11 Hazel Dormice – Habitat Assessment

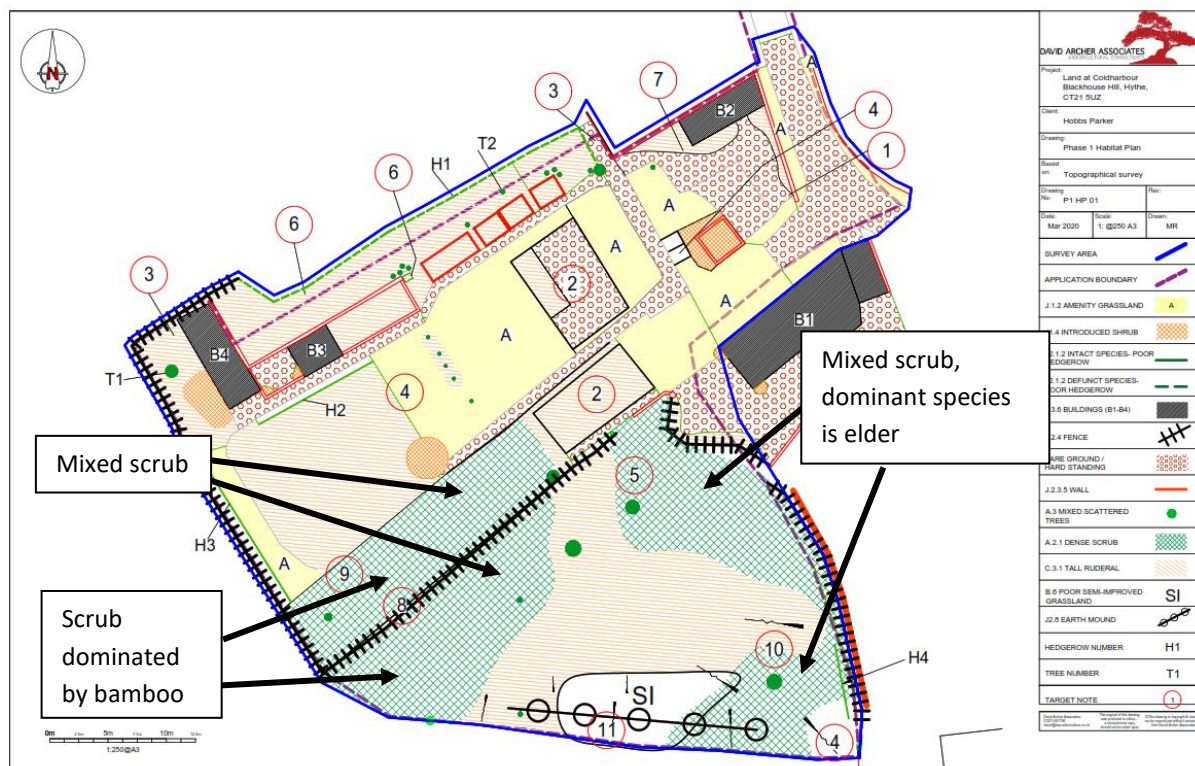
KMBRC did not return any records for dormice and no dormouse distinctively gnawed nuts were recorded during an incidental nut search of the small number of hazel nuts found within the site (only 10-15 hazel nuts were found, which is below the typical number counted as a survey technique). The site is, however, located within the dormouse natural range and the scrub, a hedgerow and scattered trees within the site contain suitable food plants such as bramble, hawthorn and a small amount of hazel. The site is connected to priority habitat deciduous woodland to the south-east of the site. According to aerial images, the woodland to the east connects to additional expanses of woodland and scrub habitat within the wider landscape.

As shown in **Figure 4.2**, the majority of the scrub habitat within the site is comprised of species that are not known to provide value to dormice, such as bamboo and elder. Whilst the site contains some habitat with suitable species, this reduces the overall suitability of the site as majority of the scrub habitat within the site is not suitable.

Although suitability for dormice is limited within certain areas of the site, the site's position being well-connected to woodland habitat, connectivity to the wider landscape, the presence of suitable forage and suitable habitat / connectivity within the site indicates that the presence of dormice cannot be ruled out. It is possible that if a dormouse population is present within the woodland to the east, dormice may disperse into the application site. The site is therefore considered to hold **low** potential for dormice.

The current proposals indicate the majority of suitable dormouse habitat within the site will be removed and therefore further surveys were recommended.

Figure 4.2: Detailed layout of scrub habitat within the application site (edited from the Phase 1 Habitat Map, Appendix 2)



4.3.12 Hazel Dormice - Nest Tube Survey

No evidence of hazel dormice was recorded during the surveys, which were carried out during optimal conditions and in line with standard guidelines. Dormice are therefore likely to be absent from the site. See **Appendix 12** for locations of the dormouse nest tubes.

This site is of **negligible importance** for hazel dormice. No further surveys or mitigation are recommended.

4.3.13 Hedgehogs and Other Section 41 Priority / Rare Species

KMBRC returned four records of hedgehog *Erinaceus europaeus* within 2km of the site. Some areas of habitat had **high** potential for hedgehogs, including the areas of tall ruderal with rough grass species

for foraging and margins of the dense scrub and brash piles / composting areas for shelter. Suitable habitat is present in the adjacent field and surrounding landscape.

Further action has been recommended within **Section 5** to maintain access within the site for hedgehogs.

4.3.14 Invasive Plants

No invasive plant species listed under Schedule 9 of the *WCA* were noted on site during the survey.

No further action has therefore been recommended.

4.4 Summary of Baseline Ecological Conditions

Table 4.8: Summary of the scale of importance for each ecological feature.

Ecological Receptor	Scale of Importance
Scattered trees and hedgerows	Site
Invertebrates	Negligible
Amphibians (including great crested newts)	Negligible
Reptiles	Local - confirmed presence
Nesting Birds	Site - breeding by widespread and common species, including small numbers of BoCC Red-listed and BoCC Amber-listed only
Badgers	Negligible – no setts present
Bats (roosting in buildings)	County (brown long-eared) and site (common pipistrelle) – the confirmed roosts in the adjacent building will not be directly impacted but the functionality of the roosts could be impacted by inappropriate lighting and removal of foraging and commuting features
Bats (roosting in trees)	Site
Bats (foraging and commuting)	Local
Hazel dormice	Negligible - confirmed likely absence
Hedgehog	Local

5 Assessment of Effects and Mitigation Measures

The following ecological receptors have been determined unlikely to be impacted by the proposed development for the reasons provided below, and as such have been scoped out from further evaluation, with no avoidance or mitigation measures required:

Table 5.1: Ecological receptors screened out from further assessment.

Ecological Receptor	Reason no Impacts are Expected
Statutory Sites	No significant impacts anticipated.
Non-statutory Sites, Ancient Woodland and HPIE	No significant impacts anticipated.
Invertebrates	No suitable habitats present.
Amphibians (including great crested newts)	No suitable habitats present.
Schedule 1 Breeding Birds	No suitable habitats present.
Wintering birds (Schedule 1 or important assemblages)	No suitable habitats present.
Bats (roosting in Buildings B2, B3 and B4 and Northern Partition Wall)	Confirmed absent by PRA or further survey work.
Hazel dormice	No evidence recorded.

Where impacts or potential impacts are anticipated, these have been described below along with recommendations for avoidance and / or mitigation measures.

5.1 Scattered Trees and Hedgerows

5.1.1 Potential Impacts

The development proposals will require the removal of a number of trees and some hedgerow habitat within the application site. This will lead to a loss in general biodiversity on-site and connectivity around the borders of the site. In addition, without suitable protective measures, construction activities could potentially damage hedgerow and scattered habitats which will be retained.

The development proposals will result in the loss of scattered trees and a small amount of non-native hedgerow.

5.1.2 Mitigation Measures

Use the following measures to minimise impacts to hedgerows and trees:

- Retain hedgerows and trees where possible and protect where required during construction with Heras fencing in line with *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* (British Standards Institution, 2012);
- Replant any trees or hedgerows lost to the development with native specimens of local provenance (refer to **Appendix 13** for suitable species); and

-
- Link existing hedgerows around the boundaries of the site where possible.

This can be secured through an appropriate planning condition.

5.1.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be a residual effect on the scattered trees on-site as the replacement planting will take time to establish. When considered alongside the proposed tree retentions, which includes trees of higher value, this is taken on balance to be of low residual effect.

5.2 Reptiles

5.2.1 Potential Impacts

Impacts to reptiles arising from the development proposal are expected to be **significant**.

Construction phase impacts may arise from inappropriate timing of works and use of unsuitable methods to clear vegetation, which may harm reptiles. Loss of c. 0.17ha of foraging habitat (tall ruderal habitat, scrub and hedgerow base interface), hibernacula (small piles of dead wood, compost heaps, brash piles and piles of construction materials (**Appendix 2, Target Notes 1, 3, 4, 5, 6 and 7**)) will also result from the development.

During the operational phase, it is unlikely that there will be a significant increase in disturbance on any local reptile population via human recreation. This is due to the relatively small number of residential units proposed, and as the adjacent land, which hosts the larger portion of the population, is private property. There may be a small increase in the risk of predation by domestic cats. However, the site and wider landscape is already heavily surrounded by residential housing and therefore an increase in a small number of properties is unlikely to cause a significant increase in cat predation already experienced by the reptile population.

5.2.2 Mitigation Measures

A Reptile Mitigation Strategy and Method Statement is recommended due to the presence of a low population of common lizards and grass snakes within the site. Based on the current proposals, translocating the reptiles to a suitable off-site receptor area is considered to be the most suitable option to mitigate for the reptiles within the site.

The Reptile Mitigation Strategy and Method Statement below provides the details of the appropriate avoidance and mitigation measures required to ensure the populations of reptiles on-site are protected from harm and safely translocated to a suitable reptile receptor site. The reptile receptor site chosen will ensure the longevity of the reptile populations present.

5.2.2.1 Receptor Site Selection

Since it is now likely that a separate planning application will be forthcoming for the field to the south-west of the current application site, and that reptiles forming part of the same population are present across both sites, a new receptor area has been identified that could support reptiles from both sites, should both applications receive planning permission. This strategy is deemed to be the optimal one for the reptiles as the population will not be divided. Further, the chosen receptor site is only 180m east of the application site and directly connected to it by woodland, scrub and grassland under the long-term lease and management of Sene Valley Golf Club, who also lease and manage the proposed receptor site. The golf club have given permission for the receptor site to be enhanced and maintained

for the primary purpose of supporting reptiles for at least 10 years from the point of planning permission being granted. This could be further secured by means of a Section 106 agreement or similar.

The receptor site is located at central OS grid reference TR 17198 35558, as shown in **Appendix 7**. The receptor area for this application is c. 0.13ha, by comparison to the 0.17ha of suitable reptile habitat being lost to the development, but there is good potential to provide sufficient enhancement features within the receptor site to compensate for the 0.04ha difference in size.

The receptor site was surveyed on two separate occasions (21st April 2020 and 20th October 2020) by Principal Ecologist Claire Munn to ascertain its current suitability and future potential to support reptiles at different times of year. From these surveys and discussions with the golf course manager, it is clear that despite the receptor site being located at the bottom of sloping ground, it remains of a suitably high enough elevation that it does not flood or hold surface water. The current ground flora and management of the site is such that reptiles are unlikely to already be present as the grass remains at a short sward for most of the year with no sheltering options in the centre of the site. However, the habitats immediately adjacent to the receptor site, in the form of scrub-covered slopes, and the tussocky grass, scrub and woodland between the receptor site and application site, offers optimal reptile habitat. As such, the receptor site offers an opportunity to create replacement reptile habitat where reptiles are not currently present, but where the reptiles being moved would still remain connected to the wider reptile population and habitats as they are currently.

5.2.2.2 Habitat Enhancement within Receptor Site

Suitable reptile habitat will be created within the reptile receptor site. This will be created in advance of the translocation in order to allow the vegetation to develop and the features created to bed in. This will include the following measures laid out below in **Table 5.2** (and shown in **Appendix 7**).

Table 5.2: Enhancement measures to be undertaken within the reptile receptor site

Enhancement Measures	Action
Creation of tussocky grass sward	An area 3m wide at the base of the slopes within the receptor area will be suitably prepared and sown with a tussocky grass seed mixture, such as Emorsgate EM10 Tussock Mixture prior to the translocation commencing. Ground preparation, sowing and aftercare will follow the guidance from the seed mix supplier specific to the seed mix ordered. Generally though, perennial weeds will need to first be removed by repeated cultivation and the ground then prepared by digging to bury the surface vegetation. Raking will then be needed to create a medium tilth and a firm surface then produced. Seeds should be sown ideally in spring or autumn, but at least when warm and sufficient moisture is present at ground level. The seeds should be surface sown and firmed in with a roll or treading. The first year after sowing will require regular strimming using hand-held equipment to a height of 40-60mm to control annual weeds, with arisings removed and placed on the dedicated grass cutting pile within the receptor area. Perennial weeds should be dug out and removed from site.
Creation of reptile hibernacula	One reptile hibernaculum measuring 8m long, 2m wide and 1m deep will be created on site, at the base of the south-facing slope where the existing bramble meets the grassland. As the site can become damp during prolonged, high rainfall, the hibernaculum will not be dug into the ground, with only the first c.15cm of soil in the location of the

	hibernaculum being scraped back and set aside. The base of the hibernaculum will be constructed of inert hardcore, rubble and wood from native hardwood species to provide reptile refuge and hibernation opportunities. Logs of various sizes and then brash will be placed above this. Finally, the stripped soil and vegetation previously removed will be placed back on top of the hibernaculum on completion. The hibernaculum will be created prior to the commencement of the reptile translocation. See Appendix 7 for further details.
Creation of additional log and brash piles	Three log and brash piles each measuring at least 2m x 2m wide and 1m high, will be created at the scrub and grassland interfaces at the bottom of the slopes. The log and brash piles will be created prior to the commencement of the reptile translocation and will include logs of varying sizes from hardwood trees, with larger logs arranged at the core and smaller logs and brash placed above, all randomly assorted rather than stacked. See Appendix 7 for further details.
Creation of grass cuttings pile	A grass cuttings pile will be created within a sunny location along the northern margin where the grass meets the sloped bramble-covered ground. This will allow any future cuttings from habitat management to be stored on-site. This feature should also provide additional sheltering opportunities for reptiles and also potentially egg laying opportunities for grass snakes. The grass cuttings pile will be started prior to the reptile translocation with grass cuttings from other parts of the golf course and will be added to as and when habitat maintenance activities are completed on site. Himalayan balsam was noted during a walkover of the wider golf course on 20th October 2020; it is paramount that no Himalayan balsam is moved into the receptor site via cuttings moved here from other areas.
New Management Regime	Once a tussocky sward has established around the edges of the site, it should require minimal maintenance, with no more than a once annual cut during autumn to a minimum height of 10-15cm. Natural development of a tussocky/tall sward within the centre of the site should also be encouraged with the same cutting regime as the seeded area. Scrub should not be allowed to encroach into the grass area and should be managed as regularly as necessary to ensure this. Arisings from grass cutting should be added to the dedicated grass pile within the receptor area and logs and brash from maintenance activities around the golf course should be added to the log piles and hibernacula as they naturally decompose (ensuring that no Himalayan balsam is moved into the receptor site from other parts of the golf course where it is present). The receptor area should be managed as such for at least 10 years from planning consent being granted for the proposed development.

5.2.2.3 Translocation (including exclusion fencing)

Reptile fencing will be installed around the site boundary prior to the reptile translocation works commencing (**Appendix 6**). A fingertip search will be carried out by an ecologist of sensitive areas to be impacted by the fence construction. The reptile fence will ensure the areas of suitable reptile

habitat within the site are enclosed, preventing ingress or egress by common lizards or grass snakes from the areas surrounding the site.

It is recommended that strong plastic material be used as this is unlikely to get damaged and is easier to install and remove upon completion. The fencing should be buried 200-300mm into the ground, with a return at the top and secured by timber posts. The reptile exclusion fence will be maintained in good condition until project completion; it will be the responsibility of the site manager to ensure that the reptile fence remains in sound condition by completing daily checks and carrying out maintenance as soon as any damage is discovered, until the works are completed.

Artificial reptile refuges will be placed across the development site, numbering at least 60 (density of 200 per hectare). Artificial refuges will consist of a combination of roofing felt and Onduline, all measuring a minimum of 50cm x 50cm. The ecologist will check these artificial refuges and any other suitable reptile habitat within the site at least five days a week (when weather is suitable) until five consecutive days of finding no reptiles has been achieved, with a minimum of 30 translocation surveys carried out. This capture effort will be carried out during suitable weather conditions between mid-March and September (potentially October if weather remains suitable for reptiles to be active).

5.2.2.4 Vegetation Removal, Hand Searches and Mechanical Excavation

Due to the nature of the site with various areas of hard standing, buildings and walls, the fencing cannot be installed neatly around the borders. In order to install the fencing so that it creates a perimeter around the site and encloses as much of reptile habitat as is possible, it will be necessary to undertake fingertip searches and vegetation manipulation of some of the eastern areas of the site prior to installation of the fencing. The small areas containing suitable reptile habitat (within the eastern area of the site) that cannot be included within the fencing will be carefully searched and trimmed back under supervision prior to the installation of reptile fencing. All suitable reptile habitat within these areas will be removed prior to the installation of the fencing. If any reptiles are found, they will be relocated to the reptile receptor site. Once cleared, the habitat on-site outside the reptile fencing will be managed to ensure it remains unsuitable for reptiles.

Following completion of the capture and relocation exercise within the fenced area, a destructive search will be undertaken 24 hours after after strimming of the vegetation to 10-15cm in height and immediately following a finger-tip search by an ecologist of all remaining suitable reptile habitat. An excavator and operative will carefully and slowly scrape back the top c. 15cm of soil under guidance and supervision of an ecologist, who will move any reptiles encountered to the receptor area. This will be undertaken in warm, dry weather during the active reptile season (mid-March to October). Once all suitable reptile habitat has been destroyed, the ecologist will declare the site free of reptiles and development works can proceed.

On completion of all development works, the reptile exclusion fence should be carefully removed from site.

5.2.2.5 Summary of Mitigation

In summary, mitigation includes the following measures:

1. Habitat enhancement of receptor site prior to translocation
2. Translocation of reptiles
3. Vegetation removal, hand searches and mechanical excavation

The above mitigation strategy aims to ensure the long-term maintenance of the reptile population in the locality and avoid harm to individual reptiles.

5.2.3 Significance of Residual Effects

Once the mitigation measures have been implemented, and subject to ongoing maintenance of the receptor site in line with the recommendations in this report, there will be no significant residual effects on reptiles.

5.3 Nesting Birds

5.3.1 Potential Impacts

Common and widespread nesting birds, including two BoCC Red-listed and three BoCC Amber-listed species, may be directly impacted during ground preparation and demolition activities if active nests are present in the woody vegetation and buildings being removed /demolished.

5.3.2 Mitigation Measures

Where possible, clear the buildings, the northern partition walls, woody habitats (including thick ivy vegetation) and tall ruderal habitat between September and February (inclusive) to avoid the breeding bird season. Alternatively, an ecologist should check potential nesting habitat immediately before clearance that is scheduled during the breeding season (March to August inclusive). The exception to this is Building B2, Building B3 and the tall ruderal habitat, which can easily be inspected for nests by a non-ecologist, providing the person carrying the check is competent in identifying birds' nests. Any active nests identified must be retained *in situ* with a suitable buffer until the ecologist has confirmed that the chicks have fledged, and the nest is no longer active.

This can be secured through an appropriate planning condition.

5.3.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be no significant residual effects on nesting birds.

5.4 Bats - Buildings

5.4.1 Potential Impacts

The proposals involve the retention of Building B1 in its current form and use and therefore there will be no direct impacts to the two common pipistrelle day roosts or the small brown long-eared maternity roost.

The proposals involve the construction of additional residential buildings at least 4m from Building B1, which is a distance that will help avoid indirect impacts to bat roosts. Providing this distance is maintained as the proposals develop, flight paths and/or access points associated with roost locations will not be impacted and the disturbance from noise and vibration can be reduced to levels that are unlikely to impact the survival of the bats and viability of the roosts.

Although a large portion of the habitat within the central areas of the site (comprising tall ruderal, amenity grassland, shrubs and scattered trees) will be removed in order to facilitate the development, connectivity from Building B1 to the south, along hedgerows and ornamental planting present within the adjacent garden area of the Cold Harbour residential property, will be retained. This will ensure that during the construction phase suitable flight paths away from Building B1 and into the wider

landscape are still available to bats. In addition, boundary habitat extending to the west of Building B1 can be replaced through an appropriate landscape scheme to ensure that connectivity along the southern boundary of the site and to the landscape west of the site is maintained.

Adverse indirect impacts from inappropriate lighting could lead to roost abandonment or increased predation risk, which could have moderate impacts at the local level and high impacts at the site level. An appropriate lighting plan will therefore be required as part of the proposals.

Based on the current proposals, any indirect impacts to roosting bats as a result of the development can be appropriately avoided and mitigated without the need for a derogation licence from Natural England.

5.4.2 Mitigation Measures

The following measures will be implemented within the development to ensure that the roosts noted within Building B1 are protected and continue to be viable during the construction and operational phases of the development:

- A 4m buffer will be maintained around Building B1, in which no buildings are constructed (3m is acceptable for hedgerow planting).
- Construction materials will not be stored up against or within the 4m buffer of Building B1.
- Site workers are to be made aware of the importance of the bat roosts within Building B1 and the legislation that protects bats.
- Within the landscaping plan, if the scrub habitat along the southern border of the site is to be lost, this is to be replaced through tree and hedgerow planting to ensure connectivity from the western aspect of Building B1 is maintained to the wider landscape, west of the site.
- Building B1 will not be illuminated by lighting during any stage of the construction works.
- An appropriate lighting plan is to be designed to ensure Building B1 is not illuminated by the installation of new lighting features within the proposed development.

The following measures will be implemented within the development to reduce impacts on roosting bats, foraging and commuting bats and other nocturnal species caused by artificial lighting (BCT & ILP, 2018):

- Direct any task lighting used during construction away from Building B1, boundary trees, scrub and hedgerows (retained and new) and any newly installed bat boxes;
- Set any necessary security lighting on short timers with a sensitivity to large moving objects only;
- Consider installing internal light fittings in a recess where installed in proximity to windows facing the boundary vegetation in order to reduce glare and light spill;
- Limit lighting times to provide dark periods;
- LED light sources should be used wherever possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capabilities. A warm spectrum light (ideally <2700 Kelvin) should be used to reduce the blue light component. Lights should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012). Luminaires should be mounted on the horizontal, i.e. with no upward tilt. Avoid the use of UV light and do not use metal halide, fluorescent light sources; and
- As a last resort, use hoods or cowls to avoid light being directed at the sky or towards the boundary vegetation.

This can be secured through an appropriate planning condition.

5.4.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will no significant residual effects on roosting bats.

5.5 Bats - Trees

5.5.1 Potential Impacts

The felling of scattered trees on site with **low** bat roosting potential during the active or hibernation season could potentially result in the killing or injuring of bats present, as well as the loss of a potential bat roost. In addition, the proposals could lead to potential disturbance of any bats present and roosting in these trees through increased lighting during the construction or operational phases of the proposed development.

5.5.2 Mitigation Measures

Tree Number 1 (Appendix 2) (also noted as Tree 7 within the Arboricultural Method Statement (March, 2020)) and **Tree Number 2 (Appendix 2)** (also noted as Tree 3 within the Arboricultural Method Statement (March, 2020)) will be retained as part of the development proposals. If for any reason, these trees can no longer be retained, precautionary measures are recommended during the felling process.

Tree Number 1 should be soft-felled in sections. Once each section of the tree is cut, this should then be carefully lowered to the ground. The tree should be checked throughout the felling process to confirm there are no holes/cracks or features that lead into suitable cavities to support bats. The pieces of tree should be left on-site overnight prior to their removal or being passed through a chipper as an extra precaution. This will allow bats to leave the tree in the unlikely event one is missed during the inspection. As a precaution, felling of Tree 2 within the hibernation season, which extends from November – February, should be avoided. The same soft-felling approach should be taken for **Tree Number 2**, however, it is recommended that an appropriately trained and licensed ecologist is present during the initial stages of felling to inspect the split branch and confirm absence of roosting bats.

These measures can be secured through an appropriate planning condition if plans change to include impacts to Trees 1 or 2.

5.5.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will no significant residual effects on any potential roosting bats.

5.6 Bats – Foraging and Commuting

5.6.1 Potential Impacts

The loss of scattered trees, scrub, hedgerow and tall ruderal habitat on site will result in the loss of a small area of bat foraging and commuting habitat. In addition, this loss could also decrease connectivity with the boundary trees on site, which may decrease the suitability of the site for foraging and commuting bats.

The use of inappropriate lighting has the potential during both the construction and operational phases of the proposed development to cause disturbance to foraging and commuting bats, particularly the suitable habitat situated adjacent to and in close proximity to the site.

5.6.2 Mitigation Measures

The loss of scattered trees, scrub, hedgerow and tall ruderal habitat within the site, which represents a small area of bat foraging and commuting habitat, will be mitigated for by planting native, locally sourced trees/shrubs around the periphery of the site and individual properties, such that connectivity is maintained. **Appendix 13** provides a table of suitable species that can be included within any new tree-lines / hedges or other planting to encourage bats to continue foraging and commuting within the site.

An appropriate lighting scheme will be required in order to maintain a suitable foraging and commuting environment on-site for bats. The lighting principles laid out in **Section 5.4.2** above will be implemented.

This can be secured through an appropriate planning condition.

5.6.3 Significance of Residual Effects

With the above mitigation measures implemented, there will be a low residual effect on bat foraging and commuting habitat as the replacement planting will take time to establish. However, some suitable boundary bat foraging and commuting habitat will be retained along the northern and western borders of the site. In the context of the wider tree retentions on site, which include mature trees likely to provide suitable cover, connectivity and high value to invertebrates and the generally high levels of tree cover in the area, this is taken on balance to be of low residual effect.

5.7 Hedgehog

5.7.1 Potential Impacts

Depending on the extent and type of fencing proposed within the development, there is potential to impact the movement of hedgehogs through the site and between the site and adjacent habitats.

5.7.2 Mitigation Measures

Any new garden fences are to have either a 13cm tall gap along the base or hedgehog links (13cm x 13cm holes at the base) at 10m intervals to allow hedgehogs to move freely between gardens and adjacent habitats.

This can be secured through an appropriate planning condition.

5.7.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will no significant residual effects on hedgehogs.

5.8 General Site Measures

5.8.1 Potential Impacts

If trenches, holes or deep pits are left open / uncovered overnight during construction works, it is possible that animals foraging or commuting through the site (such as hedgehog and badger) could

fall into these openings and become trapped, injured and in some instances become at risk of predation.

Badger setts, whilst absent at the time of survey, can appear at any time. If a new sett or suspected sett is noted within 30m of the works area prior to completion of the development, stop works and contact an ecologist for advice.

5.8.2 Mitigation Measures

Use these precautionary measures to avoid / reduce impacts to wildlife:

- Cover any trenches, holes or deep pits overnight, or use secured planks to allow any animals that fall in to escape during construction. A member of staff will check the site at the end of each working day to ensure that these provisions to protect nocturnal species (such as hedgehog and badger) have been made; and
- Include pollen and nectar-rich species in any planting design to replace this food source for insects, which is to be lost by the removal of ornamental planting.

This can be secured through an appropriate planning condition.

5.8.3 Significance of Residual Effects

Following the mitigation measures above being implemented, there will be no significant residual effects on nocturnal terrestrial mammal species or common and widespread invertebrates.

5.9 Summary of Effects and Avoidance and Mitigation Measures

Table 5.3: Significance of residual effects, avoidance and mitigation measures required and method of securing avoidance and mitigation measures

Ecological Receptor	Avoidance / Mitigation Measures Required	Means of Securing Avoidance / Mitigation Measures	Significance of Residual Effects
Scattered trees and Hedgerows	Protect these boundary features and replant any trees lost to development with native species of local provenance.	Condition	Negligible
Reptiles	The Reptile Mitigation Strategy and Method Statement will be followed to avoid impacts on reptiles and comply with wildlife legislation and policy.	Condition and Section 106 Agreement	Negligible
Birds	Careful timing of works to avoid the nesting bird season (March-August, inclusive) or a nest check to be carried out by an ecologist immediately ahead of works.	Condition	Negligible
Bats (roosting in buildings)	4m no-build buffer and 3m no-planting buffer to be applied around Building 1, a sensitive lighting strategy to be incorporated and replacement planting to be included to retain connectivity to the roost.	Condition	Negligible
Bats (roosting in trees)	Soft-felling procedures if plans change to include removal of Trees 1 or 2.	Condition	Negligible
Bats (foraging and commuting)	Sensitive lighting strategy and replacement planting to maintain foraging and commuting habitat.	Condition	Negligible - low
Hedgehog	Fencing with gaps at the base to be used to allow hedgehog access.	Condition	Negligible
General site measures	Cover open trenches overnight or install ramps to prevent entrapment of animals and include pollen/nectar-rich plants in the landscape plan to replace habitat for widespread invertebrates.	Condition	Negligible

5.10 Cumulative Effects

Cumulative effects requiring consideration are those that might lead to effects on habitats or species assessed as being of greater than negligible importance in this EclA. Only impacts to foraging and commuting bats may be higher than negligible (in this case low) due to the time-lag involved between planting of replacement trees, shrubs and / or hedgerows and them becoming suitable to offer foraging and commuting habitat for bats.

Given the location of the proposed development and the habitats and species concerned, this is likely to be limited to developments affecting habitats connected to the site, within the surrounding residential areas and adjacent golf course.

A search of the proposed, but as yet undecided, planning applications within Folkstone & Hythe District Council revealed that no likely cumulative impacts to foraging and / or commuting bats are likely to apply. No significant cumulative residential effects are therefore expected.

6 Enhancements

The recommendations below are designed to enhance the value of the site for wildlife, as encouraged through the National Planning Policy Framework (2019), and to help achieve meaningful biodiversity net gain in the context of both national and local biodiversity priorities and targets:

- 1) New planting, such as native hedgerows, should aim to provide habitat connectivity around the boundaries of the site, ideally through mixed native-species boundary hedgerows. Refer to **Appendix 13** for further suitable species.
- 2) Install a little owl nest box on a suitably mature tree. The box should be installed horizontally at least 3m above the ground on a tree branch that allows the young to walk in and out of the box prior to fledging. A small layer of untreated wood shaving / bark can be included as ground cover within the box.
- 3) Install two Schwegler 1B General Bird Boxes and / or Sparrow Terraces onto retained suitably mature trees and / or new buildings at least 3m above the ground, avoiding direct sunlight (not directly south-facing) and prevailing wind.
- 4) Install a Schwegler IFF bat box onto a retained suitably mature tree and / or new building. Install the bat box at least 5m above the ground and face in a southerly direction, so that it receives sun for part of the day. Place the box clear of any obstructions to allow access for bats (e.g. over-hanging branches).
- 5) Provide a hedgehog house within a sheltered location e.g. at the base of a hedgerow, shrub beds, within tall grassland or at the base of retained trees beneath the canopy of tall trees, preferably a distance away from the entrance track.
- 6) Create and maintain a swathe of infrequently cut grassland along the southern boundary to provide relatively undisturbed habitat for invertebrates, birds and reptiles. The swathe should be a minimum of 1m wide and sown with a wildflower seed mix (e.g. Emorsgate EL1). This should be kept outside of new residential gardens and, if possible, be provided with a 'Wildlife Area' sign to prevent inappropriate cutting and to make the new residents aware of its purpose.
- 7) Avoid use of slug pellets and use environmentally safe wood preservatives (for sheds and fences etc.).
- 8) Create a dedicated grass and / or compost heap on the development's southern boundary.

7 Conclusions

The EclA has identified that with mitigation measures secured, the development can proceed with no significant residual effects on designated wildlife sites, habitats and protected / notable species.

There is also the opportunity to enhance the development for local wildlife in the long-term by implementing the enhancement measures. The measures within the EclA will ensure the project complies with national and local planning policy, by ensuring the development takes account of the role and value of biodiversity, following the principles of the mitigation hierarchy, minimising impacts on and providing net gains (MHCLG, 2019).

The appropriate measures can be secured through Conditions attached to planning permission for the development.

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Appendix 1 Legislation & Planning Policy

Legislation

Conservation of Habitat and Species (Amendment) (EU Exit) Regulations (CHSR) 2019

The *CHSR 2019* transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

The purpose of the 2019 amendments applied to the legislation were to ensure the continued functionality of the Regulations once the UK has left the European Union, with no policy changes included.

Wildlife & Countryside Act (WCA)

The *WCA 1981*, as amended by the *Countryside and Rights of Way Act (CROW) 2000* and the *Natural Environment and Rural Communities Act (NERC) 2006*, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act.

Sites of Special Scientific Interest (SSSI) are designated under this Act.

Special Protection Areas (SPA) are strictly protected sites, designated under the Birds Directive, for rare and vulnerable birds and for regularly occurring migratory species.

Natural Environment & Rural Communities (NERC) Act

The *NERC Act 2006* amends the *CROW Act*, by further extending the requirement to have regard for biodiversity to all public authorities, which includes local authorities and local planning authorities and requires that the Secretary of State consults Natural England (NE) in the publication of the list of living organisms and habitat types deemed to be of principal importance in conserving biodiversity.

Relevant Protected Species Legislation

Species	Relevant Legislation	Level of Protection
Reptiles (adder, grass snake, common lizard & slow-worm)	Partially protected under <i>Schedule 5</i> of the <i>Wildlife and Countryside Act, 1981 (as amended)</i> .	It is an offence to: - intentionally kill or injure these animals. - sell, offer for sale, advertise for sale, possess or transport for the purposes of selling any live or dead animals or part of these animals.
Birds	Protection under the <i>Wildlife and Countryside Act, 1981 (as amended)</i> .	It is an offence to: - intentionally kill, injure or take any wild bird. - intentionally take, damage or destroy nests in use or being built (including ground nesting birds). - intentionally take, damage or destroy eggs. - Species listed on Schedule 1 of the WCA or their dependant young are afforded additional protection from disturbance whilst they are at their nests.
Badger	<i>Protection of Badgers Act, 1992.</i>	It is an offence to: - wilfully kill, injure, take, possess, or cruelly ill-treat a badger, or to attempt to do so. - intentionally or recklessly interfere with a sett.
Bats	European protected species under the <i>Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019</i> . Full protection under <i>Schedule 5</i> of the <i>Wildlife and Countryside Act, 1981 (as amended)</i> . Protected by the <i>Wild Mammals (Protection) Act 1996</i> .	It is an offence to: - intentionally kill, injure, or take any species of bat. - intentionally or recklessly disturb bats. - intentionally or recklessly damage destroy or obstruct access to bat roosts.
Wild Mammals	The <i>Wild Mammals (Protection) Act 1996</i> .	This makes it an offence to: crush or asphyxiate any wild mammal with intent to inflict unnecessary suffering. This may apply during site clearance for development, particularly where burrowing animals such as foxes and rabbits are present, since such animals could be crushed or asphyxiated in their burrows by heavy machinery.

National Planning Policy

National Planning Policy Framework (NPPF)

The NPPF sets out current government policy on biodiversity and nature conservation and places a duty on planners to make material consideration to the effect of a development on legally protected species when considering planning application (MHCLG, 2019). The NPPF also promotes sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within a development, following the principles of the mitigation hierarchy. The goals set out within the NPPF are for developments to minimise impacts on and provide net gains for biodiversity, including at the catchment or landscape scale.

The NPPF works in conjunction with Government Circular *06/2005 'Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System.'*

Regional and Local Planning Policy and Guidance

Local Structure Plans

County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity. These are used by Planning Authorities to inform planning decisions.

Biodiversity Action Plans

The UK Biodiversity Action Plan (UKBAP) was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A 'UK Post-2010 Biodiversity Framework' was published in July 2012, and succeeded the UKBAP. Much of the work for the UK BAP is now focussed at a country level due to devolution and the creation of country-level biodiversity strategies.

The UKBAP lists of priority species and habitats are still valuable reference sources. Notably, they have been used to help draw up statutory lists of priority species and habitats as required under Section 41 of the NERC Act (2006).

UK Post-2010 Biodiversity Framework

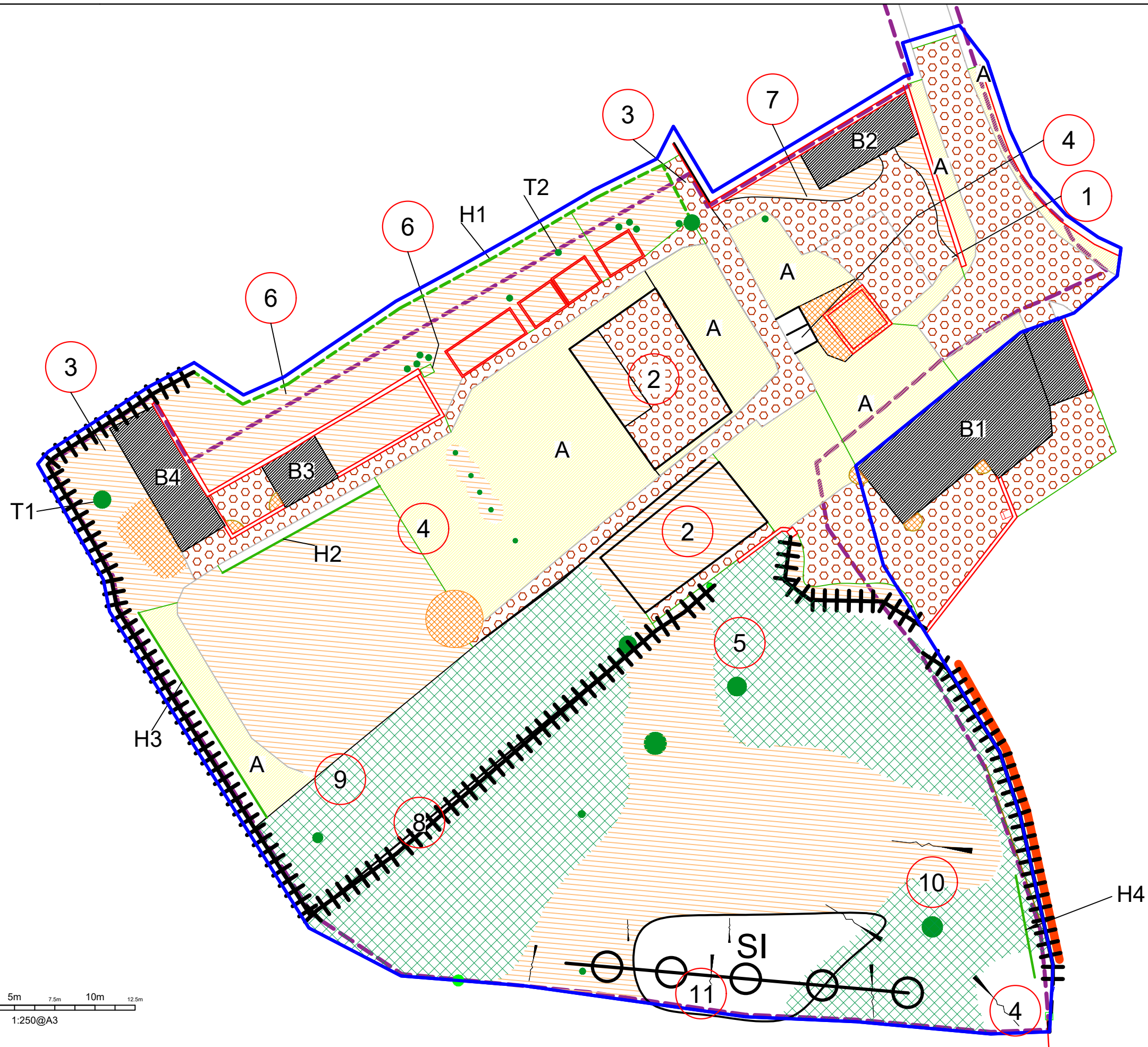
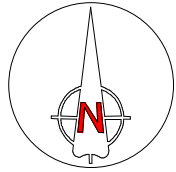
The UK Post-2010 Biodiversity Framework (2012) was produced in response to a change in strategic thinking following the publication of the Convention of Biological Diversity's Strategic Plan for Biodiversity 2011–2020. The Strategic Plan consists of 20 new biodiversity targets for 2020, termed the 'Aichi biodiversity targets' and the launch of the new EU Biodiversity Strategy in May 2011.

The framework sets a structure for action across the UK between now and 2020, including a shared vision and priorities for UK-scale activities to help deliver the Aichi targets and the EU Biodiversity Strategy. A major commitment by Parties to the Convention of Biological Diversity is to produce a National Biodiversity Strategy and/or Action Plan (NBSAP).

Natural England Standing Advice

Natural England has adopted national standing advice for protected species. It provides a consistent level of basic advice which can be applied to any planning application that could affect protected species. It replaces some of the individual comments that Natural England has provided in the past to local authorities.

Appendix 2 Phase I Habitat Map



DAVID ARCHER ASSOCIATES ARBORICULTURAL CONSULTANCY		
Project: Land at Coldharbour Blackhouse Hill, Hythe, CT21 5UZ		
Client: Hobbs Parker		
Drawing: Phase 1 Habitat Plan		
Based on: Topographical survey		
Drawing No: P1 HP 01	Rev:	
Date: Mar 2020	Scale: 1: @250 A3	Drawn: MR
SURVEY AREA		
APPLICATION BOUNDARY		
J.1.2 AMENITY GRASSLAND		
J1.4 INTRODUCED SHRUB		
J2.1.2 INTACT SPECIES- POOR HEDGEROW		
J2.1.2 DEFUNCT SPECIES- POOR HEDGEROW		
J.3.6 BUILDINGS (B1-B4)		
J.2.4 FENCE		
BARE GROUND / HARD STANDING		
J.2.3.5 WALL		
A.3 MIXED SCATTERED TREES		
A.2.1 DENSE SCRUB		
C.3.1 TALL RUDERAL		
B.6 POOR SEMI-IMPROVED GRASSLAND		
J2.8 EARTH MOUND		
HEDGEROW NUMBER		
TREE NUMBER		
TARGET NOTE		
David Archer Associates, 01273 597796, david@daa-arboriculture.co.uk The original of this drawing was produced in colour – a monochrome copy should not be relied upon. ©This drawing is copyright & must not be reproduced without consent from David Archer Associates.		

Appendix 3 Species Assessment Methodology

1 Methodology

1.1 Amphibians

The site was assessed on 9th July 2019 and 7th January 2019 for suitability to support amphibians such as the legally protected great crested newt *Triturus cristatus* and the notable common toad *Bufo bufo*. The assessment was undertaken in accordance with the *Herpetofauna Workers' Manual* (Gent & Gibson, 2003) and the *Great Crested Newt Conservation Handbook* (Langton, *et al.*, 2001).

Based on Natural England (2015) guidance, surveys of land greater than 250m from the nearest water-body are normally appropriate when all of the following conditions are met:

- a) Maps, aerial photos, walkover surveys or other data indicate that the water-bodies have potential to support a large great crested newt population;
- b) The development footprint contains particularly favourable habitat, especially if it constitutes the majority available locally;
- c) The development would have a substantial negative effect on that habitat; and
- d) There is an absence of dispersal barriers.

The proposed development meets all of the above conditions, and as such, consideration was given to water-bodies on and within 500m of the site using OS maps and aerial images.

1.1.1 Habitat Suitability Index (HSI)

A HSI was applied to the water-bodies within 500m of the site on 7th January 2020 and 17th January 2020. An updated HSI of Pond 4, located c. 75m south-west of the site was conducted on 19th March 2020, to ascertain if the pond holds water during the active newt season.

The PEA and initial HSI surveys were undertaken by Senior Ecologist Emily Sullivan, who is licenced to survey for great crested newts (2015-17729-CLS-CLS). The updated Habitat Suitability Index (HSI) assessment of Pond 4, located c. 75m south-west of the site was conducted on 19th March 2020 by Principal Ecologist Claire Munn, who is licensed to survey for great crested newts (2015-19145-CLS-CLS).

The HSI provides a method for assessing the suitability of a water-body for breeding great crested newts and gives an index between zero and one.

Low scores indicate unsuitable habitat and one indicates optimal habitat (Oldham, *et al.*, 2000). Ten suitability indices are used to calculate the score, each representing a factor considered to affect the probability of great crested newts breeding within a water-body. The final scores were then compared against a categorical scale of habitat suitability for breeding great crested newts, as follows (ARG UK, 2010):

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

1.2 Reptiles

The site was assessed on 9th July 2019 and 7th January 2020 for suitability to support reptiles with reference to the *Herpetofauna Workers' Manual* (Gent & Gibson, 2003) and *Froglife Advice Sheet 10 An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation* (Froglife, 1999).

1.3 Reptiles – Presence / Likely Absence

The reptile surveys were undertaken by Field Ecologist Toby Munn (surveys 1-3 & 6-7) and Senior Ecologist Emily Sullivan (surveys 4-5) who are both suitability trained and experienced to undertake reptile surveys.

30 bitumen felt mats and corrugated Onduline sheets measuring at least 0.5 x 0.5m were placed within suitable reptile habitat within the site on 5th August 2019 (**Appendix 5**). This equates to a density of 150 refuges / ha, which exceeds the minimum density recommended in standard guidance (JNCC, 2003; Froglife, 1999).

In addition to the above, a further 76 mats (of the same size) were placed within the remaining area of field situated to the south-west of the site, which is also within the same ownership (as shown in **Appendix 5**). As both sites are connected, it was considered likely that any population of reptiles within the site will be part of a larger population within the adjacent field, if present. When both sites are considered together the 106 mats equates to a density of 96.4 Refuges / ha, which exceeds the minimum density recommended in standard guidance (JNCC, 2003; Froglife, 1999).

Seven survey visits took place between 29th August and 26th September 2019, in temperatures of 17-22°C, and in dry conditions with no – moderate levels of wind (**Table A3.1**). Reptile activity depends on the weather conditions and therefore the air temperature, wind, rain, and cloud cover were recorded during each survey visit.

The ecologist slowly approached each refuge and searched for reptiles basking on top and sheltering beneath. The habitat between the refuges was also checked for reptiles during each survey visit. The species, life stage, and sex were recorded where possible upon each reptile sighting.

Table A3.1: Reptile survey dates and weather conditions

Survey Visit	Date (2019)	Weather Conditions
Refuges laid	5 th August	N / A
1	29 th August	Dry, 22°C, 25% cloud, 1B.
2	3 rd September	Dry, 20°C, 90% cloud, 0-1B.
3	5 th September	Dry, 18-21°C, 5% cloud, 0-1B.

4	17 th September	Dry, 16-18°C, 5-10% cloud, 1-2B.
5	19 th September	Dry, 18°C, 25% cloud, 2B.
6	24 th September	Dry, 19°C, 90% cloud, 4B.
7	26 th September	Dry, 17-18°C, 50% cloud, 2-3B.

1.3.1 Population Size Class Assessment

The population size class for each reptile species was based on the maximum number of adults seen on a single survey visit using 10 refuges / ha, as shown in **Table A3.2**. This was also used to inform whether the site is a Key Reptile Site (Froglife 1999).

It is considered that more survey effort is unlikely to yield any more significant information about the reptile population size(s). The population assessment has therefore been based on the seven presence / likely absence survey visits, considered appropriate for this site's habitats and location.

Table A3.2: Population assessment scores (Froglife, 1999).

Species	Low Population	Good Population	Exceptional Population
Grass Snake <i>Natrix helvetica</i>	<5	5 – 10	>10
Common Lizard <i>Zootoca vivipara</i>	<5	5 – 20	>20

1.4 Badgers

The site and a 30m zone around the site (where accessible), were surveyed on 9th July 2019 and 7th January 2020 for badger *Meles meles* evidence such as setts, latrines, pathways, footprints, snuffle holes and badger hairs. Any setts recorded were classified according to published criteria (Harris, *et al.*, 1989).

1.5 Bats

Potential for the site to support roosting, foraging and commuting bats was assessed on 9th July 2019 and 7th January 2020 in line with the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists Good Practice Guidelines* (Collins, 2016).

1.5.1 Preliminary Roost Assessment

The buildings on site were assessed on 9th July 2019 for suitability to support roosting bats per the scales in **Table A3.3**. Equipment used to investigate the buildings included; binoculars, a ladder, an endoscope and a high-power torch. All buildings were described and surveyed for bats and their evidence, which includes droppings, staining, scratch marks and feeding remains. Bat droppings collected from within the loft space of Building B1 were sent to the Department of Life Sciences at Warwick University for genotype analysis and species identification.

Table A3.3: Classifying the bat roosting suitability of buildings (Collins, 2016).

Low / negligible roosting suitability	Buildings with few, if any, features suitable for roosting.
Moderate roosting suitability	Features with moderate roosting potential, with roosting features appearing less suitable.

High roosting suitability	With significant roosting potential, either because they contain a large number of suitable features or those features present appear optimal.
Confirmed roost	Evidence of bat occupation found.

Trees within the site were surveyed on 9th July 2019 and 27th April 2020 for evidence of bats and Potential Roost Features (PRFs), and then assigned a level of suitability for roosting bats as outlined in **Table 3.3**. PRFs include woodpecker holes, rot holes, hazard beams, cracks and splits, knot holes, cavities, loose bark, and partially detached ivy (Andrews, 2013).

The tree PRA was completed by Emily Sullivan (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS) and Claire Munn (WML-CL18- Level 2, bat licence number 2015-12515-CLS-CLS)

Table A3.4: Classifying the bat roosting suitability of trees (Collins, 2016).

Negligible roosting suitability	Trees with few, if any, features suitable for roosting.
Low roosting suitability	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate roosting suitability	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat. These trees are unlikely to support a roost of high conservation status.
High roosting suitability	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

1.5.2 PEA- Foraging and Commuting

During the PEA on 9th July 2019 and 7th January 2020 the site was assessed for its suitability to support foraging and commuting bats according to **Table A3.5**.

Table A3.5: Classifying the suitability of bat foraging and commuting habitat (Collins, 2016).

Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated or poorly connected to habitat in the surrounding landscape. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in parkland) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that bats may use for commuting such as tree-lines and scrub or linked back gardens. Habitat that connects to the wider landscape that bats may use for foraging such as trees, scrub grassland and water.
High	Continuous, high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, tree-lines and woodland edge. High quality habitat that is well-connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

1.5.3 Nocturnal Surveys

The nocturnal bat surveys were undertaken by the following suitability experienced staff:

Dusk/ Emergence Survey 1

- Emily Sullivan BSc (Hons) GradCIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS);
- Toby Munn (7+ years' experience);
- Cali Tardivel (10+ years' experience); and
- Trevor O'Sullivan (1+ years' experience).

Dusk/ Emergence Survey 2

- Emily Sullivan BSc (Hons) GradCIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS);
- Toby Munn (7+ years' experience);
- Cali Tardivel (10+ years' experience); and
- Sophie Farrah-Devlin (<1 years' experience).

Dawn/ Re-entry Survey

- Toby Munn (7+ years' experience);
- Cali Tardivel (10+ years' experience);
- Emma Wiles (2 years' experience);
- Pam Worrall (15+ years' experience); and
- Trevor O'Sullivan (1+ years' experience).

Dusk/ Emergence Survey 3

- Emily Sullivan BSc (Hons) GradCIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS);
- Toby Munn (7+ years' experience); and
- Cali Tardivel (10+ years' experience).

Building B1 was subject to two emergence surveys and a dawn re-entry survey. Building B4 was subject to one emergence survey and a dawn re-entry survey. Building B2 and the northern wall were subject to a single emergence survey. All were completed in line with standard guidance (Collins, 2016). The survey on Building B2 was repeated due to technical difficulties with the bat detector during the initial survey. The emergence surveys commenced fifteen minutes before sunset and continued for 1.5 hours after sunset. The re-entry survey commenced 1.5 hours before sunrise and finished 15 minutes after sunrise. Refer to **Table A3.6** for the survey dates and weather conditions.

Surveyors were situated at key points around each building/structure to give suitable coverage, as shown in **Appendix 7**. The hand-held equipment used included Echo Meter Touch 2 Pro and Elekon BatLoggerM recorders.

Surveyors recorded any bat activity observed within the site, including species, flight direction and behaviour.

During each survey a static detector was placed within the enclosed attic space within the eastern garage of Building B1. An Elekon BatLoggerM recorder was utilised. In addition, a white sheet was laid

down within the central area of the same attic space in order to assist in recording any fresh droppings during the survey period from 29th July to 2nd September 2019.

Bat calls were then analysed using Kaleidoscope and BatExplorer software.

Table A3.6: Times and weather conditions of the emergence / re-entry surveys.

Date (2019)	Building / Structure surveyed	Sunrise (24 hrs)	Sunset (24 hrs)	Survey Duration	Weather Conditions
29 th July	Building B1 and Building B2	-	20:47	20:32 – 22:12	Dry, 0-10% cloud, 18°C. 1B.
30 th July	Building B2, Building B4 and the northern partition wall	-	20:46	20:31 – 22:16	Dry, 100% cloud, 18°C. 4-5B.
15 th August	Building B1 and Building B4	05:42	-	04:12 – 05:57	Dry, 75-100% cloud, 15°C - 17°C, 1-2B.
2 nd September	Building B1	-	19:40	19:25 – 21:10	Dry, 75% cloud, 17°C - 18°C, 2B.

1.5.4 Evaluation and Impact Assessment

The evaluation of any bat roosts and foraging / commuting habitat is made with reference to *Valuing Bats in Ecological Impact Assessment* (Wray, *et al.*, 2010) and the *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial and Freshwater* (CIEEM, 2016). Refer to **Appendix 12** for the method of evaluation.

1.6 Hazel Dormouse

1.6.1 Habitat Survey

During the PEA on 9th July 2019 and 7th January 2020 the site was assessed for potential to support the hazel dormouse *Muscardinus avellanarius*, in accordance with the *Dormouse Conservation Handbook* (Bright, *et al.*, 2006). Dormice typically use connected woodland, hedgerows and scrub that contain suitable food plants. Aerial images were used to assess the connectivity of any suitable habitat on the site to woodland and hedgerows within the wider area.

1.6.2 Nest Tube Survey

Fifty dormouse nest tubes were placed between 15-20m apart and 1-2m high within the scrub, hedges, scattered trees and woodland within the site and the suitable dormouse habitat within the adjacent golf course to the east in April 2020. Refer to **Appendix 13** for a map of the nest tube locations. The tubes were suspended with wire underneath horizontal tree / shrub branches (**Figure 4.1**). The nest tubes were subsequently checked by placing a bung over the open end of the tube and carefully pushing the wooden tray out, to check for hazel dormice and their evidence.

The nest tubes were checked during the day in dry weather conditions, monthly between May and September 2020 (inclusive) to achieve a robust survey effort. Nest tube surveys are based on a points system which varies throughout the year as per the dormouse's life cycle. More points are available for surveys that span May and August / September as dormice are more likely to occupy nest tubes during these months. A survey must achieve at least 20 points for it be considered thorough by Natural England. The points for the Index of Probability in relation to the surveys carried out at this site are shown in **Table A3.7**.

Figure A3.1 Dormouse nest tube (Bright *et al.*, 2006).

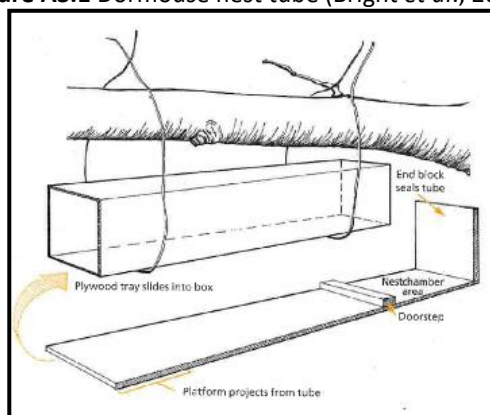


Table A3.7: Index of probability of finding dormice in nest tubes per month (Bright *et al.*, 2006).

Month	Index of Probability	Survey Date (2020)
April	1	21 st tubes set out
May	4	20 th
June	2	23 rd
July	2	23 rd
August	5	17 th
September	7	17 th (tubes collected)
Survey Score:		21

1.6.3 Evaluation and Impact Assessment

Hazel dormice have been evaluated and the impacts of the development have been made with reference to the *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial and Freshwater* (CIEEM, 2018).

1.6.4 Other Species

The site was assessed on 9th July 2019 and 7th January 2020 for suitability to support other protected and notable fauna species / assemblages including birds, invertebrates and mammals.

1.6.5 Invasive Species

The site was searched on 9th July 2019 and 7th January 2020 for invasive plants such as giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Fallopia japonica*, rhododendron *Rhododendron ponticum* and New Zealand pygmyweed *Crassula helmsii*.

Appendix 4 Habitat Suitability Index Scores

Table A4: Water-body Habitat Suitability Index (HSI) Scores

Suitability Index	Pond 1	Pond 2	Pond 3	Pond 4	
Date of HSI	07.01.2020	17.01.2020	17.01.2020	07.01.2020	19.03.2020
Field location	1.0	1.0	1.0	1.0	1.0
Pond area	0.05	0.05	0.12	0.6	0.1
Pond drying	0.9	0.1	0.9	0.1	0.1
Water quality	0.33	0.33	0.33	0.33	0.33
Shade	1.0	1.0	1.0	1.0	0.7
Fowl	1.0	1.0	1.0	1.0	1.0
Fish	0.01	1.0	0.01	1.0	1.0
Ponds	1.0	1.0	1.0	1.0	1.0
Terrestrial habitat	0.67	0.67	0.67	0.67	1.0
Macrophytes	0.3	0.85	0.35	0.8	0.8
HSI SCORE:	0.35	0.50	0.39	0.63	0.53
Pond Suitability:	Poor	Below average	Poor	Average	Below average

Appendix 5 Reptile Survey Results

Figure A5.1: Location of reptile refugia during the reptile surveys.

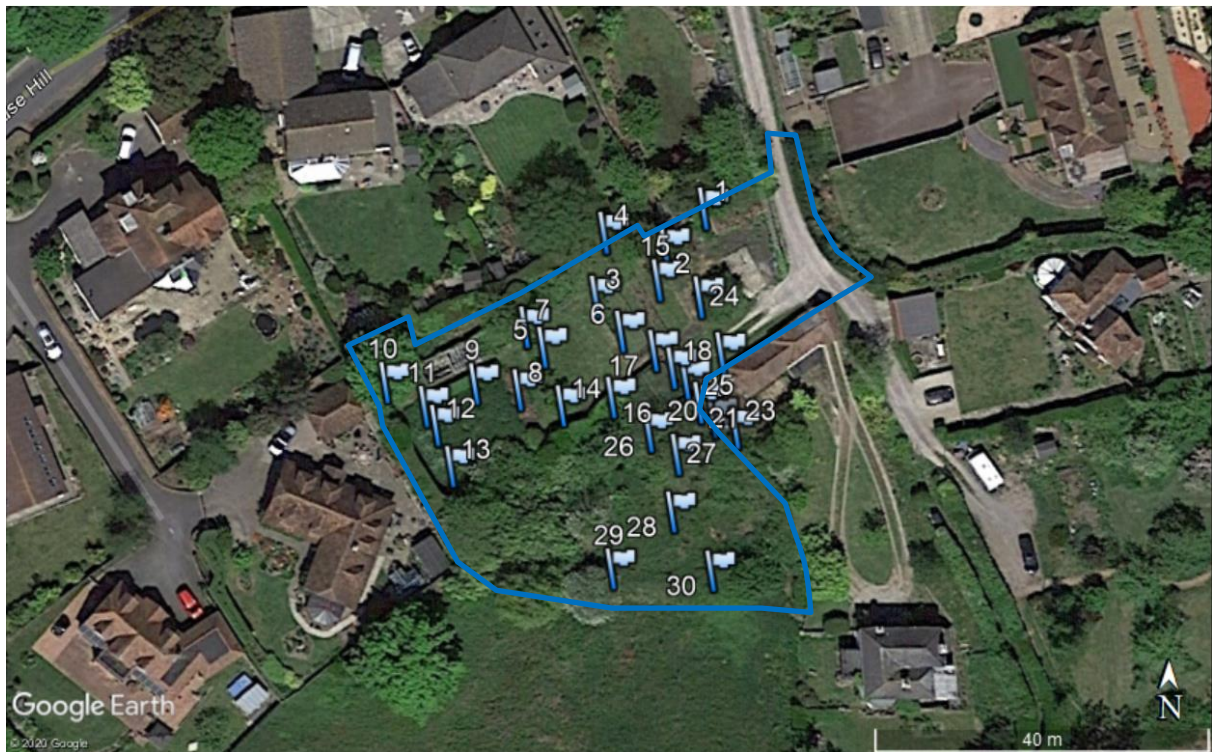
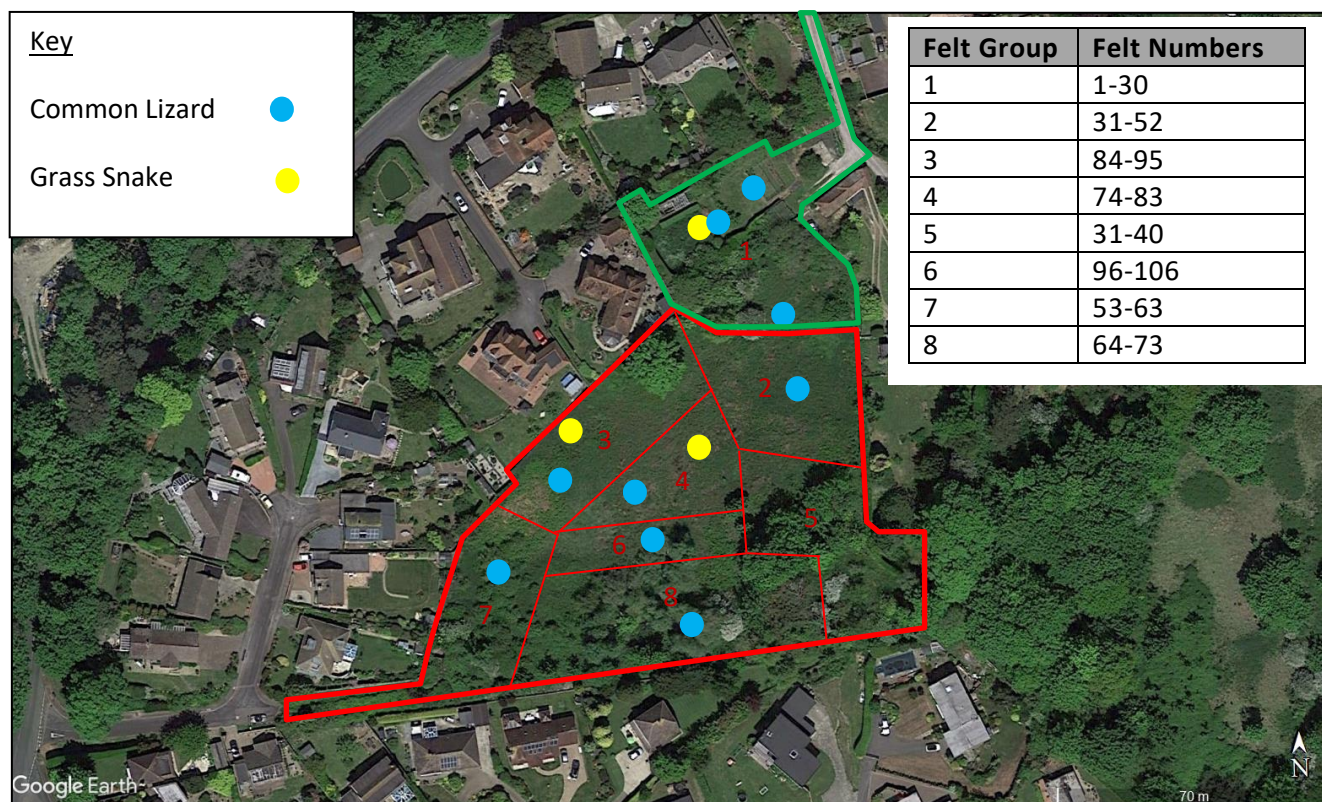


Figure A5.2: Locations where reptiles were recorded within the site (Google Earth, 2019)



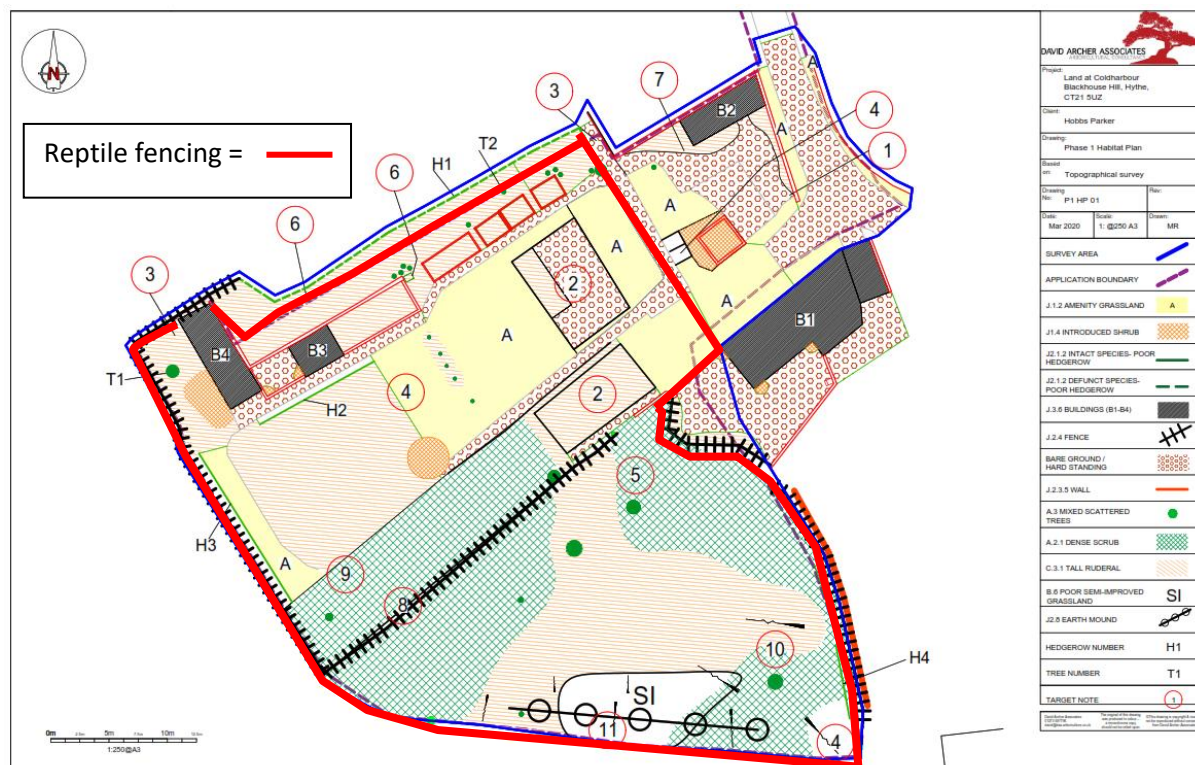
Figure A5.3: Location of reptile refugia and corresponding felt numbers across the application site and adjacent field.



Reptile presence within each felt group is indicated by a single blue/yellow dot (for exact numbers, age and sex of reptiles please refer to **Table 4.5**). Felt group 1 is located within the site and felt groups 2-9 are situated within the adjacent field connected to the south-eastern border of the site.

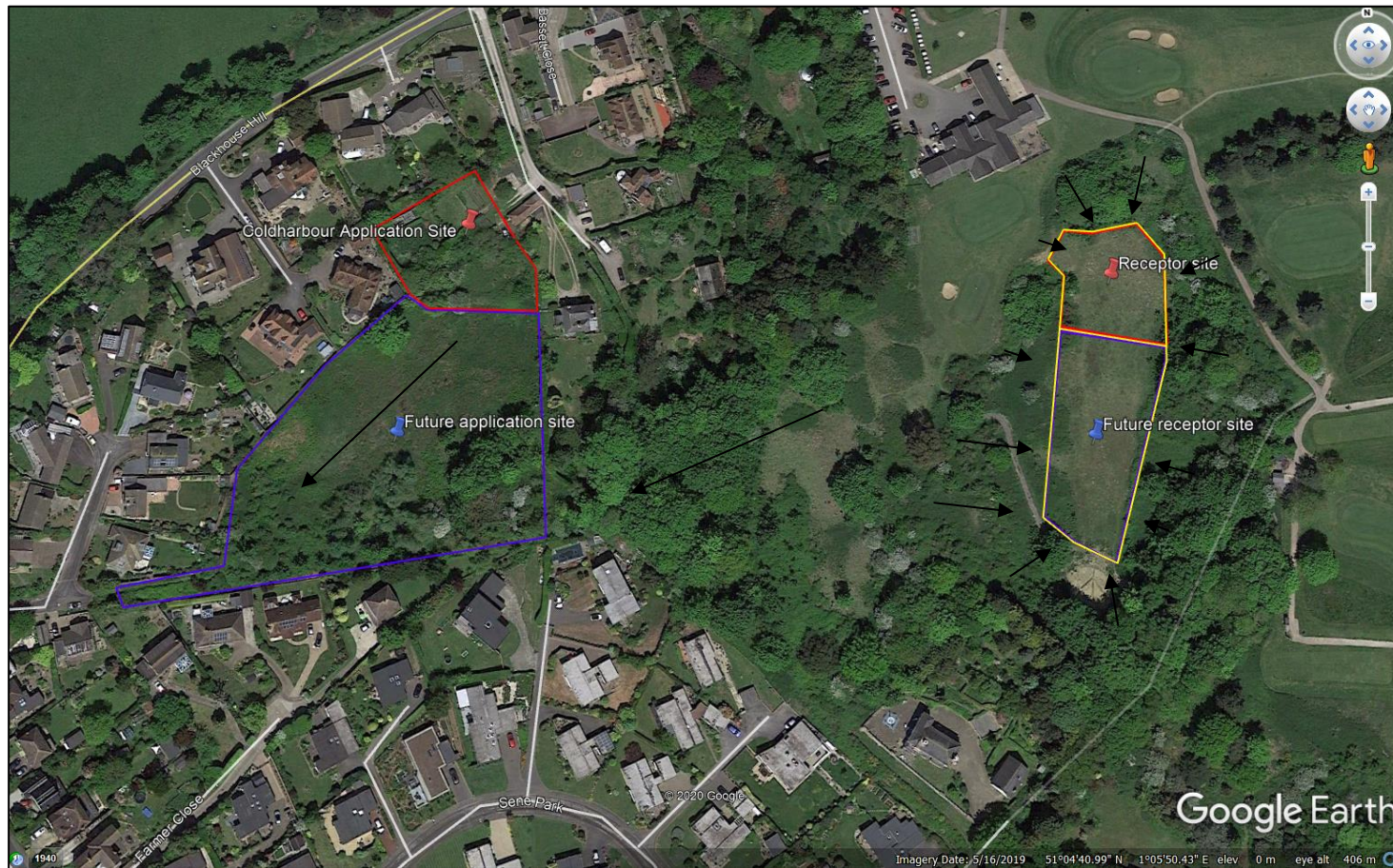
Appendix 6 Reptile Fencing Plan

Figure A6: Application site boundary showing proposed location of reptile exclusion fencing



Appendix 7 Reptile Receptor Site

Figure A7.1: Reptile receptor site location in relation to suitable reptile habitat within the proposed application site, indicated by red pins (Google Earth, 2020). A potential future planning application may be forthcoming for the land in the same ownership to the south-west of the current application site. As the reptiles across both areas form part of the same population, a receptor site has been identified which could receive reptiles from both sites, subject to planning permission being granted for both applications. The portion of the overall receptor area applicable to this planning application is that shown to the north within the wider, yellow-outlined area. Arrows indicate sloping land.



Photos A7.1-3: Proposed receptor site (photos taken on 12th October 2020)

Photo A7.1: Receptor site looking north



Photo A7.2: Sloping bank adjoining receptor site to the west



Photo A7.3: Sloping bank adjoining receptor site to the east



Figure A7.2: Proposed enhancements to be established prior to reptile translocation with indicative locations, to be confirmed on-site by the ecologist



Photos A7.4-9: Example of hibernaculum and log pile construction

Photo A7.4: Topsoil set aside and inert hardcore and larger logs placed at base of hibernaculum



Photo A7.5: Brash and logs being added to hibernaculum



Photo A7.6: Final brash added to hibernaculum



Photo A7.7: Hibernaculum complete with soil and turves



Photo A7.8: Log pile with larger logs at core prior to fresh brash being added



Photo A7.9: Fresh brash added to log pile to make it blend in and be less prone to disturbance



Appendix 8 Bat DNA Analysis Results



21 August 19

Re: Identification Results for Emily Sullivan, David Archer Associates

Job number 14298, received 06 August 2019

Sample labelled: DAA, Coldharbour, Garage (Blackhouse Hill, Hythe, Kent). Sample taken 9/7/19

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGATTCATTGATTGACCTGCTCCCTCAAATATTTATCATGTTGAACTTTGGGTCTCTTCTAGGTATT

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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Coventry CV4 7AL
Tel: 02476575000
Fax: 02476574500
Email: r.g.allaby@warwick.ac.uk

Appendix 9 Bat Dropping Location Map

Figure A9.1: Location of the bat droppings found within the attic spaces of Building B1 (adapted from the Phase 1 Map).

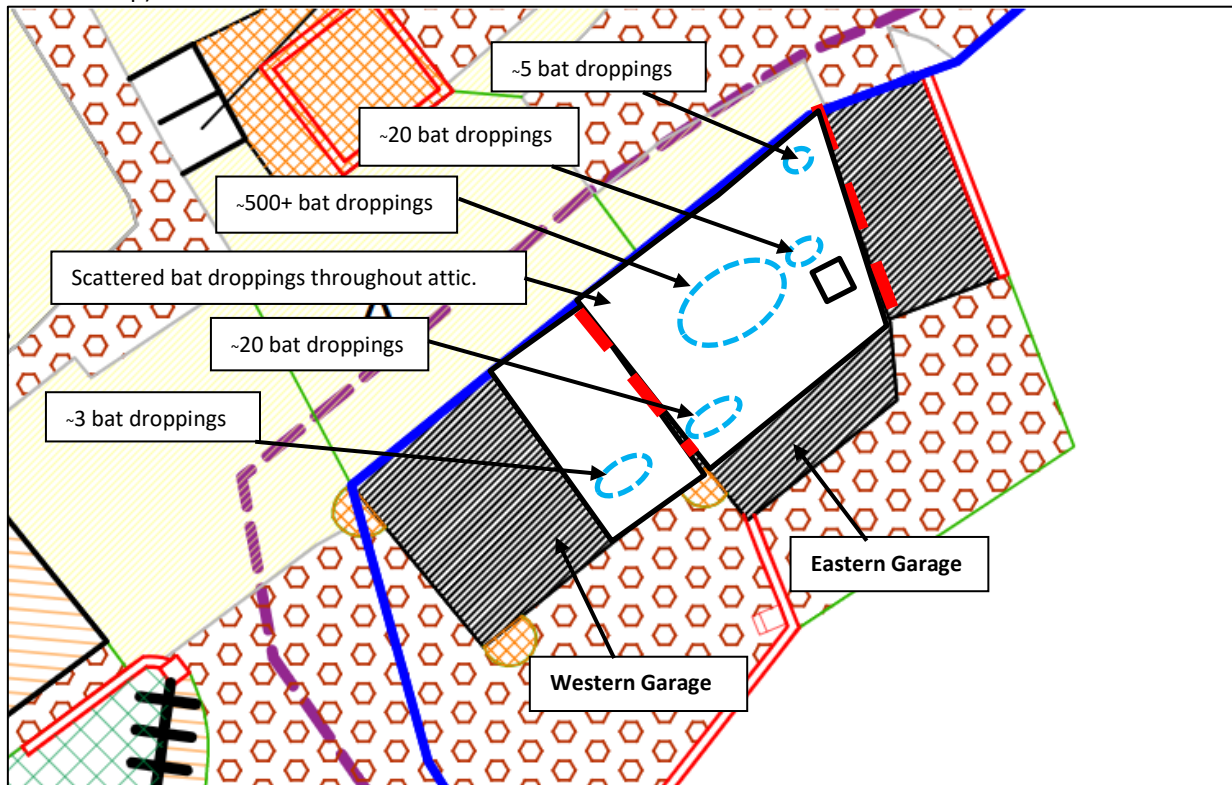
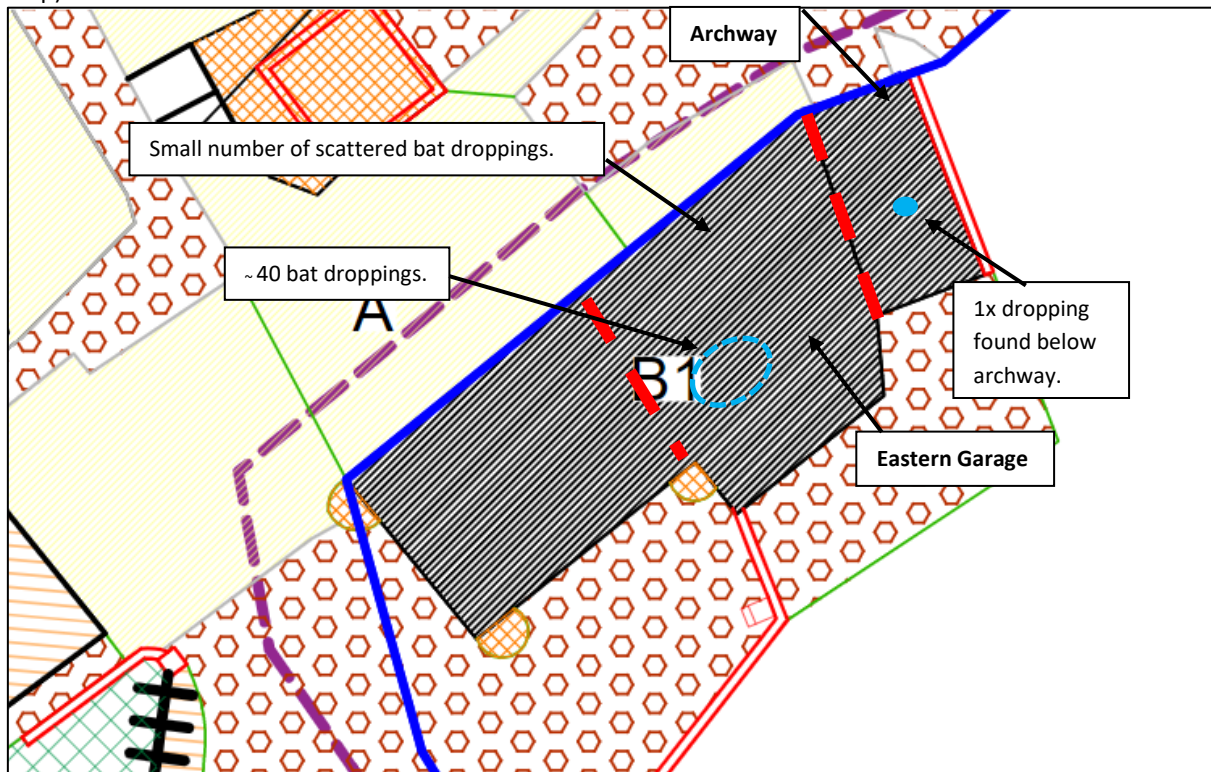


Figure A9.2: Location of bat droppings found within the ground floor of Building B1 (adapted from the Phase 1 Map).



Appendix 10 Bat Survey Results

Table A10.1: Bat emergence / re-entry survey results.

Time	Notes		
	(HNS = heard but not seen)	(SNH = seen but not heard)	(RTR = return to roost)
Emergence Survey 1: 29/07/2019 (Building B1, sunset: 20:47)			
21:11	Common pipistrelle. S+H. Commuting over site from the north west to south east, flying in between building B2 and Building B1. Bat was seen flying away down the access track to the south-east of the site.		
21:13	Common pipistrelle. S+H. Foraging along the access track south-west of the site and then within the garden area to the south of Building B1.		
21:14	Common pipistrelle 2x. S+H. One bat seen flying to the west of Building B1 and one bat seen foraging to the east of Building B1, likely same bat recorded at 21:13.		
21:15	Myotis species, likely Brandt's. S+H. Flying past the north-east corner of Building B1, travelling in a northward direction along the access track.		
21:16	Common pipistrelle x2. S+H. Two passes to the north of Building B1.		
21:17	Common pipistrelle. HNS. Foraging heard to the north-east of Building B1.		
21:19	Common pipistrelle. S+H. Flew around the northern aspect of Building B1, flying west and then flew past the western aspect of Building B1, moving off in a southward direction.		
21:20	Common pipistrelle. S+H. Flew past the north-east corner of Building B1 and flew to the east and then south along the access track, travelling south-east away from the site.		
21:20	Common pipistrelle. S+H. Circled the garden area to the south of Building B1 a few times.		
21:21	Common pipistrelle. HNS. Foraging heard to the north-east of Building B1.		
21:22	Common pipistrelle. S+H. Emergence from roof tile within the north-west facing aspect of Building B1.		
21:23	Common pipistrelle. S+H. Briefly circled within the garden area to the south of the site. Bat flew from the south and then left the area, moving south again.		
21:24	Common pipistrelle. S+H. Flew past the eastern aspect of Building B1, flying from north-west to south-east.		
21:25	Common pipistrelle. S+H. Foraging within the north-east corner of the site in between Building B1 and Building B2.		
21:25	Common pipistrelle. S+H. Possible emergence from a roof tile within the north-western aspect of Building B1.		
21:25	Brown long-eared. HNS. Heard to the north-east of Building B1.		
21:25	Common pipistrelle. S+H. Foraging within the garden area to the south of Building B1 for 1 minute.		
21:28	Common pipistrelle. S+H. Commuting north-west past the northern aspect of Building B1.		
21:28	Common pipistrelle. HNS. Brief call heard to the north-east of Building B1.		

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard) (RTR = return to roost)
21:28	Common pipistrelle. S+H. Flew from the north-west former of Building B1 moving in a south direction past the western aspect of Building B1.
21:30	Common pipistrelle. S+H. Foraging along the western border of the site moving south to north adjacent to the western aspect of Building B1.
21:30	Common pipistrelle. S+H. Foraging along the access track south-west of the site and then within the garden area to the south of Building B1.
21:31	Common pipistrelle. HNS. Heard to the south of Building B1.
21:31	Common pipistrelle. S+H. Foraging along the access track to the north-east of the site, travelling south towards Building B1.
21:33	Common pipistrelle. S+H. Flew south to north over Building B1.
21:33	Common pipistrelle. HNS. Heard foraging to the north-east of Building B1.
21:36	Common pipistrelle. S+H. Foraging in within garden area to the south of Building B1.
21:36	Common pipistrelle. S+H. Foraging along the northern aspect of Building B1, travelling west.
21:37	Soprano pipistrelle. HNS. Heard to the north-east of Building B1.
21:37	Common pipistrelle. S+H Foraging along the western border of the site moving south to north adjacent to the western aspect of Building B1.
21:38	Soprano pipistrelle. S+H. Foraging within the garden area to the south of Building B1.
21:39	Common pipistrelle. S+H. Flying north to south to the west of Building B1.
21:40	Soprano pipistrelle. S+H. Foraging within the garden area to the south of Building B1.
21:47	Common pipistrelle. HNS. Brief call heard to the north-east of Building B1.
21:48	Non-echolocating bat (likely brown long-eared). Likely emergence from the north-western facing aspect of Building B1 from a roof tile.
21:51	Common pipistrelle. S+H. Commuting from east to west over Building B1.
21:50	Common pipistrelle. HNS. Distant call, heard to the south of Building B1.
21:52	Common pipistrelle. S+H. Foraging along the access track from north to south.
21:53	Common pipistrelle. HNS. Brief, distant call, heard to the north-west of Building B1.
21:54	Common pipistrelle. HNS. Distant call, heard to the south of Building B1.
21:56	Common pipistrelle. HNS. Brief, distant call, heard to the north-west of Building B1.
21:56	Common pipistrelle. HNS. Distant call, heard to the south of Building B1.
21:57	Common pipistrelle. HNS. Brief forage, heard to the north-west of Building B1.
21:57	Common pipistrelle. S+H. Foraging within garden to the south of Building B1.
22:08	Common pipistrelle. HNS. Brief call heard to the north-east of Building B1.

Time	Notes		
	(HNS = heard but not seen)	(SNH = seen but not heard)	(RTR = return to roost)
Static detector within the enclosed attic space of Building B1 recorded no bat calls.			
Emergence Survey 1: 29/07/2019 (Building B2, sunset: 20:47)			
21:13	Common pipistrelle. HNS. Commuting heard to the south-west of Building B2.		
21:16	Common pipistrelle. S+H. Commuting from north-east, round the eastern aspect of Building B2, then travelling west over Building B2.		
21:18	Common pipistrelle. S+H. Foraging over and around Building B2.		
21:19	Common pipistrelle. S+H. Foraging over and around Building B2.		
21:22 – 21:27	Detector was inspected to resolve recording problem and surveyor had to leave post briefly.		
21:33	Common pipistrelle. S+H. Foraging over and around Building B2.		
21:40	Soprano pipistrelle. HNS. Foraging heard to the south-west of Building B2.		
21:50	Common pipistrelle. HNS. Foraging heard to the south-west of Building B2.		
21:55	Common pipistrelle. HNS. Foraging heard to the south-west of Building B2.		
22:11	Common pipistrelle. HNS. Foraging heard to the south-west of Building B2.		

Emergence Survey 2: 30/07/2019 (Northern wall)	
21:26	Myotis species (likely whiskered/Brandt's). S+H. Foraging over the central area of the site, over the northern wall, travelling south to north.
21:41	Myotis species. HNS. Very brief quiet calls heard to the south of the northern wall.
22:06	Soprano pipistrelle. HNS. Heard to the south of the northern wall.
22:07	Serotine. HNS. Very brief. Heard to the south of the northern wall.
Emergence Survey 2: 30/07/2019 (Building B4)	
21:27	Myotis species (likely whiskered/Brandt's). HNS. Heard to the south-east of Building B4.
21:40	Myotis species (likely Natterer's). HNS. Heard to the south-east of Building B4.
22:06	Serotine. HNS. Heard to the east of Building B4.
Emergence Survey 2: 30/07/2019 (Building B2)	
22:03	Common pipistrelle. HNS. Heard to the south-west of Building B4.
Static detector within the enclosed attic space of Building B1 recorded no bat calls.	
Re-entry Survey 1: 15/08/2019 (Building B1)	
03:55	Myotis species. HNS. Very faint call heard to the south-east of Building B1.
03:56	Long-eared bat. S+H. Flew over the top of Building B1 calling very quietly.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard) (RTR = return to roost)
04:10	Common pipistrelle. HNS. Heard to the south-east of Building B1.
04:11	Long-eared bat. HNS. Social calls/echolocation. Heard to the north-east of Building B1.
04:12	Brown long-eared. HNS. Social calls/echolocation. Heard to the north-east and west of Building B1.
04:15	Myotis bat (likely whiskered/Brandt's) x1-2. HNS. Heard to the south-east, north-west and north-east of Building B1.
04:25	Brown long-eared. Circling immediately north of Building B1 before leaving the vicinity of Building B2, moving north.
04:26	Long-eared bat. HNS. Social calls/echolocation. Heard to the south-east of Building B1.
04:27	Long-eared bat. HNS. Social call (likely Type C call). Brief call heard to the south-east of Building B1.
04:32	Long-eared bat. HNS. Social call/echolocation. Brief call heard to the south-east of Building B1.
04:33	Brown long-eared bat. HNS. Faint calls heard to the north & south-east of Building B1.
04:34	Brown long-eared S+H. Flying north to south along ridge of Building B1.
04:35	Brown long-eared x2. S+H. Flying south to north away from Building B1.
04:36	Long-eared bat x2. SNH. Flying along access track away from Building B1, travelling north.
04:40	Long-eared bat. S+H. Social call/echolocation. Flew past the northern aspect of Building B1 travelling north-east.
04:46	Brown long-eared bat. S+H. Flying close to the southern aspect Building B1 a few times and then flew to the south-west of Building B1 away into the garden area to the south of the site.
04:47	Long-eared bat. HNS. Heard to the south-east of Building B1.
04:48	Long-eared bat. HNS. Social call/echolocation. Heard to the south-east of Building B1.
04:49	Common pipistrelle. HNS. Brief commute heard to the west of Building B1.
04:53	Brown long-eared. S+H. Flew around southern aspect of Building B1 and then flew through the archway several times. The bat was seen to finally enter the archway and did not emerge. Based on the flight path it is considered likely that the bat entered the eastern garage within the gap between the timber beams within the archway that leads into the attic space and roof tiles within the eastern garage.
04:54	Brown long-eared. S+H. Circling close to the northern aspect of B1 before flying over the roof of Building B1, moving southwards.
04:55	Long-eared bat. HNS. Heard to the south-east of Building B1.
04:55	Brown long-eared. S+H. Flying north to south along the western aspect of Building B1.
04:57	Long-eared bat. HNS. Heard to the south-east of Building B1.
04:58	Long-eared bat. S+H. Social calls/ echolocation. Flew north-west to south-east over roof top of Building B1.

Time	Notes
	(HNS = heard but not seen) (SNH = seen but not heard) (RTR = return to roost)
04:59	Brown long-eared. S+H. Flying along the eastern aspect of the archway structure of Building B1.
04:59	Brown long-eared. S+H. Seen close to the area of roof above the garage door within the south-eastern aspect. Bat was seen to likely enter a roof tile within the roof.
05:00	Brown long-eared x2. Circling within the area of hard standing to the north of Building B1 before flying over the roof moving south.
05:00	Long-eared bat x2 (likely brown long-eared bats). S+H. Flying north to south through the archway and did not re-appear. Based on the flight path it is considered likely that the bats entered the eastern garage within the gap between the timber beams within the archway that leads into the attic space and roof tiles within the eastern garage.
05:01	Common pipistrelle. HNS. Heard close to west of Building B1.
05:03	Common pipistrelle. S+H. Flying north along access track towards Blackhouse Hill road.
05:03	Common pipistrelle. HNS. Heard to the west and south east of Building B1.
05:03	Long-eared bat. HNS. Heard to the south-east of Building B1.
05:04	Common pipistrelle. S+H. Flying north foraging over Building B1.
05:04	Common pipistrelle. S+H. Flying north to south along access track and then foraging within the garden area to the south of Building B1.
05:06	Common pipistrelle. HNS. Brief forage west of Building B1.
05:07	Long-eared bat (likely brown long-eared). S+H. Flew through the archway from the north and did not emerge. Although the exact re-entry location is not known, based on flight pattern and entry area, the bat likely re-entered through the gap in timber between the eastern garage and archway.
05:10	Long-eared bat. HNS. Social calls/echolocation. Heard to the south-east of Building B1.
05:11	Soprano pipistrelle. HNS. Heard to the south-east of Building B1.
05:13	Common pipistrelle. HNS. Foraging west of Building B1.
05:14	Common pipistrelle. S+H flying north to west past the northern aspect of Building B1.
05:14	Common pipistrelle. S+H. Foraging along access track north to south and circled twice near west of Building B1.
05:15	Common pipistrelle. S+H. Foraging over west of site.
05:17	Common pipistrelle. HNS. Foraging west of Building B1.
05:18	Common pipistrelle. HNS. Brief forage west of Building B1.
05:20	Common pipistrelle. HNS. Brief forage west of Building B1.
05:23	Common pipistrelle. HNS. Brief forage west of Building B1.
05:23	Common pipistrelle. HNS. Foraging north of Building B1.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard) (RTR = return to roost)
Static detector within the attic of Building B1 recorded long-eared and brown long-eared calls at 04:12, 04:13, 04:15, 04:16, 04:34, 04:54, 05:01, 05:02 and 05:11.	
Re-entry Survey 1: 15/08/2019 (Building B4)	
04:14	Common pipistrelle. HNS. Echolocation and social calls. Heard foraging west of Building B4.
04:40	Long-eared bat. HNS. Heard to the west of Building B4.
04:41	Common pipistrelle. HNS. Foraging and social calls west and south-east of Building B4.
04:46	Brown long-eared. HNS. Heard to the west of Building B4.
04:53	Common pipistrelle. HNS. Foraging heard to the south-west of Building B4.
04:53	Common pipistrelle. HNS. Foraging heard to the west of Building B4.
05:06	Common pipistrelle. S+H. Flew from south to trees near Building B4.
05:06	Common pipistrelle. HNS. Foraging west of Building B4.
05:08	Common pipistrelle. S+H. Commuting over Building B4 south to east.
Emergence Survey 3: 02/09/2019 (Building B1)	
20:03	Common pipistrelle. HNS. 2 brief passes. Heard to the south of Building B1.
20:03	Common pipistrelle. S+H. Flew down the track, North to south and then west of Building B1.
20:04	Common pipistrelle. HNS. Brief call heard west of Building B1.
20:05	Common pipistrelle. S+H. Foraging to the north of B1 and then flew off north.
20:06	Common pipistrelle. S+H. Foraging to the north of B1 and then flew off north.
20:06	Common pipistrelle. S+H. Commuting between west corner and north of Building B1.
20:07	Common pipistrelle. S+H. Foraging in the garden south of Building B1 for several minutes.
20:07	Common pipistrelle. S+H. Foraging in front of west garage door and then west of Building B1.
20:08	Common pipistrelle. S+H. Flying east of Building B1 then circled before flying off west.
20:09	Soprano pipistrelle. S+H. Flying north up the access track.
20:09	Common pipistrelle and soprano pipistrelle. S+H. Foraging north of Building B1 and flew off to the north.
20:09	Common pipistrelle. S+H. Foraging west of Building B1 and then in front of west garage door.
20:10	Common pipistrelle. Foraging up and down the access track north to south to the north-east of Building B1, repeatedly.
20:10	Common pipistrelle. HNS. Distant foraging call likely over the garden area to the south of the site.
20:10	Myotis sp. (likely whiskered/Brandt's). HNS. Heard to the north-east of Building B1.

Time	Notes
	(HNS = heard but not seen) (SNH = seen but not heard) (RTR = return to roost)
20:11	Soprano pipistrelle and common pipistrelle. S+H. Foraging in garden south of Building B1.
20:11	Common pipistrelle. S+H. Foraging around garage and west of Building B1.
20:11	Myotis sp. (likely whiskered/Brandt's). HNS. Heard to the north-east of Building B1.
20:12	Long-eared bats x 2 (likely brown long-eared). S+H. Emerged from a gap within the timber boards between the archway and the eastern garage, leaving through the northern archway access.
20:12	Myotis sp. (likely whiskered/Brandt's). HNS. Heard to the south-east of Building B1.
20:13	Common pipistrelle. HNS. Heard to the west of Building B1.
20:13	Common pipistrelle. HNS. Foraging heard to the west of Building B1.
20:14	Soprano pipistrelle. S+H. Foraging north of Building B1.
20:15	Common pipistrelle. HNS. Heard to the west of Building B1.
20:15	Common pipistrelle. S+H. Foraging around north of Building B1.
20:16	Brown long-eared x2. S+H. Emerged from a roof tile within the north-western aspect, between the archway and eastern garage roof of Building B1.
20:17	Brown long-eared. HNS. Heard to the south of Building B1.
20:18	Common pipistrelle. S+H. Foraging north of Building B1.
20:19	Myotis species (likely Natterers/Daubenton's). HNS. Heard to the west of Building B1.
20:19	Common pipistrelle. HNS. Foraging near west of Building B1.
20:20	Common pipistrelle. S+H. Foraging around Building B1. South to north and east to west.
20:20	Common pipistrelle. HNS. Foraging heard. Several passes for ~ 2 minutes near west of B1.
20:22	Brown long-eared. SNH. Flying in front of garage door south side of Building B1.
20:23	Myotis sp. (likely whiskered/Brandt's). HNS. Heard close to the western aspect of Building B1.
20:25	Common pipistrelle. HNS. Foraging very close to west of Building B1.
20:27	Common pipistrelle and soprano pipistrelle. S+H. Several bats foraging in garden south of Building B1.
20:31	Common pipistrelle x2. S+H. Foraging in garden south of Building B1. For several minutes.
20:34	Common pipistrelle. HNS. Heard to the north-west of Building B1.
20:35	Long-eared bat. HNS. Heard south of Building B1.
20:39	Common pipistrelle. HNS. Single pass, commuting, heard south of Building B1.
20:43	Brown long-eared. Commuting north to south along the access track to the north east of Building B1.

Figure A10.2: Bat surveyor location map on 30.07.2019 (dusk) (adapted from the Phase I Habitat Map).
Surveyors shown by red circles.

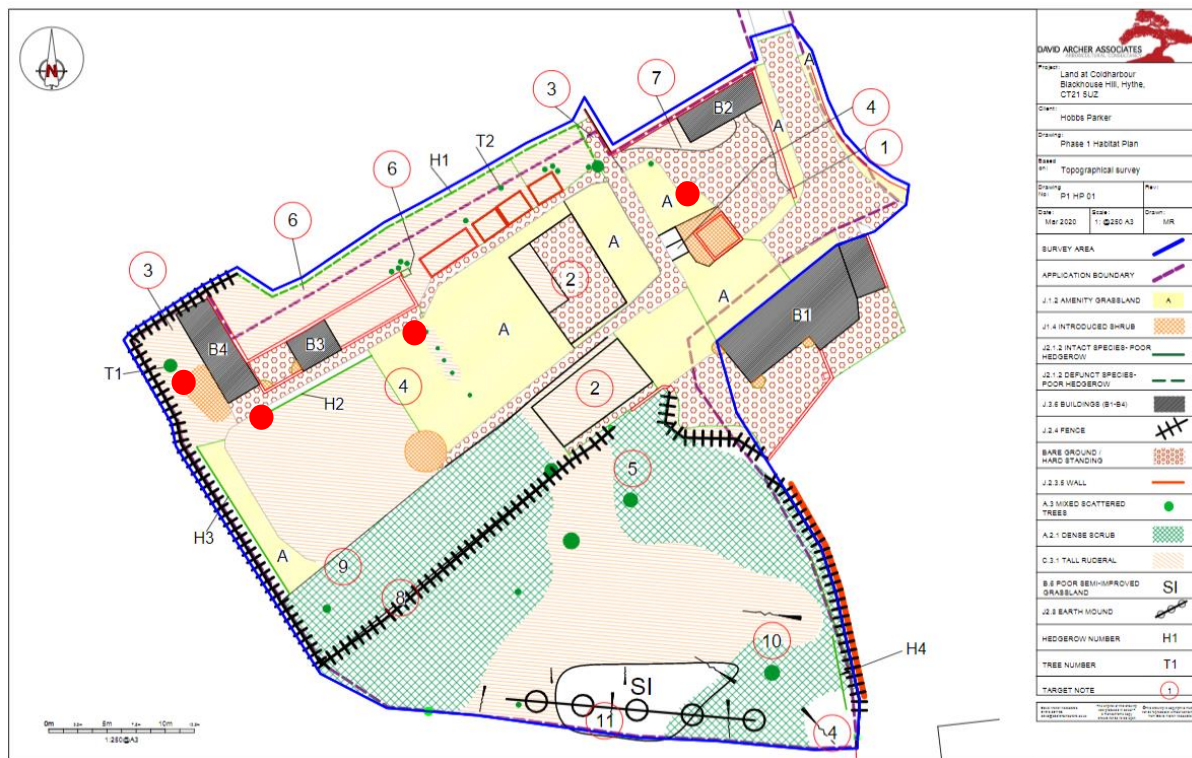


Figure A10.3: Bat surveyor location map on 15.08.2019 (dawn) (adapted from the Phase I Habitat Map).



Figure A10.4: Bat surveyor location map on 02.09.2019 (dusk) (adapted from the Phase I Habitat Map).

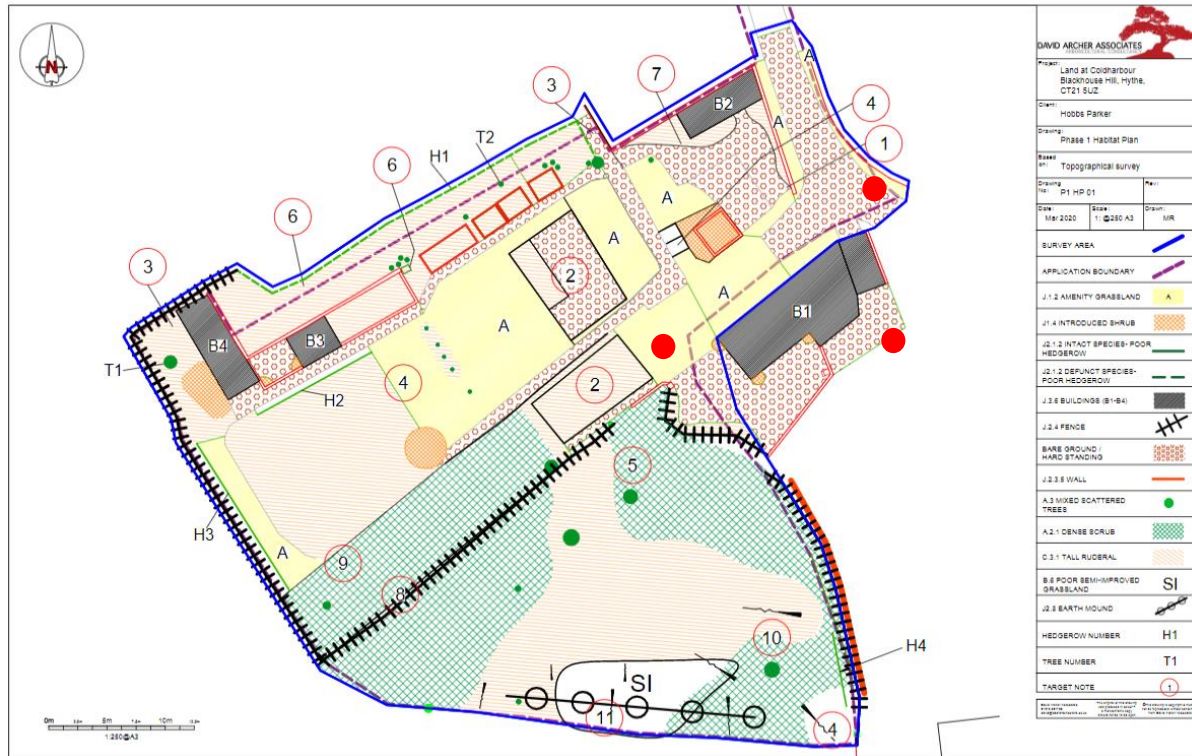


Photo A10.1: Roosting locations recorded during the emergence survey on 29th July 2019



1. Common pipistrelle emerged from roof tile within eastern garage roof of Building B1 at 21:22. Flew in a south-west direction through the site.



2. Common pipistrelle emerged from roof tile within eastern garage roof of Building B1 at 21:25. Flew in a south-west direction through the site.



3. Likely emergence of a brown long-eared bat from a roof tile between the archway and eastern garage roof of Building B1 at 21:48. Flew in a south-west direction through the site.



Photo A10.2: Roosting locations recorded during the re-entry survey on 15th August 2019

1 	1. Brown long-eared entered a gap between the timber beams into the roof structure where the eastern garage roof meets the archway roof of Building B1 at 04:53. 
2 	2. Brown long-eared entered a roof tile above the garage door within the eastern garage of Building B1 at 04:59. 
3 	3. Two brown long-eared bats entered a gap between the timber boards into the roof structure where the eastern garage roof meets the archway roof of Building B1 at 05:00. 

4



4. Brown long-eared entered a gap between the timber boards into the roof structure where the eastern garage roof meets the archway roof of Building B1 at 05:07. Entered the roof from the south-east.



Photo A10.3: Roosting locations recorded during the emergence survey on 2nd September 2019

1



1. Brown long-eared emerged from gap in the timber boards into the roof structure where the eastern garage roof meets the archway roof of Building B1 at 20:12. Flew in a north-west direction through the site.



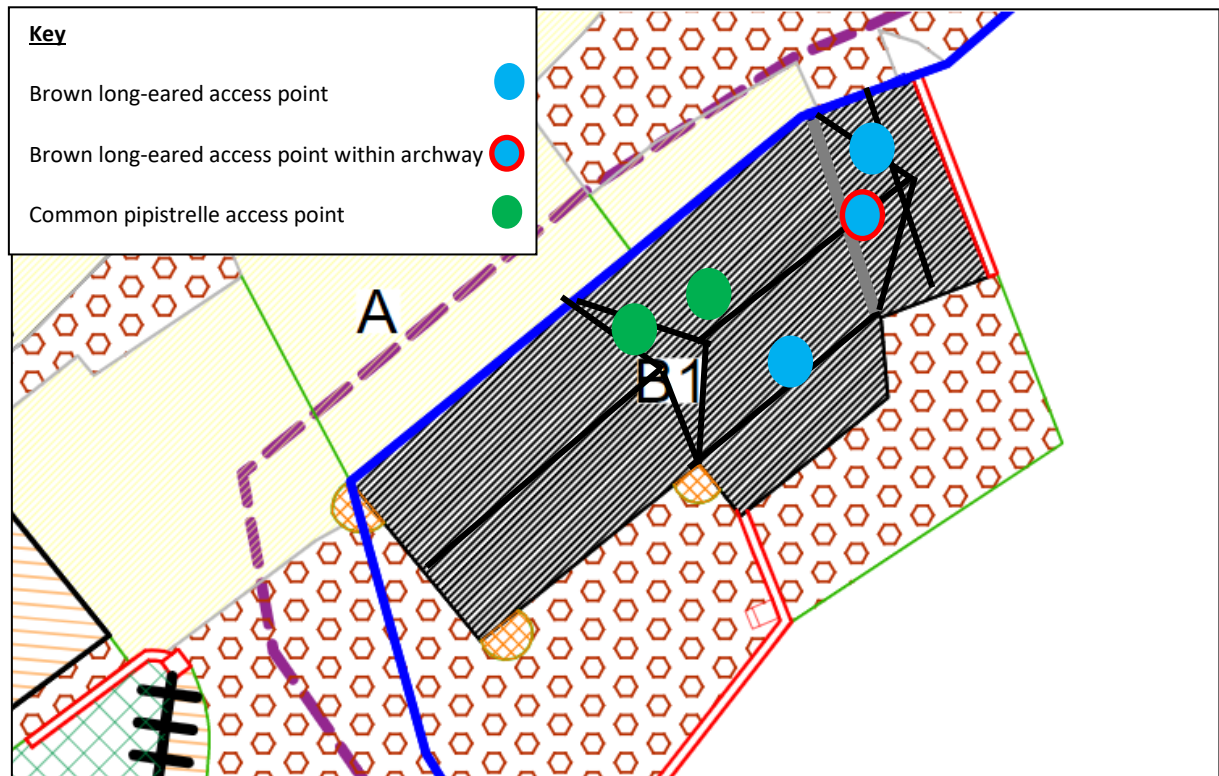
2



2. Two brown long-eared bats emerged from a roof tile between the archway and eastern garage roof of Building B1 at 20:16. Flew in a north-west direction through the site.



Figure A10.5: Bat Access Point Map (Adapted from the Phase 1 Map).



Appendix 11 Evaluating Bats in the Wider Ecological Context

The evaluation of the bat population using the site is based on *Valuing Bats in Ecological Impact Assessment* (Wray *et. al.*, 2010). The text in **bold** indicates the process of evaluation for roosting, commuting and foraging bats on site.

Where bats (species and number) use certain habitats (to roost, commute or forage), their population is assigned a relative ecological value. The value to the species is partly based on habitat usage and the rarity of the bat species. For commuting routes or foraging areas, the number of roosts nearby is also a factor. Once the value of the bat population is calculated, mitigation for impacts on the bats can be determined.

British bat species have been subdivided into groups, dependant on their abundance within England; common, rarer and rarest.

Table A11.1: Categorising bats by abundance in England.

Rarity	Bat Species
Rarest	Greater horseshoe bat Bechstein's bat Alcathoe's bat Greater mouse-eared bat Barbastelle Grey long-eared bat
Rarer	Lesser horseshoe bat Whiskered bat / Brandt's bat Daubenton's bat / Natterer's bat Leisler's bat Noctule Nathusius' pipistrelle Serotine
Common	Common pipistrelle Soprano pipistrelle Brown long-eared bat

Table A11.2: Evaluating bat roosts.

Geographic Frame of Reference	Roost Types
International	SAC sites.
National/UK	Maternity sites (rarest species). Sites meeting SSSI guidelines.
Regional	Mating sites (rarer/rarest species) including well-used swarming sites. Maternity sites (rarer species). Hibernation sites (rarest species). Significant hibernation sites for rarer/rarest species or all species assemblages.
County	Maternity sites (common species). Small numbers of hibernating bats (common and rarer species). Feeding perches (rarer/rarest species).

	Individual bats (rarer/rarest species). Small numbers of non-breeding bats (rarer/rarest species).
District, Local or Parish	Feeding perches (common species). Individual bats (common species). Small numbers of non-breeding bats (common species). Mating sites (common species).

To calculate the score for either commuting routes or foraging areas the numerical values from each column below are added together (**Tables A11.3 and A11.4** below).

Table A11.3: Evaluating commuting routes.

Species	Number of Bats	Roosts / Potential Roosts Nearby	Type & Complexity of Linear Features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts or close to a SSSI (5)	Well grown and well connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table A11.4: Evaluating foraging areas.

Species	Number of Bats	Roosts / Potential Roosts Nearby	Foraging Habitat Characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts or close to a SSSI (5)	Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Finally, the evaluation of bat commuting routes and foraging areas on the site is based on the following scoring system.

Table A11.5: Scoring system for valuing commuting and foraging bats.

Geographic Frame of Reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, Local or Parish	11-20
Not Important	1-10

Appendix 12 Dormouse Survey Plan

Figure A12.1: Location of dormouse tubes within the site (red outline) and adjacent land (field to the south and south-western corner of the adjacent golf course (to 5-10m accuracy)

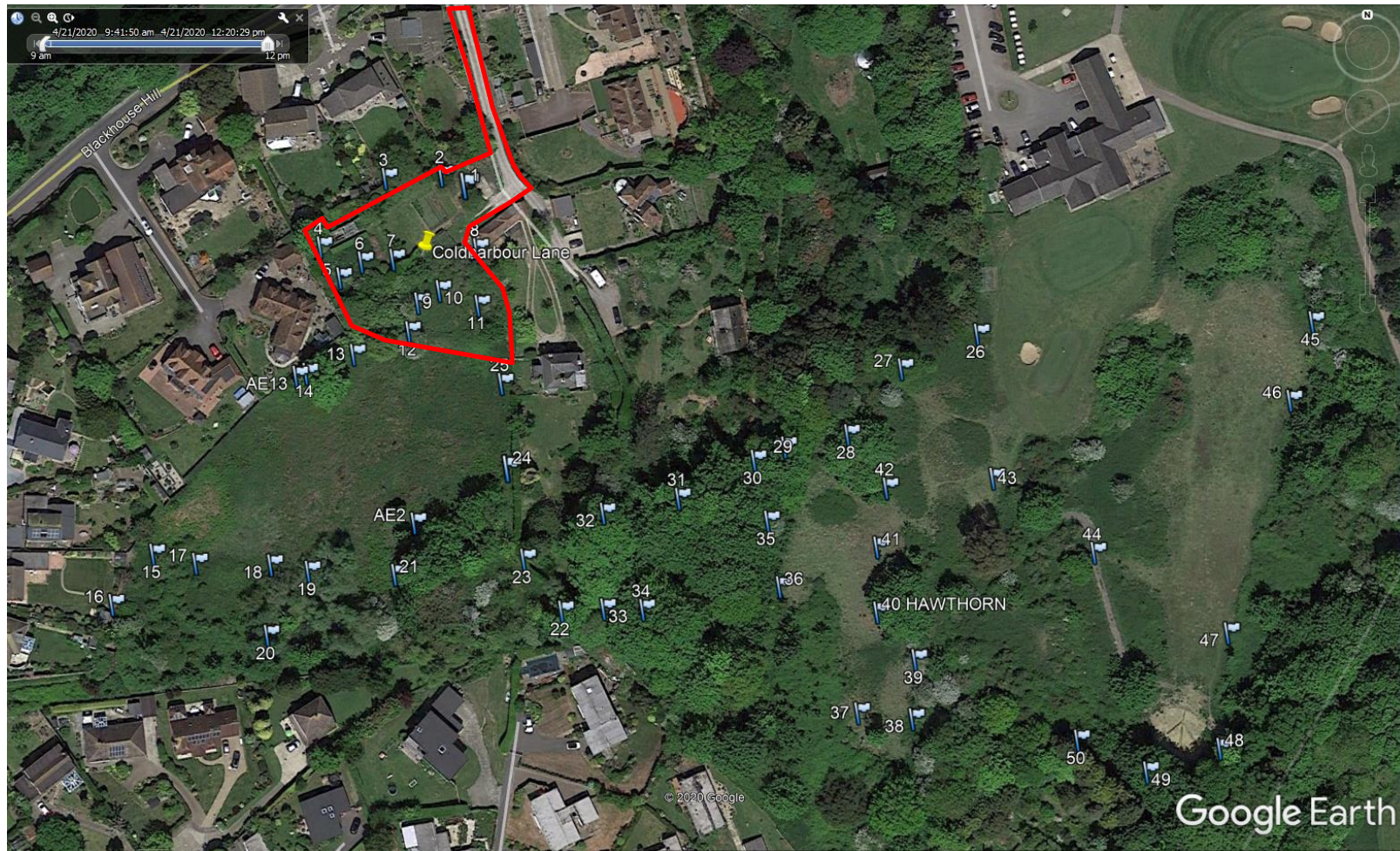
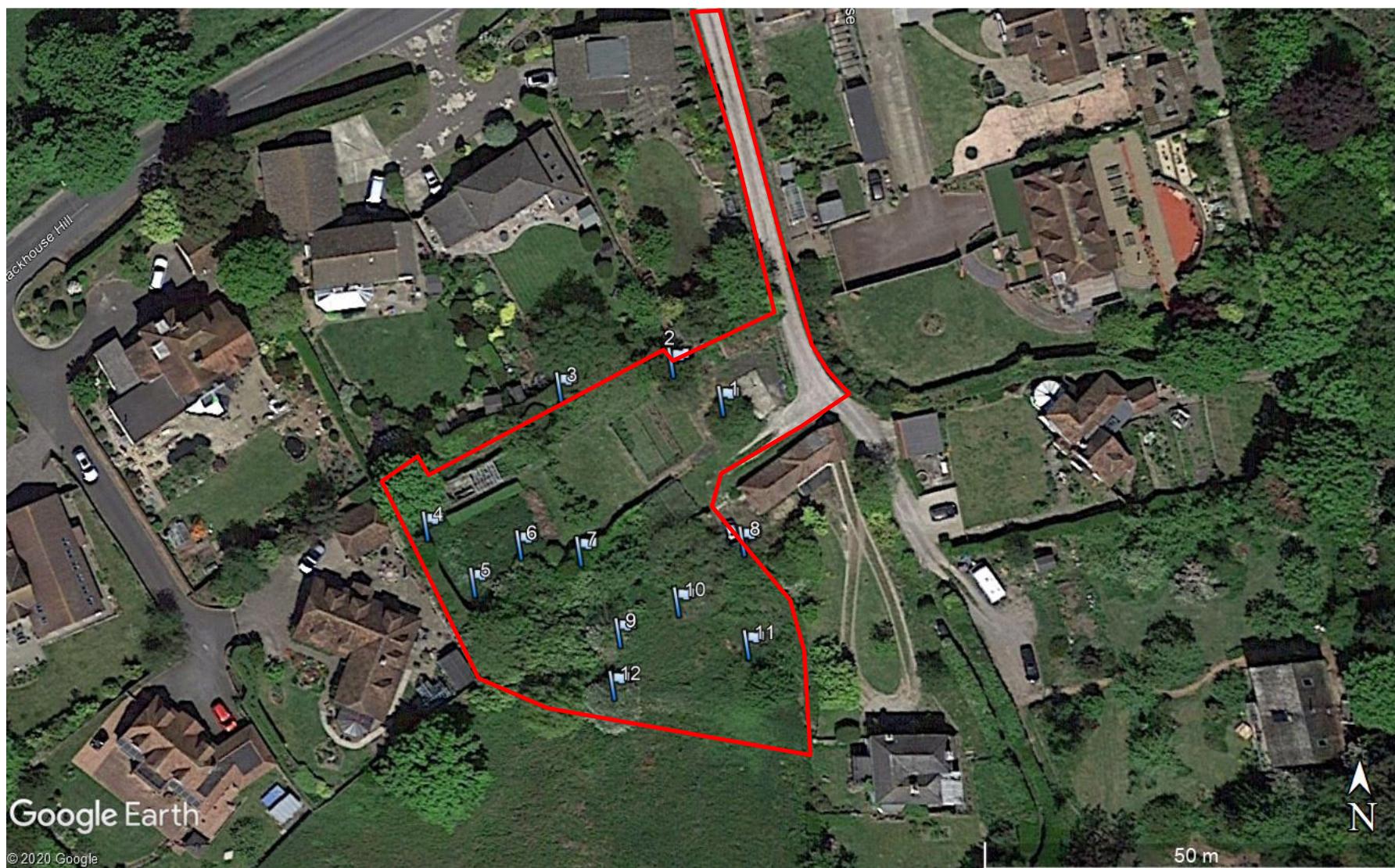


Figure A12.2: Location of dormouse tubes within the site (red outline) including tubes 1-12 (to 5-10m accuracy)



Appendix 13 Wildlife Friendly Planting

Table A13.1: Native and wildlife-friendly shrubs (Natural England, 2008).

Common Name	Scientific Name
Hazel	<i>Corylus avellana</i>
Elder	<i>Sambucus nigra</i>
Goat willow	<i>Salix caprea</i>
Hawthorn	<i>Crataegus monogyna</i>
Dog rose	<i>Rosa canina</i>
Guelder rose	<i>Viburnum opulus</i>
Gorse	<i>Ulex europaeus</i>
Broom	<i>Cytisus scoparius</i>
Wayfaring tree	<i>Viburnum lantana</i>
Shrubby cinquefoil	<i>Potentilla fruticosa</i>
Raspberry	<i>Rubus idaeus</i>
Alder buckthorn	<i>Frangula alnus</i>
Wild privet	<i>Ligustrum vulgare</i>
Barberry	<i>Berberis × stenophylla</i>
Barberry	<i>Berberis vulgaris</i>
Bell heather	<i>Erica cinerea</i>
Bilberry	<i>Vaccinium myrtillus</i>
Black currant	<i>Ribes nigrum</i>
Blackthorn	<i>Prunus spinosa</i>
Buckthorn	<i>Rhamnus catharticus</i>
Butcher's-broom	<i>Ruscus aculeatus</i>
Cowberry	<i>Vaccinium vitis-idaea</i>
Cross-leaved heath	<i>Erica tetralix</i>
New Zealand holly	<i>Olearia macrodonta</i>
Daphne	<i>Daphne odora</i>
Dogwood	<i>Cornus sanguinea</i>
Field rose	<i>Rosa arvensis</i>
Firethorn	<i>Pyracanthus angustifolia</i>
Flowering Currant	<i>Ribes sanguineum</i>
Gooseberry	<i>Ribes uva-crispa</i>
Hebe 'Midsummer Beauty'	<i>Hebe</i> sp.
Himalayan honeysuckle	<i>Leycesteria formosa</i>
Holly	<i>Ilex aquifolium</i>
Japanese quince	<i>Chaenomeles japonica</i>
Lilac	<i>Syringa vulgaris</i>
Mexican orange	<i>Choisya ternata</i>
Mezereon	<i>Daphne mezereum</i>
Midland hawthorn	<i>Crataegus laevigata</i>
Oregon grape	<i>Mahonia aquifolium</i>
Osier	<i>Salix viminalis</i>
Portugal laurel	<i>Prunus lusitanica</i>
Privet	<i>Ligustrum ovalifolium</i>
Purple willow	<i>Salix purpurea</i>

Common Name	Scientific Name
Snowy mespilus	<i>Amelanchier canadensis</i> , <i>Amelanchier lamarckii</i>
Spindle	<i>Euonymus europaeus</i>
Spurge laurel	<i>Daphne laureola</i>
Sweet briar	<i>Rosa rubiginosa</i>
Wild privet	<i>Ligustrum vulgare</i>

Table A13.2: Native and wildlife-friendly trees (Natural England, 2008).

Common Name	Scientific Name
Pedunculate oak	<i>Quercus robur</i>
Ash	<i>Fraxinus excelsior</i>
Wych elm	<i>Ulmus glabra</i>
Whitebeam	<i>Sorbus aria</i> agg.
Rowan	<i>Sorbus aucuparia</i>
Aspen	<i>Populus tremula</i>
Apple	<i>Malus domestica</i>
Bird cherry	<i>Prunus padus</i>
Common alder	<i>Alnus glutinosa</i>
Crab apple	<i>Malus sylvestris</i>
Crack willow	<i>Salix fragilis</i>
Downy birch	<i>Betula pubescens</i>
Field maple	<i>Acer campestre</i>
Hornbeam	<i>Carpinus betulus</i>
Juniper	<i>Juniperus communis</i>
Large-leaved lime	<i>Tilia platyphyllos</i>
Small-leaved lime	<i>Tilia cordata</i>
Pear	<i>Pyrus communis</i>
Scots pine	<i>Pinus sylvestris</i>
Sessile oak	<i>Quercus petraea</i>
Silver birch	<i>Betula pendula</i>
Sweet chestnut	<i>Castanea sativa</i>
Wild cherry	<i>Prunus avium</i>
Wild service-tree	<i>Sorbus torminalis</i>
Yew	<i>Taxus baccata</i>

Table A13.3: Moth pollinator species (Butterfly Conservation, 2019).

Common Name	Scientific Name
Honeysuckle	<i>Lonicera periclymenum</i>
Jasmine	<i>Jasminum officinale</i>
Evening primrose	<i>Oenothera biennis</i>
Sweet rocket	<i>Hesperis matronalis</i>
Night-scented stock	<i>Matthiola bicornis</i>
Aubretia	<i>Aubretia</i> sp.
Cuckooflower	<i>Cardamine pratensis</i>
Forget-me-not	<i>Myosotis</i> sp.
Honesty	<i>Lunaria annua</i>

Pansy	<i>Viola</i> sp.
Primrose	<i>Primula veris</i>
Wallflower	<i>Erysimum</i> sp.
French marigold	<i>Tagetes</i> sp.
Ice plant	<i>Sedum</i> sp.
Knapweed	<i>Centaurea</i> sp.
Lavender	<i>Lavendula</i> sp.
Marjoram	<i>Origanum vulgare</i>
Michaelmas daisy	<i>Aster amellus</i>
Mint	<i>Mentha</i> sp.
Scabious	<i>Scabiosa</i> sp.
Thyme	<i>Thymus</i> sp.



Ecological Impact Assessment

Field at Cold Harbour

Blackhouse Hill

Hythe

Kent CT21 5UZ

Date: May 2021

Revision: FINAL

1 Summary

Site	Land at Cold Harbour, Blackhouse Hill, Hythe, CT21 5UT
Central OS Grid Reference	TR 16955 35541
Report Commissioned by	Hobbs Parker on behalf of Mr McClure
Report Purpose	To inform a full Planning Application for the construction of seven residential units and associated access, parking and landscaping.
Authors	Emily Sullivan BSc (Hons) CIEEM, Senior Ecologist Graeme Down BSc (Hons) PhD MCIEEM, Senior Ecologist
Reviewed & Approved by	Claire Munn BSc (Hons) MSc MCIEEM, Principal Ecologist

EclA Summary	Description	Dates / Details
Surveys / Assessments Conducted	Preliminary Ecological Appraisal	Extended Phase 1 survey: 7 th January 2020 and 17 th January 2020 Web-based desk-study: 18 th December 2020 Detailed desk-study: 24 th July 2019
	Habitat Suitability Index (HSI) Assessments	Pond 1: 7 th January and 19 th March 2020 Ponds 2 and 4: 17 th January 2020 Pond 3: 7 th January 2020
	Preliminary Roost Assessment for bats	Trees: 27 th April 2020
	Detailed tree endoscope inspection	Sycamore tree within G1: 15 th May 2020
	Bat roost emergence / re-entry surveys	Dusk survey 1: 15 th May 2020 (Tree 14) Dawn survey: 12 th June 2020 (Trees 3, 13 and 14) Dusk survey 2: 15 th July 2020 (Trees 3 and 13) Dusk survey 3: 12 th August 2020 (Trees 13 and 14)
	Bat activity surveys	Transects: 15 th May 2020 (dusk); 15 th July 2020 (dusk); 4 th September 2020 (dawn) Static detectors: 23 rd – 27 th April 2020, 4 th – 13 th July 2020, 10 th – 14 th September 2020
	Reptile survey	5 th August – 26 th September 2019
	Breeding bird survey	27 th March – 15 th June 2020
	Dormouse survey	Nest tube survey: April – September 2020
Key Impacts and Avoidance / Mitigation Proposed	Deciduous Woodland Priority Habitat adjacent to the site	A Construction Environmental Management Plan (CEMP) will detail protection measures during construction.
	Hedgerow and Scattered Trees	Protect retained trees and the hedgerow and replace any trees lost to development with native species of local provenance.
	Pond	Retain the pond and protect as per details to be included in a CEMP.

EcIA Summary	Description	Dates / Details
	Bats: Trees	Sectionally fell Trees 3, 4, 8, 13, 14 and the sycamore with a suitable feature in G1 under ecological supervision during March – October (inclusive). Check Tree 7 for suitable bat roost features prior to felling. Install a hibernation bat box on a retained tree or new building.
	Bats: Foraging and Commuting	Retain the eastern boundary hedgerow. Retain a 3m wide area of trees and scrub along the southern boundary or replace with native hedgerow and tree planting. Plant a new hedgerow along the northern boundary. Include night-scented flowering plants in communal areas. Employ a sensitive lighting strategy to maintain dark corridors along the eastern, southern and northern boundaries, retained horse chestnut tree and newly installed bat boxes.
	Invertebrates	The loss of pollen/nectar sources and plants that support larval stages of locally recorded moths will be mitigated for by inclusion of locally sourced native planting.
	Reptiles and common toad	Follow the reptile mitigation strategy in this report, which includes an off-site translocation to an enhanced receptor site, reptile exclusion fencing, trapping and a destructive search.
	Birds	Retention of eastern hedgerow, planting of a new northern boundary hedgerow, retention or replacement of 3m wide strip of woody vegetation along the southern boundary. Clear any woody vegetation outside the nesting bird season, or after a nesting bird survey by an ecologist if clearance is scheduled between March and August (inclusive).
	Badgers: Setts	A preconstruction badger survey c. 6 weeks prior to works on site commencing.
	Badgers: Foraging and Commuting	Backfill or cover trenches / excavations overnight, or leave an escape ramp, and check for trapped animals before recommencing work each morning.
	Hedgehog	Provide hedgehog links within any new fencing and two hedgehog houses within an appropriate location.
Enhancements	To increase the ecological value of the site.	Plant a native species-rich hedgerow and trees on the northern boundary, enhance the existing pond for wildlife, install wildlife boxes for birds, bats and insects, Incorporate Sustainable Urban Drainage Systems and create a swathe of uncut grassland and a log pile.

EcIA Summary	Description	Dates / Details
Conclusion	The proposed development can proceed within negligible negative impacts to wildlife and when combined with the enhancement measures, compliance with relevant wildlife legislation and planning policies can be achieved. Planning conditions can be used to secure the majority of the measures proposed, with a Section 106 agreement suggested to secure the long-term viability of the off-site reptile receptor area.	

Contents

1	Summary.....	1
2	Introduction.....	6
2.1	Background.....	6
2.2	Site Location and Description.....	6
2.3	Development Proposal.....	6
2.4	Assessor Experience	7
2.5	Scope of Assessment	7
2.6	Objectives	7
3	Methodology	8
3.1	Scope of the Assessment.....	8
3.2	Desk Study	8
3.3	Field Survey	9
3.4	Evaluation	9
3.5	Limitations	10
4	Baseline Ecological Conditions	13
4.1	Designated Sites	13
4.1.1	Statutory Sites	13
4.2	Habitats	17
4.3	Protected and Notable Species	26
5	Assessment of Effects and Mitigation Measures	50
5.1	Adjacent Deciduous Woodland Priority Habitat	50
5.2	Hedgerows and Scattered Trees	51
5.3	Pond.....	51
5.4	Invertebrates	52
5.5	Common Toad	52
5.6	Reptiles.....	52
5.7	Birds.....	56
5.8	Badgers: Setts.....	57
5.9	Badgers: Foraging and Commuting	57
5.10	Bat Roosts: Trees	58
5.11	Bats: Foraging and Commuting	59
5.12	Hedgehogs	60
5.13	Summary of Effects and Avoidance and Mitigation Measures	61
5.14	Cumulative Effects.....	62
6	Enhancements	63
7	Conclusions.....	65

8	References.....	66
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Appendix 1 Legislation and Planning Policy

Appendix 2 Phase I Habitat Map

Appendix 3 Species Assessment Methodology

Appendix 4 Habitat Suitability Index Scores

Appendix 5 Reptile Survey Results

Appendix 6 Reptile Fencing Plan

Appendix 7 Enhancements of Reptile Receptor Site

Appendix 8 Bat Roost Survey Results

Appendix 9 Bat Activity Survey Results

Appendix 10 Static Bat Detector Results

Appendix 11 Weather Conditions During Static Bat Detector Surveys

Appendix 12 Evaluating Bats in the Wider Ecological Context

Appendix 13 Wildlife Pond Example

Appendix 14 Wildlife Friendly Planting

2 Introduction

2.1 Background

David Archer Associates was commissioned by Hobbs Parker on behalf of Mr McClure to undertake an Ecological Impact Assessment (EclA) at Land at Cold Harbour, Blackhouse Hill, Hythe, CT21 5UT, herein referred to as 'the site'. This report will support a planning application for seven residential units and associated access, parking and landscaping.

2.2 Site Location and Description

The site is located to the east of Pedlinge, north of the Hythe coastline and south of Etchinghill, at central Ordnance Survey Grid Reference TR 16970 35545. The site totals c. 0.9ha, comprising poor semi-improved grassland, tall ruderal, hedgerows, scattered/dense scrub, scattered trees and standing water habitats.

The site is situated within a suburban location and surrounded by residential land to the north, south and west and residential and woodland habit to the east. The wider area comprises urban settlement, agricultural land, hedgerows, recreational grounds, watercourses and pockets of deciduous woodland.

2.3 Development Proposal

The proposed development includes construction of eight residential units and associated access, parking and landscaping (as shown in **Figure 2.1**). This will require the removal of poor semi-improved grassland, tall ruderals, scattered and dense scrub, bracken and the majority of scattered trees. The hedgerow between the site and the Cold Harbour property along the eastern boundary (H2, as shown in **Appendix 2**) will be retained and the development has been designed to ensure the water-body in the southern portion of the site (Pond 1) is also retained.

Figure 2.1: Current proposals at Cold Harbour as shown within red line boundary (as of May 2021)



2.4 Assessor Experience

This report has been prepared by Emily Sullivan BSc (Hons) CIEEM and Graeme Down BSc (Hons) PhD MCIEEM. Emily is a Senior Ecologist with 9 years' industry experience, including extensive experience of PEA, Phase 2 species/habitat-specific surveys and EclA. Emily is licensed to survey for bats (level 2), great crested newts and hazel dormice. Graeme is also a Senior Ecologist with 13 years' industry experience, including extensive experience of PEA, Phase 2 species/habitat-specific surveys and EclA. Graeme is licensed to survey for great crested newts. Licence numbers can be provided on request. Where other surveyors have contributed to the EclA, their experience is outlined in the relevant methodology sections.

2.5 Scope of Assessment

This EclA pulls together all ecology work completed to fulfil the requirements of national and local planning policies and to advise on compliance with European and UK wildlife legislation (**Appendix 1**). This EclA combines the methods, results, evaluation and recommendations of the following surveys and assessments:

- Preliminary Ecological Appraisal (PEA), including:
 - Extended Phase 1 Habitat Survey;
 - Web-based desk study of relevant nearby designated sites and priority habitats, and granted European Protected Species Mitigation (EPSM) licences;
 - Detailed desk study, including analysis of nearby biological records and non-statutory site data; and
- Habitat Suitability Index (HSI) Assessment of the on-site pond and others within 500m of the site identified during the detailed desk study;
- Preliminary bat Roost Assessment (PRA) of the trees to be impacted;
- Bat emergence / re-entry surveys of the trees identified during the PRA to have bat roost potential;
- Bat activity surveys of the habitats identified as suitable for foraging and commuting bats during the PEA;
- Reptile presence and population assessment surveys of the habitats identified as suitable during the PEA;
- Breeding bird surveys of the habitats identified as suitable during the PEA; and
- Dormouse presence / likely absence surveys of the habitats identified as suitable during the PEA.

2.6 Objectives

The objectives of this EclA are to:

- Identify and describe all potentially significant ecological effects associated with the proposed development;
- Set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects;
- Identify how mitigation measures will / could be secured;
- Provide an assessment of the significance of any residual effects;
- Identify appropriate enhancement measures; and
- Set out requirements for post-construction monitoring.

3 Methodology

3.1 Scope of the Assessment

Zone of Influence

Aerial photographs, maps and field observations were used to identify habitats in the wider landscape which could be impacted by the proposed development of the site. By using these tools, the Zone of Influence of the development is defined as being of the following distances for each feature considered:

- 10km for statutory sites of international importance designated for nature conservation;
- 2km for statutory sites of national and local importance designated for nature conservation;
- 2km for non-statutory sites designated for nature conservation;
- 2km for Priority Habitats;
- 2km for protected and notable species;
- 500m for habitats and water-bodies (in relation to great crested newts); and
- 30m for badger setts.

3.2 Desk Study

Natural England's Multi-Agency Geographic Information for the Countryside (MAGIC) database was accessed on 18th December 2020 for information on statutory sites designated for nature conservation within a 2km radius of the site. Consideration for Natura 2000 sites (referred to as National Site Network sites since 1st January 2021) was extended to a 10km radius where the potential risk of impact to interest features of such sites may extend over a wider area. Such sites include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites as well as those currently under public consultation for future designation as SACs, SPAs and Ramsar sites.

The MAGIC Impact Risk Zones (IRZs) were used to assess whether the proposed development may impact on any Sites of Special Scientific Interest (SSSI), and thus whether consultation with Natural England is needed to discuss how impacts might be avoided or mitigated.

The Kent and Medway Biological Record Centre (KMBRC) was also consulted on 24th July 2019 for the following information for a 2km radius around the application site:

- Non-statutory nature conservation designations, such as Local Wildlife Sites (LWS);
- Legally protected species, such as great crested newts, reptiles, birds and bats; and
- Notable / priority species, such as those listed under Section 41 of the NERC Act, 2006.

MAGIC was also accessed on 18th December 2020 to identify any European Protected Species Mitigation (EPSM) licences granted by Natural England within a 2km radius of the site.

The following reports have been reviewed as part of this assessment:

- Preliminary Ecological Appraisal for Coldharbour South Site (David Archer Associates, 2020)

-
- Ecological Impact Assessment for Land at Cold Harbour (Vegetable Garden) (David Archer Associates, 2020)

3.3 Field Survey

The Phase 1 survey involved a site visit on 7th January 2020 by Emily Sullivan BSc (Hons) CIEEM, to record and map habitat types and ecological features within the site and those within 500m adjacent to the site, in line with the defined Zone of Influence, where access was possible. The survey was undertaken in accordance with *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017), and the general principles and methods outlined in the *Handbook for Phase I Habitat Survey* (JNCC, 2010). Features of interest were identified as target notes on the Phase I Habitat Map (**Appendix 2**).

Hedgerows on site were also evaluated for their importance with reference to the *Hedgerows Regulations 1997*.

Weather conditions during the survey were 8°C, a light breeze (Beaufort 2), no rain and 100% cloud cover.

The Phase 1 survey was extended to look for evidence of and assess the potential for the site to support protected, notable and invasive species. This included species listed under the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*, the *Wildlife and Countryside Act 1981 (as amended) (WCA)*, and those given extra protection under the *Natural Environment and Rural Communities (NERC) Act 2006*, *Countryside and Rights of Way (CROW) Act 2000*, and the *Protection of Badgers Act 1992*.

The protected, notable and invasive species considered within the assessment are: invertebrates, great crested newts *Triturus cristatus*, reptiles, breeding birds, badgers *Meles meles*, bats, hazel dormice *Muscardinus avellanarius* and hedgehogs *Erinaceus europaeus*. The species assessment methodologies applied can be found in **Appendix 3**.

3.4 Evaluation

Ecological effects have been characterised using the following impact parameters, where relevant:

- Direct or indirect
- Positive or negative
- Extent
- Magnitude
- Duration
- Reversibility
- Frequency
- Timing

The above factors have been used to guide the thought process to show how each impact will occur as a result of the proposals, thus enabling a conclusion to be reached as to the likely significance of each impact as per the parameters explained below.

Designated sites, habitats and species (where presence has been identified) have been evaluated in accordance with the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), with the addition of 'site' level importance.

These guidelines aim to give consistency in evaluating the importance of the ecological features within and around a site, which help inform any effects or impacts a scheme will have upon them.

A value of the ecological features (designated sites, habitats or species) has been assigned according to their level of importance using the following terms:

- International
- National
- Regional
- County
- Local
- Site
- Negligible

3.5 Limitations

3.5.1 PEA

Access was available to the entire site and the baseline conditions reported represent those identified at the time of the survey. Although a reasonable assessment of the site can be made during a single survey, seasonal variations are not observed.

The survey date falls outside the optimal season for botanical work. However, the habitat descriptions and evaluations are considered to be accurate due to the common and widespread habitats recorded and the vegetation being clearly visible at the time of survey.

This PEA provides an overview of the likelihood of protected / notable species occurring on the site (negligible, low, moderate, or high). Absence of a species cannot be presumed where no evidence was found. Further surveys have been recommended where there is reasonable likelihood of a protected species being present and impacted by the development proposal. This is based on the suitability of the habitat and any evidence observed.

The site contains dense tall ruderal vegetation which provided a structure and height that could potentially conceal well-hidden mammal burrows. However, the whole site was walked, and additional efforts were made to follow and investigate mammal paths. This is not considered to be a constraint as a pre-construction badger walk-over survey will be completed alongside the reptile translocation to ensure there is no risk to potentially concealed badger setts.

It was not possible to survey the southern aspect of Tree 7 during the Preliminary Roost Assessment of the scattered trees within the site. This is not considered to be a constraint as a check has been recommended prior to its felling, should the development require its removal as part of the proposals.

This PEA does not constitute a full botanical survey or a Phase 2 pre-construction survey for Japanese knotweed.

Follow-up surveys have been taking place within the site until September 2020, which enabled us to confirm that the habitats remained the same with the same maintenance regime in the interim period between the original PEA survey taking place and the EcIA report being produced. As such, the

conclusions reached in the PEA remain valid for 12 months from the last site visit, i.e. until September 2022.

3.5.2 Reptile Surveys

The reptile surveys were undertaken in suitable weather conditions between August and September 2019. The first and third surveys were undertaken when temperatures were slightly above the recommended temperature range for reptiles. This is not considered a limitation as the site and adjacent habitats provide a variety of microclimates, some of which benefit from slightly warmer temperatures/sun. The conditions on site were therefore considered to be suitable for reptiles to be active on these surveys.

During one of the surveys, it was observed that a small number of the artificial refugia had been moved. These mats were replaced on the following survey. As a higher density of refugia was used during the reptile surveys than the minimum recommended in the standard guidance (Froglife 1999), this is not considered a constraint.

As the site conditions and habitats remain unchanged since the reptile surveys were carried out, the results remain valid and will continue to be so providing the habitats, maintenance regime and adjacent habitats remain unchanged.

3.5.3 Bat Roost Surveys

During the roost survey of Tree 3 and Tree 13 on 15th July 2020 light rain was experienced briefly from 21:20 – 21:21 (16-17 minutes after sunset), 22:00 (56 minutes after sunset), 22:04 – 22:09 (1 hour – 1 hour 3 minutes after sunset) and 22:28 (1 hour and 24 minutes after sunset). Although the unpredicted rain was experienced during the survey, the showers were very light and intermittent, which is less likely to significantly impact bat behaviour. In addition, bats were recorded all through the tree roost survey (and the bat activity survey completed at the same time), indicating the weather conditions were still suitable for various bat species (five species noted) to emerge and forage / commute within the site.

The final bat roost survey, completed on Tree 13 and Tree 14 completed on 12th August 2020, was undertaken in suitable weather conditions. However, towards the end of the survey, thunder and lightning was heard within the surrounding landscape which could be heard becoming more frequent and closer as time went on. It was decided that due to the positioning of surveyors beneath trees, it was best to end the survey early at 21:35 (1 hour and 13 minutes after sunset) due to health and safety risks. This is not considered to be a significant limitation as this survey makes up one of the three roost surveys completed for Tree 3 and Tree 14, during which no evidence of roosting bats was found, and all bat species would typically have emerged from their roost by this time during a survey.

The nocturnal surveys were undertaken at a suitable time of year and although two surveys were slightly below optimal in terms of timings and rainfall, all were completed within suitable weather conditions and obtained the required information. The survey results are therefore not significantly limited and are considered to represent a valid assessment of the roosting bats on-site.

On the assumption that site conditions and habitats remain unchanged, the bat roost surveys will remain valid for one year i.e. until August 2021 and should be updated if the works have not yet commenced within this timeframe.

3.5.4 Bat Activity Surveys

Transect

The second bat activity survey completed on 15th July 2020 experienced some light rain, which is explained and justified within **Section 3.5.3.**, as this activity survey was completed at the same time as one of the tree roost surveys.

The nocturnal surveys were undertaken at a suitable time of year and although one activity survey was slightly below optimal, all were completed within suitable weather conditions. The survey results are therefore not significantly limited and are considered to represent a valid assessment of the bat activity on-site.

Static Detector survey

When the two static detectors were deployed in April 2020, three of the five consecutive recording nights experienced minimum temperatures of 7-8°C. Although this indicates it may not have been 10°C at sunset, these temperatures are still considered suitable for bats to be active, emerge from their roosts and therefore would be out foraging and commuting as expected at this time of year. These slightly lower temperatures experienced are therefore not considered to be a significant limitation to the survey results.

The weather in July 2020, when both static detectors were deployed to capture the summer season, was repeatedly suboptimal. Both frequent rain and high winds were experienced. To compensate for this, the number of days included within the evaluation was increased from five to ten for the month of July.

Overall

On the assumption that site conditions and habitats remain unchanged, the bat activity surveys will remain valid for one year i.e. until September 2021 and should be updated if the works have not yet commenced within this timeframe.

3.5.5 Dormouse Surveys

Access was available to the entire site and adjacent land included in the survey, which spanned the optimal season for dormouse nest tube surveys.

The survey results are therefore not significantly limited and are considered to represent a valid assessment of hazel dormice within the site and connecting habitat.

On the assumption that site conditions and habitats remain unchanged, the dormouse surveys will remain valid for two years, i.e. until September 2022, and may need to be updated if works have not yet commenced within this timeframe.

4 Baseline Ecological Conditions

The following section presents the results, evaluation and discussion of the designated sites, habitats and protected / notable species, which may be impacted by the proposed development.

4.1 Designated Sites

4.1.1 Statutory Sites

Statutory sites designated for nature conservation within the vicinity of the site are provided in **Tables 4.1** and **4.2**. SACs are of **European importance**, SSSIs are of **national importance** and Local Nature Reserves (LNR) are of **local importance**.

There are no habitats or species within the site that serve as qualifying features of the nearby statutory sites.

The application site is not ecologically linked to Folkestone to Etchinghill Escarpment SAC due to the intervening land being extensive open farmland and the M20 motorway between the sites (OS, 2020). The development is also highly unlikely to indirectly impact the SAC due to its small-scale size and number of residential dwellings proposed. No significant impacts on statutory sites are expected.

The site falls within the Seabrook Stream SSSI and Folkstone to Etchinghill Escarpment SSSI Impact Risk Zones (IRZs), however, the development does not meet criteria for impacts that would likely lead to a significant effect on these SSSIs. Therefore, no consultation with Natural England and no mitigation is required for these SSSIs.

It is considered that the development is small enough and located far enough from the SSSIs for there to be any direct or indirect impacts on their habitats. There does not appear to be any direct hydrological link or other habitat connectivity between the SSSIs and the application site (OS, 2020). Whilst public footpaths within the local area provide connectivity to Seabrook Stream SSSI, as above, the small increase in residential housing on-site is unlikely to significantly impact upon the SSSI (OS, 2020).

No significant impacts on statutory sites are expected and therefore no further action is recommended.

Table 4.1: Statutory designated sites of international importance within 10km of the application site.

Site Name	Distance & Direction from Site	Area (ha)	Reasons for Designation
Folkestone to Etchinghill Escarpment SAC & SSSI	3.1km NE	187	This site is designated for the presence of semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>), which is an Annex I Habitat. The site is also an important orchid site. The site contains the priority habitat type 'orchid rich site', which includes an important collection of rare and scarce orchids. These include early spider-orchid <i>Ophrys sphegodes</i>, late spider-orchids <i>O. fuciflora</i> and burnt orchid <i>Orchis ustulata</i>.

Table 4.2: Statutory designated sites of national and local importance within 2km of the application site.

Site Name	Distance & Direction from Site	Area (ha)	Reasons for Designation
Seabrook Stream SSSI	875m NE	24.13 (ha)	The site is designated for the presence of alder wet woodland (carr) and fen communities that together support a high number of crane fly species (67 known). The formation of the stream provides a range of different conditions that support various habitats near its course. The site supports breeding reed warblers <i>Acrocephalus scirpaceus</i>, sedge warblers <i>Acrocephalus schoenobaenus</i>, grey wagtails <i>Motacilla cinerea</i> and sand martins <i>Riparia riparia</i>.

4.1.2 Non-Statutory Sites

Non-statutory sites designated for nature conservation that are located within 2km of the application site are provided in **Table 4.3**. LWSs are of **local importance**.

It is considered that the development will be small enough and located far enough from any of these sites for there to be any direct or indirect impacts on their habitats.

Further, there does not appear to be any direct hydrological link or other habitat connectivity between these sites and the application site (OS, 2020). No significant impacts on non-statutory sites are expected. Although the site is situated in close proximity to Saltwood Valley, the site is separated from the LWS by residential areas and an existing road, Blackhouse Hill.

Whilst public footpaths within the local area provide connectivity to some of the LWSs, the small increase in residential housing on-site is unlikely to significantly impact upon these LWSs (OS, 2020).

No significant impacts to non-statutory sites are expected. No further action is recommended.

Table 4.3: Non-statutory sites within 2km of the application site.

Site Name (LWS)	Distance & Direction from Site
Saltwood Valley	144m NE
Paraker Wood and Seabrook Stream, Shorncliffe	590m NE
Royal Military Canal	780km S
Brockhill Country Park, Saltwood	1.7km W
Hythe Ranges	1.7km SW
Asholt Wood Pasture and Pond	1.9km NE
Tolsford and Summerhouse Hills	2.0km N
Postling Wents Woods	2.0km NW

4.1.3 Ancient Woodland

Six small pockets of Ancient Semi-natural Woodland are situated within the surrounding landscape within 1km of the development site. The closest area of Ancient Woodland is Blackhouse Shaw, which is situated 350m north-east of the site beyond a road and residential housing.

There will be no significant impact to any of these areas of Ancient Woodland within 2km of the development site as the distance from the site and construction works are far enough away to avoid any impacts to root damage and potential pollution impacts.

Although public footpaths and roads are present within the local landscape that could provide access from the site to areas of Ancient Semi-natural Woodland, the small-scale proposals are unlikely to have any impact on these habitats. In addition, footpaths are available within the closest area of Ancient Woodland which should help alleviate any small increase in visitor pressure. As the development involves the construction of a small numbers of dwellings on-site, it is considered unlikely to lead to a significant increase in visitor pressure to these sites.

No further action is recommended.

4.1.4 Priority Habitats

The MAGIC database (2020) indicates that the priority habitat Deciduous Woodland is found within the site boundary and within 1km of the site. MAGIC also indicates the priority habitat Traditional Orchard is located within 1km of the site.

The ground level assessment has confirmed that the site does not contain the priority habitat Deciduous Woodland. The confidence of this main habitat classification is 'Low' on MAGIC, which indicates it was likely determined through aerial imagery assessment alone and not a ground level assessment. The scattered trees and areas of dense/scattered scrub (as shown in **Photo 4.1**) do not form a woodland complex but instead include a mosaic of scattered trees and scrub habitat, which has likely expanded over the years through self-seeding (Google Earth, 2020).

The closest area of priority habitat Deciduous Woodland is an area of woodland situated adjacent to the south-east corner of the site. This woodland area forms the boundary habitat for a golf course (Google Earth, 2020). As this priority habitat is situated within private land that is already used for commercial purposes, it is not anticipated that the development would lead to further recreational pressure than is already experienced within this area of woodland. In addition, should any of the new residents utilise this recreational facility, they are unlikely to impact upon the woodland within the golf course due to the nature of the sport. As the proposed development is situated adjacent to this habitat, it does have the potential to impact upon over-hanging branches and root systems of trees within the off-site woodland as a result of construction works.

There will be no significant impact to any other priority habitats within 1km of the development site as there are no physical pathways for impacts from construction to affect habitats. The development is unlikely to lead to a significant increase in visitor pressure on areas where priority habitats are present.

Further recommendations with regards to the priority habitat Deciduous Woodland situated adjacent to the site are provided within **Section 5**.

Photo 4.1: Scrub habitat and scattered trees, facing north-west



4.2 Habitats

The habitats below were recorded within the site during the survey. No protected, Habitats of Principal Importance (HPIE) or locally important floral species or habitats were recorded during the survey. Habitat types are described below and shown on the Phase I Habitat Map (**Appendix 2**).

- Poor semi-improved grassland
- Tall ruderals
- Marshy grassland
- Dense scrub and scattered scrub
- Bracken
- Hedgerows
- Scattered trees
- Pond with associated drainage system
- Other habitats

4.2.1 Poor Semi-Improved Grassland

The site contains a small area of tussocky, poor semi-improved grassland within a clearing situated within the south-western end of the site (**Photo 4.2**). The grassland exhibits evidence of rabbit grazing with an average sward height of approximately 1-5cm, with tall forb species interspersed. It is likely that the grazing from rabbits has maintained this area of habitat as grassland and prevented the more dominant forb species present within the tall ruderal habitat taking over.

The semi-improved grassland was dominated by false oat-grass *Arrhenatherum elatius* and creeping bent grass *Agrostis stolonifera*. Other species present include Yorkshire fog *Holcus lanatus*, meadow grass species *Poa sp.*, red campion *Silene dioica*, creeping buttercup *Ranunculus repens*, field wood-rush *Luzula campestris*, dwarf thistle *Cirsium acaule*, ground ivy *Glechoma hederacea*, broadleaf plantain *Plantago major* and Germander speedwell *Veronica chamaedrys*. Tall forb species are interspersed throughout the short grassland, including great willowherb *Epilobium hirsutum*, common fleabane *Pulicaria dysenterica* and bramble *Rubus fruticosus* agg. shoots.

The poor semi-improved grassland lacks species diversity and structure. It is therefore of **negligible** importance. No further action is recommended.

Photo 4.2: Poor semi-Improved grassland within the south-western area of the site, facing east



4.2.2 Tall ruderals

Tall ruderals were recorded throughout the majority of the site and were found to dominate the central areas in particular (**Photo 4.3**). The dominant species present is great willowherb, which ranged in height from 1-2m and is particularly prevalent within the central areas. Other species include common fleabane, common sorrel *Rumex acetosa*, pendulous sedge *Carex pendula*, stinging nettle *Urtica dioica*, common hogweed *Heracleum sphondylium*, Yorkshire fog, ground ivy, mosses *Cirriphyllum sp.*, dwarf thistle, white dead-nettle *Lamium album*, male fern *Dryopteris filix-mas*, bracken *Pteridium aquilinum*, meadow grass species *Poa sp.*, wood dock *Rumex sanguineus*, hard rush *Juncus inflexus*, soft rush *Juncus effusus*, stinking iris *Iris foetidissima*, primrose *Primula vulgaris*, ornamental bulbs, lords and ladies *Arum maculatum*, hart's-tongue fern *Asplenium scolopendrium*, hedge bedstraw *Galium mollugo*, red campion, water figwort *Scrophularia auriculata*, broad-leaved dock *Rumex obtusifolius*, soft shield fern *Polystichum setiferum*, cocksfoot grass, St. John's wort *Hypericum sp.*, wood avens *Geum urbanum*, spear thistle *Cirsium vulgare* and ribwort plantain *Plantago lanceolata*.

The tall ruderal habitat contains mostly common and widespread species which have little intrinsic value. It is therefore of **negligible** importance. No further action is recommended.

Photo 4.3: Tall ruderals, facing west



4.2.3 Marshy Grassland

The site contains an area of marshy grassland where the site becomes more waterlogged within the southern areas of the site close to the pond and along the drain channel leading to the pond (**Photo 4.4 and Photo 4.13**). The marshy grassland contains similar species as those within the tall ruderal habitat but comprises a higher proportion of pendulous sedge and also contains yellow flag iris *Iris pseudacorus*. The marshy grassland contains common and widespread species. It is therefore of **negligible** importance. No further action is recommended.

Photo 4.4: Marshy grassland, facing north



4.2.4 Dense Scrub and Scattered Scrub

Areas of dense and scattered scrub are present on-site, most of which is located along the southern, northern and western boundaries (**Photo 4.5**). Dominant species include mostly elder *Sambucus nigra* and bamboo *Bambusoideae sp.* (**Photo 4.6**). Other species include buddleia *Buddleja sp.*, bramble, ivy *Hedera helix*, dogwood *Cornus sanguinea*, sycamore *Acer pseudoplatanus* and hawthorn *Crataegus monogyna*. The scrub lacks species diversity and contains mostly common and widespread species, as well as non-natives, which have little intrinsic value. It is therefore of **negligible** importance. No further action is recommended.

Photo 4.5: Dense scrub dominated by elder, facing north-west



Photo 4.6: Scattered scrub dominated by bamboo, facing south-east



4.2.5 Bracken

A portion of the north-western border of the site contains an area of dense bracken growth (**Photo 4.7**). The bracken lacks species diversity, is common and widespread and provides little intrinsic value. It is therefore of **negligible** importance.

No further action is recommended.

Photo 4.7: Area of bracken, facing east



4.2.6 Hedgerows

An intact, non-native hedgerow was recorded along the eastern boundary of the site and just north of this, and outside the site boundary, a short section of intact hedgerow was also recorded. The hedgerows are of **site** importance. The hedgerows are not considered to be important under the *Hedgerow Regulations Act 1997* due to the lack of native species and associated features.

Further action has therefore been recommended in **Section 5**.

4.2.6.1 **Hedgerow 1 (H1)**

Hedgerow H1 is intact, managed and located immediately north of the site (**Photo 4.8**). H1 is c. 2.5m tall and c.1.75m wide and comprises garden privet *Ligustrum ovalifolium*. H1 comprises only a short section of hedgerow approximately 3-5m and lies outside of the development site, along the same boundary fence as Hedgerow H2. Hedgerow H1 and Hedgerow H2 are separated by an access fence.

Hedgerow H1 will not be impacted by the development proposals as this hedgerow lies outside of the development site.

Photo 4.8: Hedgerow 1 (H1), facing north



4.2.6.2 **Hedgerow 2 (H2)**

Hedgerow H2 is intact, managed and located on the eastern boundary of the site (**Photo 4.9**). H2 is c. 3.5-4m tall and c. 2m wide. Woody species predominately comprise garden privet *Ligustrum ovalifolium* with a small amount of ivy and holly *Ilex sp.* Based on the current development proposals, Hedgerow H2 will be retained. Further recommendations are provided within **Section 5** to prevent accidental damage.

Photo 4.9: Hedgerow 2 (H2), facing south



4.2.7 Scattered Trees

A number of scattered trees, ranging in size and age are present within the site (**Photo 4.10**). Species include sweet chestnut, sycamore, English oak *Quercus robur*, crack willow *Salix fragilis*, goat willow *Salix caprea*, hawthorn and ash *Fraxinus excelsior*. Tree species present are common and widespread in the local area (as well as some non-native / ornamental trees), and therefore these features are of **local** importance. Many trees will be removed to facilitate the development and as such, further action has been recommended in **Section 5**.

Photo 4.10: Tree 4 (**Appendix 2**) along the north-western border of the site



4.2.8 Pond

A pond was noted within the southern area of the site, which appeared to act as part of a drainage system due to the topography of the surrounding land and drains present (**Photo 4.11**). Water feeds into the pond from a drain to the east (**Photo 4.12**) and leads away from the pond via a drain to the west. A channel to the north also feeds surface water from the site into the pond (**Appendix 2; Target Note 14**).

During the PEA survey on 7th January 2020, at the pond's deepest point, the water level was approximately 10-20cm, with shallower areas towards the edge of the pond. The pond was heavily vegetated and the presence of dense vegetation throughout the majority of the water-body indicates that it is largely ephemeral, with both aquatic species and tall ruderal species present. Due to the shallow nature of the pond and the dense array of vegetation, there was no real differentiation between marginal and emergent vegetation. Species present within the pond included pendulous sedge, soft rush, hard rush, willowherb *Epilobium* sp., yellow flag iris, curled dock *Rumex crispus*, fool's-water-cress *Apium nodiflorum* and creeping buttercup. No fish were noted within the water-body and their presence is not considered likely based on its ephemeral nature.

The pond had been previously visited by the author as part of a great crested newt HSI survey for another nearby development on 19th September 2019, however, no water was present at the time and a full HSI was therefore not possible (**Photo 4.13**). The pond was again revisited on 19th March 2020, at which time it was found to contain a shallow body of water less than 1 inch deep (**Photo 4.14**).

These inspections confirmed Pond 1 to be highly ephemeral, supporting only a very shallow body of water after a prolonged period of heavy rainfall during winter 2019-2020. The warm weather in summer and the increased rainfall during winter likely lead to the annual drying of the pond over the year, which is supported by the condition of the water-body. The pond is important at the **site level** and is proposed to be retained.

Further action to protect the pond has been recommended in **Section 5**.

Photo 4.11: Pond 1 on-site, on 7th January 2020, facing south



Photo 4.12: Channel of water leading from the south of the site into Pond 1 on 7th January 2020, facing north-west



Photo 4.13: Pond 1 on-site on 19th September 2019, facing south



Photo 4.14: Pond on-site on 19th March 2020, facing south



4.2.9 Other Habitats

The site contained various log piles (**Appendix 2; Target Note 6**) and scattered pieces of dead wood (**Appendix 2; Target Note 13** and **Photo 4.15**). An old stone wall, approximately 0.5-1m in height, is present along some of the eastern border of the site. Whilst these habitats have the potential to support protected species, they offer little intrinsic value and are therefore of **negligible** importance.

A substation is present within the south-western corner of the site, which is surrounded by fencing and situated on hard standing, which is of **negligible** importance.

No further action is recommended.

Photo 4.15: Dead wood scattered around the on-site pond



4.3 Protected and Notable Species

Records of protected / notable species for the last ten years have been considered within the assessment below. Older records have been considered where appropriate. None of the records pertain to the site.

4.3.1 Invertebrates

KMBRC returned one record of swallowtail *Pailio machaon*, one record of large tortoiseshell butterfly *Nymphalis polychloros*, one record of white-letter hairstreak *Satyrrium w-album* and 12 records of Sussex emerald *Thalera fimbrialis*, which are listed on Schedule 5 of the WCA. These records pertain to Seabrook (at least 1.1km south-east), Saltwood (at least 0.9km west) and St. Hilda's Road, Hythe (at least 1km south-west).

Numerous records of Section 41 (NERC Act 2006) moth and butterflies were also returned within 2km of the site. The majority of these Section 41 species records pertain to Seabrook (at least 1.1km south-east), Saltwood (at least 0.9km west), St. Hilda's Road, Hythe (at least 1km south-west) and Lynton Road, Hythe (at least 0.5km south).

The site is predominantly comprised of tall ruderal habitat, which is largely dominated by species known to provide sources of pollen and nectar for a range of common and widespread invertebrate species including bees and butterflies. The plants themselves are also known to provide a food source for moth caterpillars, such as hawkmoth larvae.

The site does not contain habitat or forage species typically required by the protected species of invertebrates noted within the local landscape. In addition, the condition of the ephemeral pond on-site is unlikely to support rare / notable invertebrates. The site is therefore considered of **negligible** importance for rare / notable invertebrates. Whilst the site is considered unlikely to support significant numbers of rare / notable species, the presence of pollen / nectar rich sources and suitable forage species across a large portion of the site does suggest the site holds value for widespread invertebrates.

Further recommendations have been provided within **Section 5** to ensure that suitable forage (including pollen- and nectar-rich plants) are included within the proposals to ensure there is no net loss in suitability of the site to support common and widespread invertebrate species.

4.3.2 Amphibians

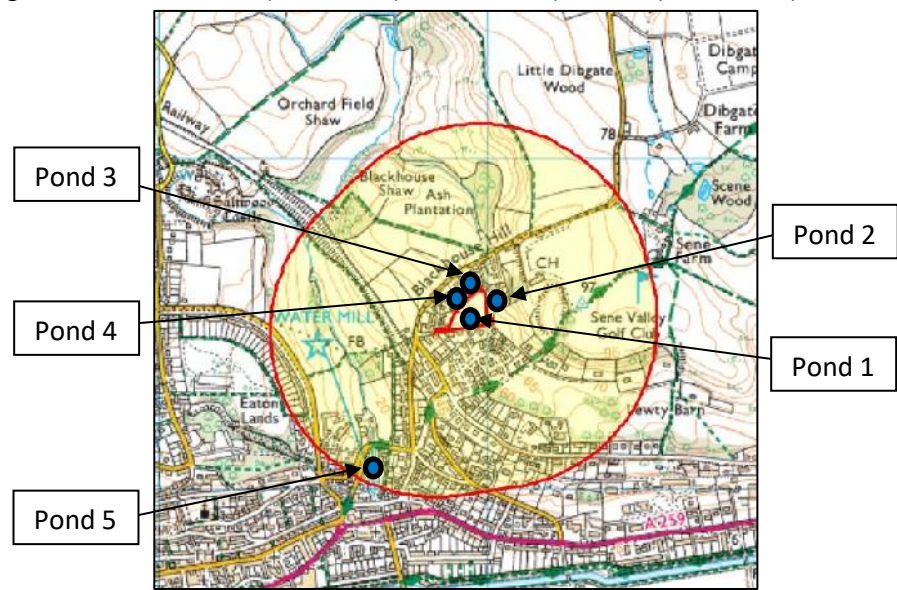
KMBRC returned two records of the legally protected great crested newt *Triturus cristatus* and 15 records of the Section 41 Priority Species common toad *Bufo bufo*. The great crested newt records were returned from approximately 1.8km to the north-east of the site in 2012, close to the M20 near Newington. In addition, a Natural England Mitigation Licence to destroy a resting place for great crested newts was also granted in 2009 for the same location, for March – April 2019 (MAGIC, 2020). The water-body that likely pertains to these records is situated north of a railway line.

In addition to the records returned from KMBRC and MAGIC noted during the initial searches completed within July 2019 and January 2020, since Natural England updated the great crested newt records within MAGIC in May 2020, an updated search on MAGIC in December 2020 highlighted a new great crested newt record not previously present. In May 2020 Natural England added additional great crested newt records in the form of Great Crested Newt Class Survey Licence Returns. As a result of this, an additional class licence return of great crested newt/s has recently been noted from 1st April

2017, which is located approximately 220m north of the site, within the arable field north of Blackhouse Hill. However, on checking this location from the nearby public footpath, it is clear that there are no water-bodies in this location and no suitable terrestrial habitat for great crested newts, with the land also sloping down to the north-west. This topography and land use combined with no water-bodies shown to be at this location on OS and aerial imagery, no records from KMBRC and no associated granted licence record, means that this record most likely contains an incorrect / inaccurate grid reference, and it is very unlikely that great crested newts are present.

A single pond (**Target Note 16, Appendix 2**) is present within the southern area of the application site and an additional four ponds are located within 500m (OS, 2020). Refer to **Figure 4.1** and **Table 4.4** below, and **Appendix 4** for HSI calculations. HSI assessments were completed for the on-site pond and three of the four off-site ponds noted within 500m of the site.

Figure 4.1: Water-bodies (blue circles) within 500m (red circle) of the site (red outline)



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Table 4.4: Location and description of waterbodies on and within 500m of application site.

Waterbody Number	Distance & Direction from Site	HSI Score	Connectivity to the Site	Further Surveys Required?
1	N/A	0.53	Within the southern portion of the site	No
2	5m E	0.50	Directly connected to the site	No
3	38m N	0.35	Separated by a residential plot	No
4	68m N	0.39	Separated by a residential plot	No
5	460m SW	Unknown	Separated by residential housing.	No

The site contains low-lying stone walls along the eastern border with cracks and crevices, scattered dead wood (**Target Note 13, Appendix 2**) and log piles (**Target Note 6, Appendix 2**) that provide possible places of shelter and hibernation for amphibians, including great crested newts. The site also comprises tall ruderals, marshy grassland, bracken, scrub habitat and tree root systems that represent

good quality terrestrial habitat for foraging, sheltering and commuting great crested newts. It is understood that these habitats are to be removed.

The HSI assessment undertaken on 7th January 2020, confirmed the pond on-site is highly ephemeral, supporting only a very shallow body of water after a prolonged period of heavy rainfall during winter 2019-2020.

The water levels within the breeding season were checked to confirm the suitability of the water-body to support great crested newts. The HSI assessment of Pond 1 undertaken on 19th March 2020 confirmed the presence of a shallow body of poor-quality water less than 1 inch deep, with a seemingly heavy nutrient load due to sediment and leaf litter. These findings are very similar to the conditions noted in January 2020. Very little vegetation was noted within the water-body that could be used for egg laying, with yellow iris *Iris pseudacorus* being the dominant species. In addition to the field assessment, the HSI results from within the breeding season (19th March 2020) indicate Pond 1 provides **below average** suitability (**Appendix 3**) for great crested newts. With no known great crested newt populations within the local area and the visual and HSI assessments indicating the pond is unsuitable for great crested newts, the combined evidence indicates that Pond 1 is of **negligible suitability** for this species.

A small water trough was noted within the tall ruderal habitat on-site (**Target Note 4, Appendix 2**), which has been assessed as providing negligible suitability for great crested newts.

The HSI calculation for Pond 2 indicates that the water-body holds below average suitability for great crested newts (**Appendix 4**). The lack of management of this very small pond has led to almost all of the body of water becoming choked by vegetation (**Photo 4.16**). In particular grass species, such as false oat grass and cocksfoot and New Zealand pygmyweed *Crassula helmsii* dominate the pond area. Over half of the water-body had become completely dry as a result of the dense vegetation growth. The water that remains within the pond contains dense mats of New Zealand pygmyweed, dominating the reduced water availability left present. New Zealand pygmyweed is a schedule 9 invasive species. As such, when combining the HSI score, the other factors listed above and the lack of known great crested newt presence in the locality, Pond 2 is of **negligible** suitability for great crested newts.

Photo 4.16: Pond 2, facing west (photo taken 7th January 2020)



Ponds 3 (**Photo 4.17**) and 4 (**Photo 4.18**) are both ornamental ponds that contain high numbers of fish. Both ponds were assessed as providing **negligible** suitability for great crested newts. This is supported by their HSI results, which indicate they provide poor suitability for great crested newts. The homeowner of Pond 4 indicated that both frogs and toads utilise Pond 4. Whilst the presence of great crested newts is unlikely, it is possible that other amphibians, if present within Pond 4, migrate across the site between their breeding, foraging and hibernating grounds.

Photo 4.17: Pond 3, facing north east (photo taken 17th January 2020)



Photo 4.18: Pond 4, facing west (photo taken 7th January 2020)



Pond 5 was not accessible at the time of the survey. Aerial searches and further research into its location confirmed that Pond 5 is a mill pond associated with Upper Mill Cottage, Hythe, Kent. Pond 5 is considered likely to contain fish and the position of the pond in relation to the site makes it very unlikely that any potential great crested newts, if present, would migrate from the water-body to the application site. The site and Pond 5 are separated by a dense area of residential properties which are likely to reduce the risk of great crested newts commuting from the pond to the site. In addition, adult great crested newts tend to stay within c.250m of their breeding pond (Langton, *et al.*, 2001) and high quality great crested newt habitat appears to be present within the immediate area surrounding Pond

5. This is therefore likely to reduce the need for great crested newts, if present within Pond 5, to disperse into the site.

The site therefore holds **negligible** potential for great crested newts as no suitable water-bodies are present within 500m of the site. It is possible that common toads could be present on-site during their terrestrial phase, due to a lack of barriers to movement between it and Pond 4, where anecdotal evidence suggests that common toads are present.

No further action is required for great crested newts. Further general recommendations for common toads, are provided within **Section 5**.

4.3.3 Reptiles

KMBRC returned records of common lizard *Zootoca vivipara*, grass snake *Natrix helvetica* and slow-worm *Anguis fragilis*. The poor semi-improved grassland, tall ruderal habitat, scrub, marshy grassland, pond and hedgerow base interface provides suitable habitat structure that slow-worms, common lizards and grass snakes typically require. The site contains scattered dead wood (**Target Note 13, Appendix 2**), log piles (**Target Note 6, Appendix 2**) and low-lying brick walls along the eastern border that provide possible places of shelter and hibernation for reptiles. The site is connected to the northern portion of the field (situated outside of the site boundary), which contains compost heaps comprised of garden waste and dead leaves, which provide potential egg laying sites for grass snakes (**Target Note 1, Appendix 2**). In addition, the site is well connected to an overgrown vegetable garden to the north and a golf course to the east which appears to provide suitable commuting corridors, thereby allowing dispersal between surrounding areas and the site. The site therefore holds **high** potential for reptiles.

Further reptile surveys were recommended for the application site, the northern portion of the field and the vegetable garden site (which are part of a separate planning application), as both sites are connected.

4.3.3.1 Reptiles: Presence / Likely Absence Survey

During the reptile surveys, common lizards and grass snakes were found within a large proportion of the application site, including within tall ruderals, marshy grassland, poor semi-improved grassland and brash piles/compost heaps (refer to **Table 4.5** and **Appendix 5** for a plan of the reptile results and refugia locations). In addition, common lizards and grass snakes were recorded within the tall ruderal and poor semi-improved grassland habitat within the western and central areas of the application site to the north.

Table 4.5: Reptile survey results

Survey Visit	Date	Location of Reptiles		Reptile Records	
		Application site	Adjacent site	Application site	Adjacent site
1	29 th August	-	-	-	-
2	3 rd September	Refugia 92 Refugia 86	-	1 adult common lizard. 1 sub-adult common lizard.	-

Survey Visit	Date	Location of Reptiles		Reptile Records	
		Application site	Adjacent site	Application site	Adjacent site
		Refugia 54, 55, 57, 59		4 juvenile common lizards.	
3	5 th September	-	Refugia 8	-	1 adult common lizard.
4	17 th September	-	-	-	-
5	19 th September	Refugia 73, 102 Free roaming within Area 5 in field Refugia 86 Refugia 85	Refugia 3 Refugia 28 Refugia 29	2 adult common lizards (1x female). 1 juvenile common lizard. Sub-adult grass snake. 1 adult female grass snake.	1 juvenile common lizard. 1 sub-adult common lizard. 1 adult common lizard
6	24 th September	Refugia 72, 73, 103 Refugia 42	Refugia 8 Refugia 9 Refugia 9, 28	3 adult lizards. 1 sub-adult common lizard.	3 adult grass snakes. 1 adult lizard. 2 juvenile common lizards.

Survey Visit	Date	Location of Reptiles		Reptile Records	
		Application site	Adjacent site	Application site	Adjacent site
		Refugia 42, 57, 77, 85		5 juvenile common lizards.	
7	26 th September	Refugia 85 Refugia 42, 72, 73, 102 Refugia 28, 77, 86 Refugia 54, 57, 94, 100	Refugia 8 Refugia 9, 28	1 adult grass snake. 4 adult common lizards. 3 sub-adult common lizards. 5 juvenile common lizards.	3 adult grass snakes. 2 adult common lizards.
Peak Adult Count Within Site				4 Common lizards 1 Grass snake	
Total Combined Peak Adult Count (across this site and the separate application site to the north)				6 Common lizards 4 Grass snakes	

4.3.3.2 Reptiles: Population Size Class Assessment

The maximum number of adult common lizards and grass snakes recorded during any one survey visit within the site was 4 and 1 respectively. This equates to a **good population** of common lizards and a **low population** of grass snakes present within the site based on a density of 81 refugia / ha (Table A3.2, Appendix 3).

The maximum number of adult common lizards and grass snakes recorded within both sites combined during any one survey visit was 6 and 4 respectively. This similarly equates to a **good population** of common lizards and a **low population** of grass snakes present within both the site and the adjacent vegetable garden, based on a density of 96.4 refugia / ha (Table A3.2, Appendix 3).

When assessing the site itself or the two combined sites as a whole, neither of these sites qualify as a Key Reptile Site (Froglife, 1999). The population on-site is considered to be of **local importance**.

Appropriate mitigation and avoidance measures have been recommended in **Section 5**.

4.3.4 Birds

KMBRC returned records of 65 bird species listed as Annex I (Birds Directive) and / or Schedule 1 (WCA), including red-throated diver *Gavia stellata*, purple heron *Ardea pupurea*, goldeneye *Bucephala*

clangula, hen harrier *Circus cyaneus*, avocet *Recurvirostra avosetta*, little gull *Larus minutus*, barn owl *Tyto alba*, fieldfare *Turdus pilaris* and snow bunting *Plectrophenax nivalis*. The majority of these records are associated with the coastline or surrounding watercourses and riparian habitat. Some of these species include birds of prey that may on occasion utilise the site to forage. The records also included 45 species of Birds of Conservation Concern (BoCC) Red-listed and 76 species of Amber-listed birds.

The following birds were also recorded during the PEA survey: wood pigeon *Columba palumbus*, great tit *Parus major*, dunnoek *Prunella modularis*, robin *Erithacus rubecula*, jay *Garrulus glandarius*, green woodpecker *Picus viridis*, blackbird *Turdus merula*, magpie *Pica pica*, crow *Corvus corone* and snipe *Gallinago gallinago*.

Whilst a single snipe was recorded on-site (**Target Note 15, Appendix 2**) and records of snipe were returned from 2010-2017 along Blackhouse Hill (which is the main road that connects to the access track), the site is considered to be of **negligible** importance for wintering bird assemblages. This is based on the largely suburban surroundings, the small size of the site, the sloping nature of the site and the general area and dominance of tall ruderal habitat within the site. These factors indicate potential for regular disturbance and also lack of open areas with good sight lines for birds. All these factors when considered in combination indicate that the site is unlikely to be suitable for assemblages of over-wintering birds.

The site provides tall ruderal and scrub habitat that is suitable for farmland breeding birds, such as grey partridge and turtle dove *Streptopelia turtur*. Turtle doves, including breeding pairs have been recorded along Blackhouse Hill within 2010 and grey partridge *Perdix perdix*, including breeding pairs have also been recorded within 2016 within a similar area. It is considered likely that these records pertain to the farmland north of the site, however, the suitable habitat on-site and the presence of breeding pairs in close proximity, indicates there is potential for these species to use the application site. The site therefore holds **moderate** potential for farmland breeding birds.

In addition to farmland birds the site provides general bird interest (nesting / foraging) in the form of hedgerows, scrub, scattered trees and tall ruderals throughout the site. The site therefore holds **high** potential for widespread species of nesting bird.

Further breeding bird surveys were recommended for the application site, the northern portion of the field and the vegetable garden site (the latter two being part of a separate planning application), as both sites are connected.

4.3.4.1 **Birds: Breeding Bird Survey**

The breeding bird surveys recorded a total of 29 species, of which 24 were confirmed or considered likely to be breeding. A minimum of 50 breeding territories was identified (**Table 4.6**). In most cases, nesting was considered to occur within the survey area. However, magpie was known to nest in adjacent habitats, while great spotted woodpecker and carrion crow were strongly suspected of doing so. All three species regularly foraged within the site.

Table 4.6: Minimum numbers of breeding territories of each species present in the survey area during the 2020 breeding bird survey.

Species	Min. no. territories
Stock dove	2
Woodpigeon	5
Collared Dove	3
Great Spotted Woodpecker	1
Jay	1
Magpie	1
Jackdaw	3
Carrion Crow	1
Coal Tit	1
Blue Tit	2
Great Tit	3
Long-tailed Tit	1
Chiffchaff	1
Blackcap	4
Whitethroat	1
Wren	5
Blackbird	4
Song Thrush	1
Robin	2
Dunnock	3
Chaffinch	1
Greenfinch	1
Goldfinch	2
Bullfinch	1
Total territories	50
Total species	24

Table 4.7 shows the eight species which were recorded breeding or otherwise using habitats in or adjacent to the survey area during the 2020 survey and which are red- or amber-listed under the Birds of Conservation Concern and / or listed as Section 41 Priority species (NERC Act, 2006). This excludes species only noted flying over. No Schedule 1 (WCA, 1981) species were noted within the site during the surveys.

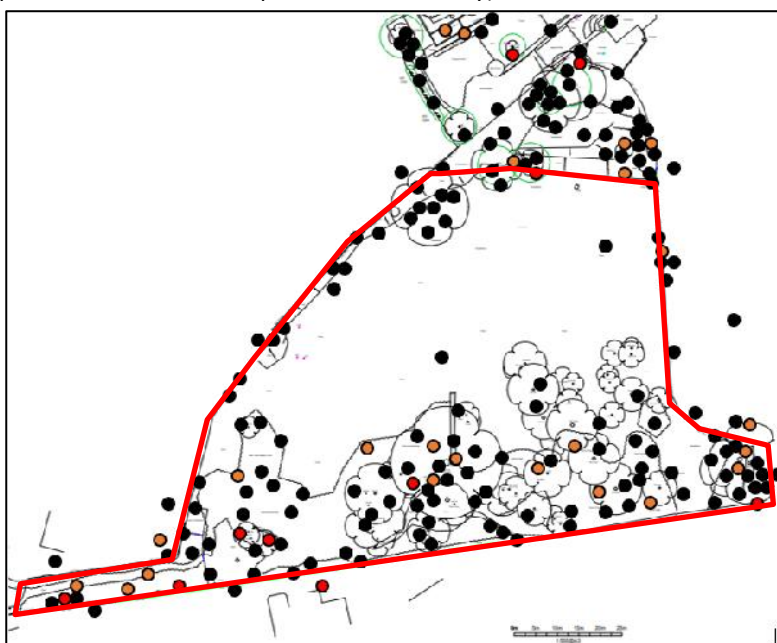
The surveys red- and amber-listed BoCC species recorded generally across both sites included two red-listed species, song thrush *Turdus philomelos*, and greenfinch *Chloris chloris*, both with one confirmed territory, and three amber-listed species, stock dove *Columba oenas* (two territories), dunnock *Prunella modularis* (three territories) and bullfinch *Pyrrhula pyrrhula* (one territory). These species were utilising the scrub, scattered trees and hedgerows within the site, with the southern boundary vegetation being of particular importance (see **Figure 4.2** for the distribution of birds recorded during the breeding bird survey).

Table 4.7: Bird species of conservation importance recorded breeding or using habitats within the survey area during the 2020 breeding bird survey.

Species	WCA Sch.1 ¹	BoCC Red ²	BoCC Amber ³	S.41 ⁴
Stock Dove	-	-	●	-
Song Thrush	-	●	-	●
Dunnock	-	-	●	●
Greenfinch*	-	●	-	-
Bullfinch	-	-	●	●

*British race is red-listed

Figure 4.2: Distribution of mapped registrations from the four surveys visits, with each dot representing a single registration, which can involve single birds, pairs or family groups (red dots = BoCC red list species; amber dots = BoCC amber list species; red line = development site boundary).



¹ WCA Schedule 1 = Wildlife and Countryside Act.

² BoCC Red List = Red List of Birds of Conservation Concern.

³ BoCC Amber List = Amber List of Birds of Conservation Concern.

⁴ S41 = Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006) priority list

The total of 24 breeding species is reasonable for an area of this size and species composition is typical of deciduous scrub and young woodland. Within the surrounding area it is of at least local importance. The minimum total of 50 breeding territories is good for an area of this size and reflective of the 'naturalness' and invertebrate-rich habitats present at the site and its relatively undisturbed nature.

No species was particularly numerous and none is currently scarce in south-east England. The largest populations were Woodpigeon (5 pairs), Wren (5) and Blackcap (4), which were the most numerous. All are common or reasonably so in south-east England.

Although the site is relatively small, it is clearly of value to birds at the local level. The belt of trees and scrub across the southern part of the site appears to be the most important to birds and supports a good diversity of species. The site is also likely to provide refuge and foraging opportunities for widespread and common birds during winter.

Further recommendations for widespread and common birds and those included under the Amber and Red BoCC lists are included within **Section 5**.

4.3.5 Badgers

KMBRC returned 10 records of badgers. The closest record was approximately 720m south-east, close to Cliffe Road, Hythe in 2019. No badger setts were recorded on or within 30m of the site boundary, where access was possible. A number of mammal burrows were noted within the site, however, upon closer inspection the tunnels were found to be too narrow to allow access to a badger. The mammal burrows were therefore likely created by rabbits (**Target Note 2, Appendix 2**).

Mammal paths were recorded throughout the site, with some prominent mammal paths along the northern and southern boundaries (**Target Note 7, Appendix 2**). Some of these paths could be used by both humans and wild mammals, due to the level of human activity noticed within these areas (**Target Note 8, Appendix 2**). A push-through was also noted within the southern wire fence, which led from the site into a neighbouring garden (**Target Note 10, Appendix 2**). The area of dense bamboo along the northern border of the site (**Target Note 5, Appendix 2**) contained a badger latrine within the area of bamboo that continues into the adjacent site to the north (**Target Note 17, Appendix 2; Photo 4.19**). A single badger hair was also noted within the vicinity of the latrine. In addition, a fox scat was noted within the earth mound within the northern portion of the site (**Target Note 3, Appendix 2**). The mammal paths could therefore have been created by badger and/or fox.

The site provides potentially suitable foraging and commuting habitat for badgers in the form of poor semi-improved grassland, tall ruderals, scrub and marshy grassland. Earth banks suitable for digging were also noted on-site. The site does not appear to support badger setts, although badger setts can appear at any time.

A pre-construction badger survey has therefore been recommended in **Section 5**.

Photo 4.19: Badger latrine present within the land north of the application site



4.3.6 Bats

KMBRC returned records for eight bat species: long-eared species *Plecotus sp.*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, Nathusius' pipistrelle *Pipistrellus nathusii*, Natterer's *Myotis nattereri*, serotine *Eptesicus serotinus* and Daubenton's *Myotis daubentonii*. These records comprised one soprano pipistrelle maternity roost, one hibernation roost and four unknown roost records. The nearest roost record was of a pipistrelle bat approximately 450m south-west of the site in 2010.

Bat surveys of on off-site structure c. 30m to the north, were conducted by David Archer Associates during July – September 2019 in relation to a separate planning application for an adjacent site. These surveys resulted in confirmation of a small maternity roost of brown long-eared bats and two common pipistrelle day roosts within the building, which is connected to the site by the hedgerow and other vegetation along the northern site boundary.

Table 4.8 below provides a list of bat Mitigation Licences granted by Natural England within 2km of the site (MAGIC, 2020).

Table 4.8: Granted bat mitigation licence applications within 2km of the site.

Case Reference	Bat Species	Type of Roost	Distance & Direction	Licence Start & End Dates
2014-3777-EPS-MIT	Daubenton's and whiskered <i>Myotis mystacinus</i>	Resting place / non-breeding	1.0km SE	09/10/2014 -10/10/2019
EPSM2010-2295	Common pipistrelle and Nathusius' pipistrelle	Resting place / non-breeding	1.5km SW	07/10/2010 - 06/10/2012

4.3.6.1 Roosting (Trees)

Trees proposed for removal either for sound arboricultural reasons or to facilitate development with **low-high suitability** for roosting bats during the active and hibernation season were recorded within the site boundary. Trees have been numbered as per the Arboricultural Method Statement (David Archer Associates, 2020).

Tree 1 is a horse chestnut, which contains a single hole c.5m above ground level within the north-western main stem (**Photo 4.20**). A second hole is present within the north-western aspect of the central stem c.7 above ground level. Tree 1 has **high** bat roosting suitability during both the active and hibernation seasons. Based on the current proposals and the TPO, it is understood that Tree 1 will not be impacted by the development proposals.

Tree 2 (sycamore) and Tree 3 (crack willow) are both connected where Tree 3 has collapsed and fallen on Tree 2 (**Photo 4.21**). Dense ivy is present on Tree 3 that could potentially obscure suitable bat roosting features from the ground level inspection. In addition, holes are present within the eastern aspect and a woodpecker hole is present within the south-eastern aspect of Tree 3, c.7m above ground level. The woodpecker hole appears to contain bird nesting material, which could reduce its suitability. However, bats and birds have been known to cohabit holes in some circumstances and therefore bat roosting suitability cannot be entirely ruled out. Prior to further surveys being carried out, Tree 3 was deemed to be of **moderate** bat roosting suitability during the active and hibernation seasons.

Tree 4, a sycamore, contains dense ivy covering over its stem (**Photo 4.22**). The ivy covering could obscure potential bat roosting features from the ground level inspection. Tree 4 is therefore of **low** bat roosting suitability during the active and hibernation seasons.

Tree 7 is a semi-mature sycamore tree which was inspected from within the development site and found to contain no bat roosting features (**Photo 4.23**). It was not possible to inspect the southern aspect of the tree in order to entirely rule out bat roosting features. Although Tree 7 is considered to likely be of **negligible** bat roosting suitability, prior to its removal, a check of the southern aspect of the tree is required to confirm this assessment.

Tree 8 is a dead semi-mature sycamore tree which contains flaking bark within its stem (**Photo 4.24**). Tree 8 has **low** bat roosting suitability during the active and hibernation seasons.

Tree 13 is an over-mature crack willow, which contains multiple bat roosting features (**Photos 4.25 and 4.26**). Two holes are present within the eastern aspect of the leaning stem, c.5m from ground level. Bird nesting material was noted within one of these holes, which, as mentioned above, could reduce its suitability. Bees were noted using a small hole present within the northern aspect of the leaning stem, which is likely to render this hole unsuitable for bats. A large and smaller hole are situated within the eastern aspect of one of the fallen stems. Prior to further surveys being carried out, Tree 13 was considered to be of **high** bat roosting suitability during both the active and hibernation seasons.

Tree 14 is a mature crack willow, which contains multiple bat roosting features (**Photos 4.27 and 4.28**). Three holes of potential bat roosting suitability are present on the eastern aspect of the tree. Two holes, c.4m-5m from ground level, are present within the western aspect of the main stem. A single hole is present within the southern aspect of the main stem which is situated c.5m from ground level. A woodpecker hole is present within the western aspect of the central stem c.9m from ground level. An endoscope was used where possible, however, the features extended further into the tree and beyond the reach of the camera. It was therefore not possible to rule out these features. In addition, due to the size and condition of the tree, it is possible that further features are present within the tree's structure that are not visible from ground level. Prior to further surveys being carried out, Tree 14 was deemed to be of **high** bat roosting suitability during both the active and hibernation seasons.

A single sycamore tree within the G1 grouping contains a single hole c.3.5m from ground level (**Photo 4.29**). Prior to further surveys, this tree was originally assessed as providing **low** bat roosting suitability during the active and hibernation seasons.

Further nocturnal surveys were therefore recommended for Trees 3, 13 and 14. A detailed endoscope inspection was recommended for the single sycamore tree within G1 grouping with low bat roosting suitability.

If impacted, further action in relation Trees 4, 7 and 8 has been recommended within **Section 5**.

Photo 4.20a & b: Bat roosting features within Tree 1, horse chestnut (photos taken 27.04.2020)

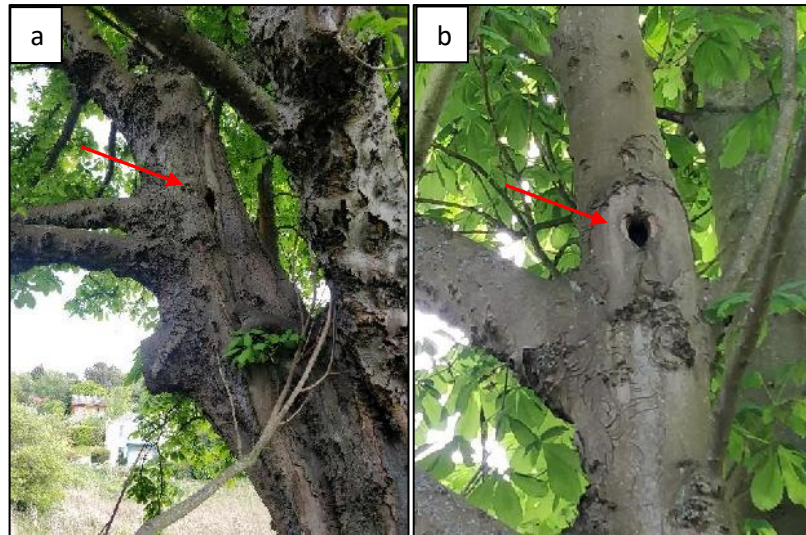


Photo 4.21a & b: Tree 2 (sycamore) and Tree 3 (crack willow) with dense ivy covering and suitable bat roosting features (photos taken 27.04.2020)

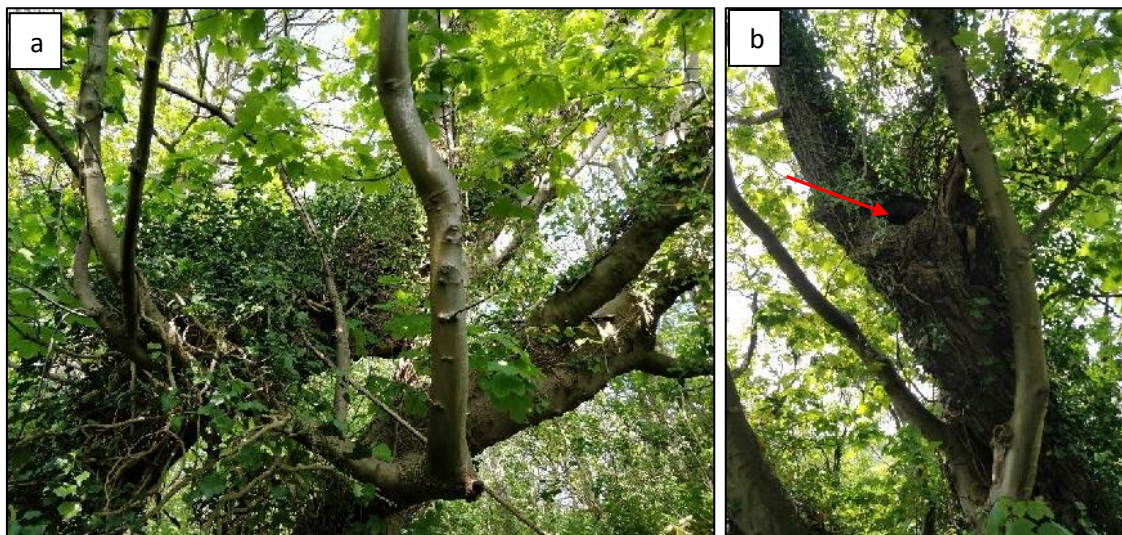


Photo 4.22: Tree 4, sycamore with dense ivy covering (photo taken 27.04.2020)



Photo 4.23: Tree 7, sycamore (photo taken 27.04.2020)



Photo 4.24: Tree 8, dead sycamore with flaking bark (photo taken 27.04.2020)



Photo 4.25a&b: Bat roosting features within Tree 14, crack willow (photos taken 27.04.2020)



Photo 4.26: Bat roosting features within Tree 14, crack willow (photo taken 27.04.2020)



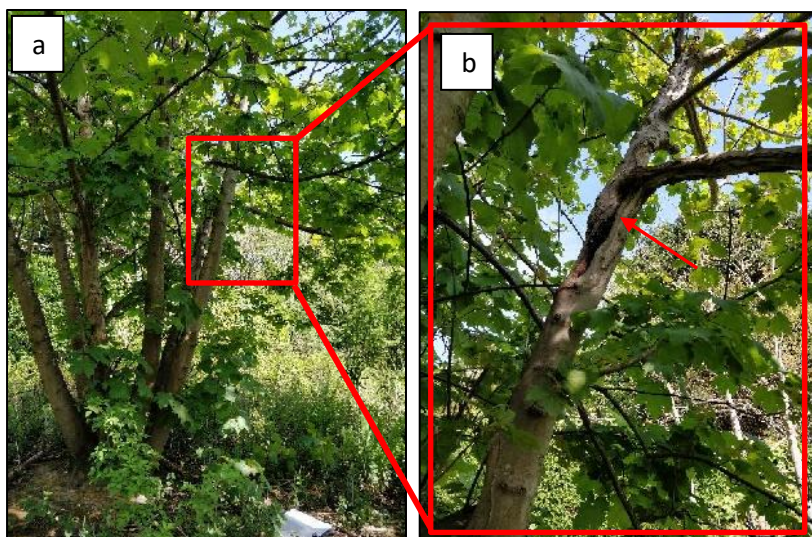
Photo 4.27: Bat roosting features within Tree 14, crack willow (photos taken 27.04.2020)



Photo 4.28: Bat roosting features within Tree 13, crack willow (photo taken 27.04.2020)



Photo 4.29: Bat roosting feature within sycamore tree within G1 (photos taken 27.04.2020)



4.3.6.2 **Bats: Detailed endoscope inspection**

A detailed endoscope inspection was completed of the single hole within the sycamore tree within G1 grouping on site on 15th May 2020. The entire feature could be thoroughly inspected, and no evidence of roosting bats was noted.

The sycamore tree is therefore considered to be of **negligible suitability** for roosting bats. Due to the transient nature of tree roosts, precautionary measures for felling are recommended in **Section 5** in relation to this tree.

4.3.6.3 **Bats: Nocturnal Tree Roost Surveys**

No bats were recorded entering or emerging from any of the trees during the nocturnal surveys. Refer to **Appendix 8** for the raw data tables and surveyor locations.

Common pipistrelle bats were most frequently recorded during the nocturnal roost surveys, followed by occasional passes of soprano pipistrelle and noctule and a small number of passes by brown long-eared, Myotis species and serotine. The majority of the foraging and commuting behaviour was not seen due to the tree canopies and surveyor focus on access points, however, some general behaviour

was observed. The bats that were seen were observed foraging and commuting along the southern border of the site, along boundary vegetation and over the pond. Bats were frequently seen to fly from the southern boundary vegetation into the central open areas of tall ruderal habitat within the site and on occasion moving towards the adjacent golf course, to the east/north-east of the site.

4.3.6.4 **Bats: Evaluation of Roosts**

No evidence of roosting bats was recorded during any of the surveys. Tree 3, Tree 13 and Tree 14 are therefore currently of **negligible** importance for roosting bats. Tree roosts are, however, highly transient and therefore precautionary methods to employ during felling are recommended for these trees in **Section 5**, including avoidance of works to the trees during the bat hibernation season, which is November – February (inclusive).

4.3.6.5 **Bats: Foraging and Commuting**

Suitable habitat for foraging and commuting bats was recorded within the site. Habitats include tall ruderals, marshy grassland, scrub, hedgerows and scattered trees. These habitats connect to areas of woodland to the east of the site, which connect to similar habitats within the wider area. The building supporting a known brown long-eared bat maternity roost and common pipistrelle day roosts c. 30m north, has direct commuting habitat to the site in the form of the northern boundary hedgerow and other vegetation, which continues to woodland and the golf course further east and north-east. The site itself is, however, small in area in terms of bat foraging and commuting habitat and on balance the site is therefore of **low** suitability for foraging and commuting bats. Further surveys for foraging and commuting bats were therefore completed.

4.3.6.6 **Bat Activity Transect Surveys**

A plan showing the transect route walked and the stopping points can be found in **Appendix 3**. Further details of the results can be found in **Appendix 9**.

15th May 2020

The manual transect activity survey conducted on 15th May 2020 showed common pipistrelles and noctule bats were most frequently recorded, followed by very occasional passes of serotine, soprano pipistrelle and Myotis species. Foraging and commuting activity was focussed along the scattered trees within the southern border of the site, along the northern border of the site and within the central areas of the site above the tall ruderal and scrub habitat.

The majority of the bats recorded on the site included both ‘common’ species and ‘rarer’ species. Common pipistrelles, comprising 38.5% of the bat activity recorded within the survey area are a common species. Noctule bats, comprising 30.8% activity recorded within the survey area are a rarer species. Soprano pipistrelle (a common species), Myotis species (a rarer species) and serotine (a rarer species) made up the remaining 30.8% of the bat activity.

Table 4.9: Summary of recordings during activity survey on 15th May 2020

Species	Number of recordings/ minutes	% of total of recordings	First recording	Last recording
Myotis sp.	1	7.7	21:38	N/A
Noctule	4	30.8	20:52	22:13
Common pipistrelle	5	38.5	20:55	22:32
Soprano pipistrelle	1	7.7	20:52	21:07
Serotine	2	15.4	21:56	N/A
Total Recordings:	13			

15th July 2020

Common pipistrelle and soprano pipistrelle bats were most frequently recorded, followed by very occasional passes of brown long-eared, noctule and Myotis species. Foraging and commuting activity was focussed along the northern border of the site, and within the central areas of the site above the tall ruderal and scrub habitat.

The majority of the bats recorded on the site were 'common' species with occasional 'rarer' species. Common pipistrelles comprised 57.7% of the bat activity recorded within the survey area and soprano pipistrelles, 39.9% of the recorded bat activity. Noctule bats, comprising just 1.4% activity recorded within the survey area are a rarer species. Just one recording of brown long-eared bats (common) and one recording of a Myotis species (rarer) were made.

Table 4.10: Summary of recordings during activity survey on 15th July 2020

Species	Number of recordings/ minutes	% of total of recordings	First recording	Last recording
Myotis sp.	1	0.5	22:18	N/A
Noctule	3	0.5	21:44	22:25
Common pipistrelle	120	57.7	21:13	22:10
Soprano pipistrelle	83	39.9	21:14	21:51
Brown long-eared	1	1.4	21:55	N/A
Total Recordings:	208			

4th September 2020

Common pipistrelle bats were most frequently recorded, followed by occasional passes of soprano pipistrelle and brown long-eared. Foraging and commuting activity by common pipistrelles was focussed within approximately 45 minutes to 25 minutes before sunrise and along the northern boundary of the site.

Common pipistrelle comprised 85.2% of the bat activity recorded within the survey area, with soprano pipistrelle accounting for 8.2% and brown long-eared bats 3.3%.

Table 4.11 Summary of recordings during activity survey on 4th September 2020

Species	Number of recordings/ minutes	% of total of recordings	First recording	Last recording
Pipistrelle sp.	2	3.3	05:42	05:56
Common pipistrelle	52	85.2	04:26	05:48
Soprano pipistrelle	5	8.2	04:49	05:32
Brown long-eared	2	3.3	04:20	05:13
Total Recordings:	61			

4.3.6.7 *Bat Static Detector Surveys*

A plan showing the location of the static detectors for spring (April), summer (July) and Autumn (September) can be found in **Appendix 3**. Further details of the results can be found in **Appendix 10**.

23rd – 27th April 2020

The majority of records from the static detectors were of common pipistrelle (a common species), followed by Nathusius' pipistrelle and serotine (both rarer species). Occasional passes were also recorded of Myotis species and soprano pipistrelle bats (both rarer species). Pipistrelle social calls were only detected on a single occasion. The split of overall bat detections was roughly even between the two bat detector locations, although common pipistrelle activity was detected more frequently by detector 13, in the southern part of the site.

Table 4.12: Summary of recordings over both static detectors from 23rd – 27th April 2020

Species	Number of recordings/ minutes	% of total recordings/minute
Unknown bat	4	6.6
Myotis sp.	7	11.5
Pipistrelle sp.	3	4.9
Common pipistrelle	18	29.5
Soprano pipistrelle	4	6.6
Nathusius' pipistrelle	13	21.3
Pipistrelle social call	1	1.6
Serotine	11	18
Total Recordings:	61	

1. 4th – 13th July 2020

A much higher overall level of activity was recorded in July by comparison to April, even when the extra number of recording days (due to regular rainfall) is taken into account. The most frequently recorded species was still the common pipistrelle, but with soprano pipistrelle accounting for the second-most frequently recorded passes (both are common species). Other species, including brown long-eared (common species), Myotis species, serotine and noctule (rarer species) each comprised less than 6% of the overall calls. Very few social calls were detected. The total level of common pipistrelle activity was relatively evenly split between both static detectors, however, all other species were recorded more frequently by detector 13 in the southern portion of the site.

Table 4.13: Summary of recordings over both static detectors from 4th – 13th July 2020

Species	Number of recordings/ minutes	% of total recordings/minute
Brown long-eared	4	1.1
Myotis sp.	18	5.1
Pipistrelle sp.	28	3.8
Common pipistrelle	190	54.0
Soprano pipistrelle	84	23.9
Pipistrelle social call	7	2.0
Serotine	12	3.4
Noctule	9	2.6
Total Recordings:	352	

10th – 14th September 2020

The most frequently recorded type of call was pipistrelle social calls, followed by records of Myotis species, which were much higher than in the previous recording months. This is in keeping with the typical socialisation behaviour of this time of year, particularly as mating opportunities are explored. Common pipistrelle and soprano pipistrelle calls were the next most frequently recorded, with only low numbers of records of brown long-eared, Nathusius' pipistrelle, serotine and noctule bats.

Table 4.14: Summary of recordings from 10th – 14th September 2020

Species	Number of recordings/ minute	% of total recordings/minute
BigBat	4	1.6
Brown long-eared	1	0.4
Myotis sp.	56	22.9
Nathusius pipistrelle	1	0.4
Noctule	11	4.5
Pipistrelle sp.	35	14.2
Common pipistrelle	25	10.2
Soprano pipistrelle	26	10.6
Pipistrelle social call	80	32.7
Serotine	6	2.4
Total Recordings:	245	

4.3.6.8 Bats: Evaluation of Foraging and Commuting Bats

The overall lower level of bat activity recorded in April, by comparison to the summer and autumn recording periods, is typical of the time of year as bats are moving through the landscape prior to settling in summer roost locations for the main breeding season and insect abundance is not yet maximised. During the summer recording period, when food was more abundant, and in spite of regular rainfall, bat activity levels were higher than in early spring, most likely a reflection of more abundant food sources and bats being fully active around their summer roost locations. The high level of activity, and particularly high levels of social calling pipistrelles, recorded in September is a typical reflection of young of the year having left their natal roosts, heavy levels of foraging following breeding and ahead of hibernation, and adults socialising with a view to mating. The site is therefore used throughout the year in a manner typical of bat lifecycles in south-east England, with the same species range broadly using the site throughout the entirety of the recording period.

Common and widespread species use the site in the highest numbers, with a variety of rarer species also finding the site important at the local level for foraging and commuting. No especially rare species

were found to be using the site. The southern boundary vegetation appeared to be the most important part of the site to the full species range of bats, although other boundaries and the central tall ruderal vegetation was also used for foraging and commuting by some species.

Care should be applied to overinterpreting the low levels of brown long-eared bat recordings as this species does not always echolocate and when it does, the calls are usually very quiet and directional, meaning they are not as easily heard by the detectors as some other bats. Taking the results as a whole from across the suite of different types of surveys conducted within the site, it was clear that brown long-eared bats seem to particularly rely on the dark commuting corridors of the eastern boundary hedgerow and trees along the southern boundary, both of which provide direct connectivity between the nearby small maternity roost c.30m north of the site and areas of suitable foraging habitat in the wider landscape. As such, it is likely that the eastern and southern boundary vegetation performs a critical function in maintaining the functionality of the nearby brown long-eared maternity roost. This boundary vegetation is also likely to increase the suitability of the structure c.30m north of the site for crevice-roosting species, including common pipistrelles, which are known to use the structure as a day roost.

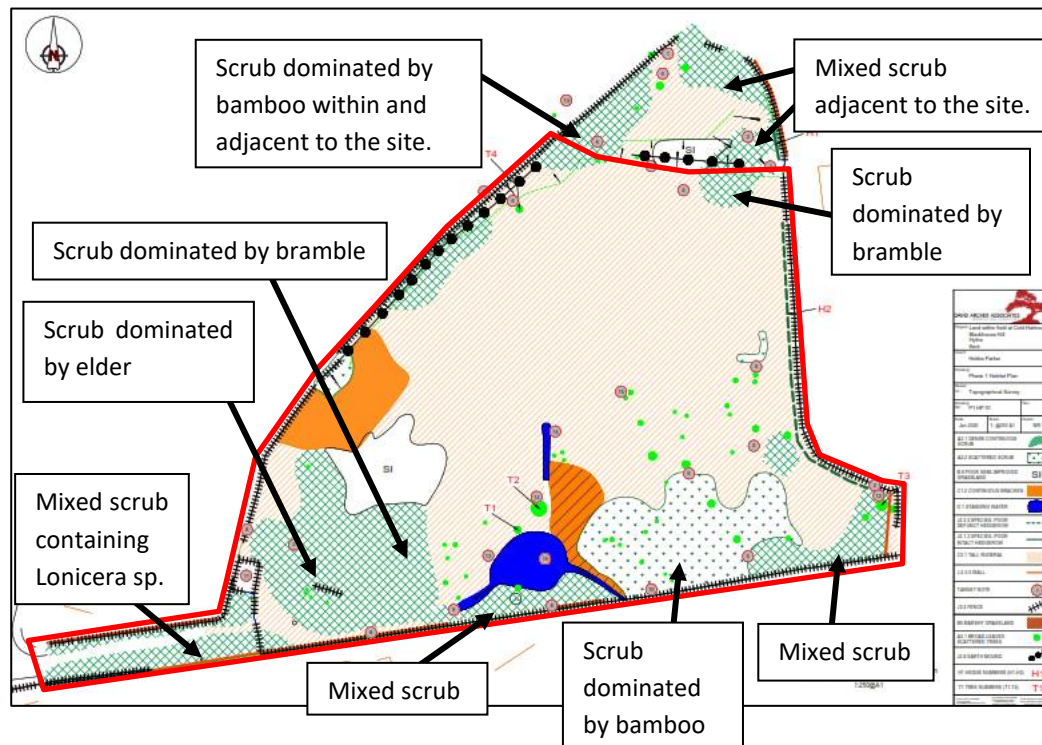
Overall, the site is considered to be of **local** importance for foraging and commuting bats.

4.3.7 Hazel Dormice

KMBRC did not return any records for dormice and no dormouse distinctively gnawed nuts were recorded during an incidental nut search of the small number of hazel nuts found within and adjacent to the site (only 10-15 hazel nuts were found, which is below the number required for this to be a reliable survey technique to determine presence). The site is, however, located within the dormouse natural range and the scrub, a hedgerow and scattered trees within the site contain suitable food plants such as bramble, sycamore, hawthorn, a small amount of holly, a few stands of hazel and a single oak and sweet chestnut tree. The site also contains an area of scrub with ornamental *Lonicera* species along the access route within the south-western corner of the site. The *Lonicera* could also potentially provide suitable nesting material from its bark. The site is connected to priority habitat deciduous woodland to the east of the site. According to aerial images, the woodland to the east connects to additional expanses of woodland and scrub habitat within the wider landscape.

As shown in **Figure 4.3**, the majority of the scrub habitat within the site is comprised of species that are not known to provide value to dormice, such as bamboo and elder. Whilst the site contains some habitat with suitable species, this reduces the overall suitability of the site as majority of the scrub habitat within the site is not suitable.

Figure 4.3: Detailed layout of scrub habitat within the application site (edited from the Phase 1 Habitat Map, Appendix 2)



Although suitability for dormice is limited within certain areas of the site, the site's position adjacent to woodland habitat, connectivity to the wider landscape, the presence of suitable forage and nest building species and suitable habitat / connectivity within the site indicates that the presence of dormice could not be ruled out. It is possible that if a dormouse population is present within the woodland to the east of the site, dormice may disperse into the application site. Prior to further surveys being carried out, the site was therefore considered to hold **low** potential for dormice.

The current proposals indicate the majority of suitable dormouse habitat within the site will be removed. Further surveys for dormice were therefore recommended.

4.3.7.1 **Dormouse: Nest Tube Survey**

No evidence of hazel dormice was recorded during the surveys, which were carried out during optimal conditions and in line with standard guidelines. Dormice are therefore likely to be absent from the site.

This site is of **negligible importance** for hazel dormice. No further surveys or mitigation are recommended. In the very unlikely event that a dormouse or suspected dormouse nest is discovered, works should stop immediately and the advice of a suitably experienced ecologist sought.

4.3.8 **Hedgehogs and Other Section 41 Priority / Rare Species**

KMBRC returned four records of hedgehog within 2km of the site. The majority of the site has **high** potential for hedgehogs, including the areas of grassland, tall ruderals and scrub for foraging and brash piles / log piles / composting areas for shelter. Suitable habitat is present in the adjacent site to the north and surrounding landscape.

Further action has been recommended within **Section 5** to maintain access within the site for hedgehogs.

Invasive Plants

No invasive plant species listed under Schedule 9 of the *WCA* were noted on-site during the survey.

4.3.9 Summary of Baseline Ecological Conditions

Table 4.15: Summary of the scale of importance for each ecological feature.

Ecological Receptor	Scale of Importance
Priority Habitat (off-site) – Deciduous Woodland	Local
Hedgerows and Scattered Trees	Local
Invertebrates	Site
Great Crested Newts	Negligible
Common Toad	Site
Reptiles	Local - confirmed presence
Breeding Birds	Local - breeding by widespread and common species, including small numbers of BoCC Red-listed and BoCC Amber-listed only.
Badgers	Negligible – no setts present
Bats (roosting in trees)	Negligible – local in active and hibernation seasons
Bats (foraging and commuting)	Local
Hazel dormice	Negligible - confirmed likely absence
Hedgehog	Local

5 Assessment of Effects and Mitigation Measures

The following ecological receptors have been determined unlikely to be impacted by the proposed development for the reasons provided below, and as such have been scoped out from further evaluation, with no avoidance or mitigation measures required:

Table 5.1: Ecological receptors screened out from further assessment.

Ecological Receptor	Reason no Impacts are Expected
Statutory Sites	No significant impacts anticipated.
Non-statutory Sites and Ancient Woodland	No significant impacts anticipated.
Great Crested Newts	No suitable habitats present.
Schedule 1 Breeding Birds	No suitable habitats present and absent during surveys.
Wintering birds (Schedule 1 or important assemblages)	No suitable habitats present.
Hazel dormice	Absent during surveys.

Where impacts or potential impacts are anticipated, these have been described below along with recommendations for avoidance and / or mitigation measures.

5.1 Adjacent Deciduous Woodland Priority Habitat

5.1.1 Potential Impacts

Deciduous Woodland Priority Habitat lies immediately adjacent to the south-east corner of the site. There is potential for impacts to result during construction through dust, spills and run-off pollution and through impacts to tree roots.

5.1.2 Mitigation Measures

The adjacent woodland habitat will be protected from construction works with Heras fencing in line with *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* (British Standards Institution, 2012).

A Construction Environmental Management Plan (CEMP) will be required, most likely secured by condition, in order to ensure protection of adjacent deciduous woodland and will need to include:

- Measures to minimise dust production and to suppress spread of dust – for example physical barriers between dust-generating activities, and sensitive receptors, and wetting of equipment and plant;
- Safe storage of materials to avoid pollution through spills and run-off;
- Protocols for dealing with any accidental spillages to avoid polluted run-off or pollution entering ground water systems; and
- Provision of spill kits.

5.1.3 Significance of Residual Effects

With the above mitigation measures implemented, there will be no significant residual effect on the deciduous woodland.

5.2 Hedgerows and Scattered Trees

5.2.1 Potential Impacts

The development proposals will require the removal of a number of trees within the application site, with further removals recommended for sound arboricultural reasons where hazardous trees have been identified (Arboricultural Method Statement, David Archer Associates, 2020). This will lead to a loss in general biodiversity on-site and connectivity around the borders of the site. In addition, without suitable protective measures, construction activities could potentially damage hedgerow and scattered habitats which will be retained.

5.2.2 Mitigation Measures

Use the following measures to minimise impacts to the hedgerows and trees:

- Retain native trees where possible and protect these and the retained hedgerow where required during construction with Heras fencing in line with *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* (British Standards Institution, 2012);
- Replant trees lost to the development with native specimens of local (refer to **Appendix 14** for suitable species); and
- Link existing and new hedgerows where possible to preserve habitat connectivity.

A detailed Landscape and Planting Plan is required, which can be conditioned, to demonstrate compliance with the replacement native-species planting to ensure no net loss of biodiversity. This will tie in with requirements outlined in relation to other fauna using the site.

5.2.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be a low residual effect on the scattered trees on-site as the replacement planting will take time to establish. However, in the long-term, this will create a more diverse age range of trees in combination with those in the adjoining woodland to the east and north-east associated with the Sene Valley Golf Course.

5.3 Pond

5.3.1 Potential Impacts

The on-site pond is to be retained but is at risk from construction phase spills, run-off, debris, dust and litter as well as accidental damage from machinery. During the operational phase, run-off, litter and direct disturbance from people and their pets may occur.

5.3.2 Mitigation Measures

A CEMP will be required, most likely secured by condition, in order to ensure protection of the pond from pollution as per the requirements in **Section 5.1.2**.

To minimise operational phase risks, the pond will remain outside of the private curtilage of individual new homes and will be fenced off from public access. Further enhancement opportunities for the pond are discussed in **Section 6**.

5.3.3 Significance of Residual Effects

If the above mitigation is followed, there will be no significant residual effects on the pond.

5.4 Invertebrates

5.4.1 Potential Impacts

The removal of the tall ruderals, scrub and scattered trees on-site will result in the removal of nectar and pollen sources for widespread invertebrates.

5.4.2 Mitigation Measures

Native species planting to include nectar- and pollen-rich species, as well as those that offer foraging opportunities for larval stages of moths that have been recorded locally will be included in the final Landscape and Planting Plan (see **Appendix 14** for suggested suitable species).

5.4.3 Significance of Residual Effects

If the above mitigation is followed, there will be no significant residual effects on invertebrates.

5.5 Common Toad

5.5.1 Potential Impacts

Common toads may be present in nearby water-bodies, and as such, they may occasionally pass through the site and / or seek shelter in suitable terrestrial habitat. As such, they may be harmed during construction.

5.5.2 Mitigation Measures

See **Section 5.6.2**, which will also serve to protect common toads from harm.

5.5.3 Significance of Residual Effects

If the above mitigation is followed, there will be no significant residual effects on common toads.

5.6 Reptiles

5.6.1 Potential Impacts

In the absence of mitigation, impacts to reptiles arising from the development proposal are expected to be **significant**.

Construction phase impacts: may arise from inappropriate timing of works and use of unsuitable methods to clear vegetation, which may harm reptiles. Further, loss of c. 0.7ha of foraging habitat (tall ruderals / poor semi-improved grassland / marshy grassland / scrub / hedgerow bases), hibernacula (log piles / stone walls / hedgerow bases), breeding and sheltering sites (compost heaps / scattered dead wood) and potential habitat fragmentation and isolation of reptiles may also result from the development.

Operational phase impacts: it is unlikely that there will be a significant increase in disturbance on any local reptile population via human recreation or predation by domestic cats. This is due to the relatively small number of residential units proposed, and the development's location within a town in which these pressures are already likely to exist.

5.6.2 Mitigation Measures

The Reptile Mitigation Strategy and Method Statement below will be followed due to the presence of a good population of common lizards and low population of grass snakes within the site. Due to the

extent of the proposals, translocating the reptiles to a suitable off-site receptor area is considered to be the most suitable option to mitigate for the reptiles within the site.

The Reptile Mitigation Strategy and Method Statement below provides the details of the appropriate avoidance and mitigation measures required to ensure the populations of reptiles on-site are protected from harm and safely translocated to a suitable reptile receptor site. The reptile receptor site chosen will ensure the longevity of the reptile populations present.

5.6.2.1 Receptor Site Selection

A receptor area has been identified that is able to support reptiles from the proposed development site and a separate development site immediately to the north, across which the reptiles are likely to form a single population unit. This strategy is deemed to be the optimal one for the reptiles as the population will not be divided. Further, the chosen receptor site is only 180m east of the application site and directly connected to it by woodland, scrub and grassland under the long-term lease and management of Sene Valley Golf Club, who also lease and manage the proposed receptor site. The golf club have given permission for the receptor site to be enhanced and maintained for the primary purpose of supporting reptiles for at least 10 years from the point of planning permission being granted. This could be further secured by means of a Section 106 agreement or similar.

The receptor site is located at central OS grid reference TR 17198 35558, as shown in **Appendix 7**. The receptor area for this application is c. 0.2ha, by comparison to the c. 0.6ha of suitable reptile habitat being lost to the development, but there is good potential to provide sufficient enhancement features within the receptor site to compensate for the difference in size.

The receptor site was surveyed on two separate occasions (21st April 2020 and 20th October 2020) by Principal Ecologist Claire Munn to ascertain its current suitability and future potential to support reptiles at different times of year. From these surveys and discussions with the golf course manager, it is clear that despite the receptor site being located at the bottom of sloping ground, it remains of a suitably high enough elevation that it does not flood or hold surface water. The current ground flora and management of the site is such that reptiles are unlikely to already be present as the grass remains at a short sward for most of the year with no sheltering options in the centre of the site. However, the habitats immediately adjacent to the receptor site, in the form of scrub-covered slopes, and the tussocky grass, scrub and woodland between the receptor site and application site, offers optimal reptile habitat. As such, the receptor site offers an opportunity to create replacement reptile habitat where reptiles are not currently present, but where the reptiles being moved would still remain connected to the wider reptile population and habitats as they are currently.

5.6.2.2 Habitat Enhancement within Receptor Site

Suitable reptile habitat will be created within the reptile receptor site. This will be created in advance of the translocation in order to allow the vegetation to develop and the features created to bed in. This will include the following measures laid out below in **Table 5.2** (and shown in **Appendix 7**).

Table 5.2: Enhancement measures to be undertaken within the reptile receptor site

Enhancement Measures	Action
Creation of tussocky grass sward	An area 3m wide at the base of the slopes within the receptor area will be suitably prepared and sown with a tussocky grass seed mixture, such as Emorsgate EM10 Tussock Mixture prior to the translocation commencing. Ground preparation, sowing and aftercare will follow the guidance from the seed mix supplier specific to the seed mix ordered. Generally though, perennial weeds will need to first be removed by repeated cultivation and the ground then prepared by digging to bury the surface vegetation. Raking will then be needed to create a medium tilth and a firm surface then produced. Seeds should be sown ideally in spring or autumn, but at least when warm and sufficient moisture is present at ground level. The seeds should be surface sown and firmed in with a roll or treading. The first year after sowing will require regular strimming using hand-held equipment to a height of 40-60mm to control annual weeds, with arisings removed and placed on the dedicated grass cutting pile within the receptor area. Perennial weeds should be dug out and removed from site.
Creation of reptile hibernacula	One reptile hibernaculum measuring 8m long, 2m wide and 1m deep will be created on site, at the base of the east-facing slope where the existing scrub meets the grassland. As the site can become damp during prolonged, high rainfall, the hibernaculum will not be dug into the ground, with only the first c.15cm of soil in the location of the hibernaculum being scraped back and set aside. The base of the hibernaculum will be constructed of inert hardcore, rubble and wood from native hardwood species to provide reptile refuge and hibernation opportunities. Logs of various sizes and then brash will be placed above this. Finally, the stripped soil and vegetation previously removed will be placed back on top of the hibernaculum on completion. The hibernaculum will be created prior to the commencement of the reptile translocation. See Appendix 7 for further details.
Creation of additional log and brash piles	Three log and brash piles each measuring at least 2m x 2m wide and 1m high, will be created at the scrub and grassland interfaces at the bottom of the slopes. The log and brash piles will be created prior to the commencement of the reptile translocation and will include logs of varying sizes from hardwood trees, with larger logs arranged at the core and smaller logs and brash placed above, all randomly assorted rather than stacked. See Appendix 7 for further details.
Creation of grass cuttings pile	A grass cuttings pile will be created within a sunny location along the eastern margin where the grass meets the sloped bramble-covered ground. This will allow any future cuttings from habitat management to be stored on-site. This feature should also provide additional sheltering opportunities for reptiles and also potentially egg laying opportunities for grass snakes. The grass cuttings pile will be started prior to the reptile translocation with grass cuttings from other parts of the golf course and will be added to as and when habitat maintenance activities are completed on site. Himalayan balsam was noted during a walkover of the wider golf course on 20 th October 2020; it is paramount that no Himalayan balsam is moved into the receptor site via cuttings moved here from other areas.

New Management Regime	Once a tussocky sward has established around the edges of the site, it should require minimal maintenance, with no more than a once annual cut during autumn to a minimum height of 10-15cm. Natural development of a tussocky/tall sward within the centre of the site should also be encouraged with the same cutting regime as the seeded area. Scrub should not be allowed to encroach into the grass area and should be managed as regularly as necessary to ensure this. Arisings from grass cutting should be added to the dedicated grass pile within the receptor area and logs and brash from maintenance activities around the golf course should be added to the log piles and hibernacula as they naturally decompose (ensuring that no Himalayan balsam is moved into the receptor site from other parts of the golf course where it is present). The receptor area should be managed as such for at least 10 years from planning consent being granted for the proposed development.
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5.6.2.3 *Translocation (including exclusion fencing)*

Reptile fencing will be installed around the site boundary prior to the reptile translocation works commencing (**Appendix 6**). A fingertip search will be carried out by an ecologist of sensitive areas to be impacted by the fence construction. The reptile fence will ensure the areas of suitable reptile habitat within the site are enclosed, preventing ingress or egress by common lizards or grass snakes from the areas surrounding the site.

It is recommended that strong plastic material be used as this is unlikely to get damaged and is easier to install and remove upon completion. The fencing should be buried 200-300mm into the ground, with a return at the top and secured by timber posts. The reptile exclusion fence will be maintained in good condition until project completion; it will be the responsibility of the site manager to ensure that the reptile fence remains in sound condition by completing daily checks and carrying out maintenance as soon as any damage is discovered, until the works are completed.

Artificial reptile refuges will be placed across the development site, numbering at least 80. Artificial refuges will consist of a combination of roofing felt and Onduline, all measuring a minimum of 50cm x 50cm. The ecologist will check these artificial refuges and any other suitable reptile habitat within the site at least five days a week (when weather is suitable) until five consecutive days of finding no reptiles has been achieved, with a minimum of 30 translocation surveys carried out. This capture effort will be carried out during suitable weather conditions between mid-March and September (potentially October if weather remains suitable for reptiles to be active).

5.6.2.4 *Vegetation Removal, Hand Searches and Mechanical Excavation*

Following completion of the capture and relocation exercise within the fenced area, a destructive search will be undertaken 24 hours after strimming of the vegetation to 10-15cm in height and immediately following a finger-tip search by an ecologist of all remaining suitable reptile habitat. An excavator and operative will carefully and slowly scrape back the top c. 15cm of soil under guidance and supervision of an ecologist, who will move any reptiles encountered to the receptor area. This will be undertaken in warm, dry weather during the active reptile season (mid-March to October). Once all suitable reptile habitat has been destroyed, the ecologist will declare the site free of reptiles and development works can proceed.

On completion of all development works, the reptile exclusion fence should be carefully removed from site.

5.6.2.5 **Summary of Mitigation**

In summary, mitigation includes the following measures:

1. Habitat enhancement of receptor site prior to translocation
2. Translocation of reptiles
3. Vegetation removal, hand searches and mechanical excavation

The above mitigation strategy aims to ensure the long-term maintenance of the reptile population in the locality and avoid harm to individual reptiles.

5.6.3 **Significance of Residual Effects**

Once the mitigation measures have been implemented, and subject to ongoing maintenance of the receptor site in line with the recommendations in this report, there will be no significant residual effects on reptiles.

5.7 **Birds**

5.7.1 **Potential Impacts**

Common and widespread nesting birds and two BoCC Red-listed and three BoCC Amber-listed species, may be directly impacted during ground preparation and demolition activities if active nests are present in the woody vegetation being removed.

In addition, the loss of scrub and trees will lead to the loss of breeding, refuge and foraging habitat for widespread bird species.

5.7.2 **Mitigation Measures**

Wherever possible, trees and scrub along the southern site boundary are to be retained as this area was found to be used more than other areas of the site by birds. If the existing vegetation along the southern boundary cannot be retained, then replacement planting in the form of a native hedgerow and scattered trees along the southern boundary is required, totalling at least 3m width.

Where retention of vegetation is not possible, clear the woody habitats (including thick ivy vegetation) between September and February (inclusive) to avoid the main breeding bird season. Alternatively, where more sparse vegetation allows and/or where bat roost risks require it, an ecologist will check potential nesting habitat immediately before clearance that is scheduled during the breeding season (March to August inclusive). Any active nests identified must be retained *in situ* with a suitable buffer until the ecologist has confirmed that the chicks have fledged, and the nest is no longer active.

Native-species planting is to be incorporated into the final Landscape and Planting Plan to replace the loss of trees and scrub as a result of development. This will include boundary hedgerow and tree planting to replace any lost along the southern boundary (which will be at least 3m wide) and new hedgerow planting along the northern boundary. This will provide replacement breeding, refuge and foraging opportunities for common and widespread birds and red- and amber- listed BoCC species known to be present. Native, thorny and berry-producing species of local provenance are recommended to provide protection and a food source for birds (see **Appendix 14** for suitable species).

In addition to a Landscape and Planting Plan, is recommended that a long-term management plan should be conditioned to ensure appropriate management of the replacement boundary planting for birds. This is also to include measures to encourage ivy growth during operational phase management in order to provide a much-needed winter food source for birds.

This can all be secured through appropriate planning conditions.

5.7.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be a low significant residual effect on breeding birds due to the time taken for replacement planting to become established. However, in the long-term, no significant effects are expected.

5.8 Badgers: Setts

5.8.1 Potential Impacts

Although none were recorded on site, badger setts can appear at any time and some areas of the site were heavily obscured by dense scrub vegetation which prevented a thorough inspection. It is therefore possible that a badger sett could appear on-site between the PEA survey date and construction commencing. In the event that this occurs, the newly created badger sett could be damaged or destroyed during the construction works. In addition, if a badger within the sett at the time of the works is unable to escape safely, the destruction of the sett could also lead to killing or injuring a badger.

5.8.2 Mitigation Measures

A pre-construction badger survey on and within 30m around the site by an ecologist c. ten weeks before clearance / construction begins is recommended. This should allow time for any mitigation / avoidance measures to be designed, and preparation of a Natural England badger Development License application if required.

5.8.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be no significant residual effects on badgers.

5.9 Badgers: Foraging and Commuting

5.9.1 Potential Impacts

Based on evidence of badger activity within the site, it is likely that badgers commute along the boundary habitat and forage throughout the site. Legislation relating to badgers pertains specifically to ensuring their welfare rather than protecting badger populations from decline, as they are not considered to be of conservation concern. As such, the relevant potential impact to foraging and commuting badgers is that they may become trapped if any excavations are left open overnight when they are most active.

5.9.2 Mitigation Measures

All trenches and excavations will either be backfilled or covered at the end of the working day or a ramp left within them to enable any badgers that may have fallen in to escape. As an additional measure, a designated site supervisor will check the excavations for any trapped animals at the start of each working day.

5.9.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be no significant residual effects on badgers.

5.10 Bat Roosts: Trees

5.10.1 Potential Impacts

Whilst the tree roost surveys of Trees 3, 4, 8, 13, 14 and the sycamore with suitable feature in G1, did not show evidence of roosting bats and thus no known bat roosts will be destroyed during felling, due to the transient nature of bat roosts, it cannot be fully ruled out that a bat could be present at a later date in suitable features during the active season. These trees also hold potential for bats to roost during hibernation. Potential harm to bats and loss of a roost could also occur if Tree 7, which could not be viewed from all angles due to dense vegetation, was to support roosting bats. Inappropriate methods and timings of felling could therefore result in the killing or injury of bats present. In addition, the proposals could lead to potential disturbance of any bats present and roosting in these trees through increased lighting during the construction or operational phases of the proposed development.

The features identified as potentially suitable for hibernating bats do not lend themselves to typical hibernation survey methods of measuring activity by use of static detectors and manual inspection over winter months.

5.10.2 Mitigation Measures

Trees 3, 4, 8, 13 and 14 should be soft-felled in sections under ecological supervision. Once each section of the tree is cut, this should then be carefully lowered to the ground. The trees should be checked throughout the felling process to confirm there are no holes/cracks or features that lead into suitable cavities to support bats. Where necessary and advised by the ecologist, pieces of tree should be left on-site overnight prior to their removal or being passed through a chipper as an extra precaution. This will allow bats to leave the tree in the unlikely event one is missed during the inspection.

A detailed inspection of the southern aspect of Tree 7 is required prior to its removal to confirm the absence of potential bat roosting features (i.e. no cracks, holes or entry points). This inspection can be completed by a competent tree surgeon.

As a precaution, it should be assumed that hibernating bats may be present within suitable features of Trees 3, 4, 8, 13 and 14 and therefore works to these trees should be timed to avoid the hibernation period of November – February (inclusive). Additionally, a bat box suitable for hibernation, such as a Schwegler 1FW bat box, should be installed on Tree 1 (or suitable alternative location) to provide replacement roosting provision. This should be sited at least 5m above the ground, be north-west or north-east facing, not subject to artificial lighting and be clear of obstructions such as overhanging branches.

5.10.3 Significance of Residual Effects

Following the mitigation measures above being implemented, there will be no significant residual effects on roosting bats.

5.11 Bats: Foraging and Commuting

5.11.1 Potential Impacts

Bats use the vegetation within the site to commute and forage, with the eastern and southern boundary vegetation being of particular importance. This boundary commuting corridor also aids the functionality of the brown long-eared maternity and common pipistrelle day roosts within the building located c. 30m north of the site as it connects the roost to other suitable foraging habitat in the wider area. Whilst the hedgerow along the eastern boundary is to be retained, many other trees and scrub and all of the tall ruderals are to be lost to the development, which would result in a loss of foraging and commuting habitat for bats.

5.11.2 Mitigation Measures

In addition to retaining the eastern boundary hedgerow (H2), southern boundary vegetation comprising a minimum of 3m width will either (ideally) be retained, or failing this, be replaced with native hedgerow and tree species of local provenance (see **Appendix 14** for suitable species) in order to retain suitable commuting and foraging opportunities for bats in these key areas of the site. Replacement of other suitable foraging habitat will be included in the form of additional native boundary hedgerow planting of local provenance along the northern site boundary and through the inclusion of night-scented plants in communal areas.

The following measures will be incorporated into a sensitive lighting design to reduce impacts on foraging and commuting bats caused by artificial lighting, with the aim of maintaining dark corridors for bats along the eastern, southern and northern site boundaries, the retained mature horse chestnut tree and locations of newly installed bat boxes (BCT & ILP, 2018):

- Direct any task lighting used during construction away from boundary vegetation (retained and new), the horse chestnut tree in the north of the site and any newly installed bat boxes;
- Set any necessary security lighting on short timers with a sensitivity to large moving objects only;
- Consider installing internal light fittings in a recess where installed in proximity to windows facing the boundary vegetation, horse chestnut tree and bat boxes in order to reduce glare and light spill;
- Limit lighting times to provide dark periods;
- LED light sources should be used wherever possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capabilities. A warm spectrum light (ideally <2700 Kelvin) should be used to reduce the blue light component. Lights should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012). Luminaires should be mounted on the horizontal, i.e. with no upward tilt. Avoid the use of UV light and do not use metal halide, fluorescent light sources;
- If the above measures still do not enable dark corridors to be maintained along the site boundaries, consider screening as a means of reducing light spill to boundary vegetation. This could take the form of soft landscaping, fences, walls or bunds. Fencing could also be overplanted with hedgerow or climbing species to add further ecological value to the site and soften its appearance; and

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- As a last resort, use hoods or cowls to avoid light being directed at the sky or towards the boundary vegetation.

5.11.3 Significance of Residual Effects

Subject to the above mitigation measures being implemented, residual effects on foraging and commuting bats are expected to be low while new planting becomes established, with no long-term effects expected.

5.12 Hedgehogs

5.12.1 Potential Impacts

Depending on the extent and type of fencing proposed within the development, there is potential to impact the movement of hedgehogs through the site and between the site and adjacent habitats and potential hedgehog sheltering / nesting habitat may be lost through the removal of piles of deadwood.

5.12.2 Mitigation Measures

Any new garden fences are to have either a 13cm tall gap along the base or hedgehog links (13cm x 13cm holes at the base) at 10m intervals to allow hedgehogs to move freely between gardens and adjacent habitats.

In order to mitigate for the potential loss of hedgehog sheltering habitat, provide two hedgehog houses within sheltered locations within the communal areas outside of residential curtilage to the south of the site e.g. at the base of the hedge, preferably a distance away from the access roads.

5.12.3 Significance of Residual Effects

Once the mitigation measures have been implemented, there will be no significant residual effects on hedgehogs.

5.13 Summary of Effects and Avoidance and Mitigation Measures

Table 5.3: Significance of Residual Effects, Avoidance and Mitigation Measures Required and Method of Securing Avoidance and Mitigation Measures

Ecological Receptor	Avoidance / Mitigation Measures Required	Means of Securing Avoidance / Mitigation Measures	Significance of Residual Effects
Adjacent deciduous woodland priority habitat	A Construction Environmental Management Plan (CEMP) is required to ensure protection from accidental damage through impacts to roots and/or pollution during construction.	Condition	Negligible
Hedgerow and scattered trees	Protect the retained eastern boundary hedgerow and any retained scattered trees from accidental damage during construction, to be detailed in a CEMP. Replace trees lost to development with native species of local provenance.	Condition	Negligible - low
Pond	Retain pond on-site and protect from pollution in line with a CEMP.	Condition	Negligible
Bats (foraging and commuting)	Retain the eastern boundary hedgerow and plant a new hedgerow along the northern boundary. Include night-scented flowering plants in communal areas. Retain at least 3m width of southern boundary trees and scrub. Alternatively, replace with a minimum 3m width of native-species hedgerow and tree planting along the southern boundary. Employ a sensitive lighting strategy to ensure dark boundary corridors for bats, to include no light spill along the eastern and northern hedgerows and 3m-wide southern boundary vegetation.	Condition	Negligible - low
Bats (roosting in trees)	Sectional felling, to be carried out only during the bat active season of March – October (inclusive) of Trees 3, 4, 8, 13, 14 and the sycamore in Group 1 with a single bat roost feature. A pre-felling check of Tree 7 to confirm that previously inaccessible sections of the tree are also of negligible suitability for roosting bats. Install a bat box suitable for hibernation onto the retained mature horse chestnut tree or new building.	Condition	Negligible
Invertebrates	Replacement planting to include nectar- and pollen-rich species and those that support larvae of locally recorded moths.	Condition	Negligible
Common toad	Common toads will also be protected from harm by following the mitigation measures for reptiles.	Condition	Negligible

Ecological Receptor	Avoidance / Mitigation Measures Required	Means of Securing Avoidance / Mitigation Measures	Significance of Residual Effects
Reptiles	Off-site reptile translocation, including receptor site enhancement, exclusion fencing, trapping and destructive search.	Condition and Section 106 Agreement	Negligible
Birds	Retention of the eastern boundary hedgerow, planting a new hedgerow along the northern boundary and retaining or replacing at least 3m width of southern boundary woody vegetation. Careful timing of de-vegetation works to avoid the nesting bird season (March-August, inclusive) or a nest check to be carried out by an ecologist immediately ahead of works.	Condition	Negligible - low
Badgers (setts)	Pre-construction badger survey c. 6 weeks before works commence.	Condition	Negligible
Hedgehog	Fencing with gaps at the base to be used to allow hedgehog access and install two hedgehog houses to replace lost sheltering habitat.	Condition	Negligible

5.14 Cumulative Effects

Cumulative effects requiring consideration are those that might lead to effects on habitats or species assessed as being of greater than negligible importance in this EclA. Given the location of the proposed development and the habitats and species concerned, this is likely to be limited to developments affecting habitats connected to the site, within the surrounding residential areas and adjacent golf course.

A search of the proposed, but as yet undecided, planning applications within Folkstone & Hythe District Council revealed that no likely cumulative impacts to protected and notable species are expected as a result of the proposed development.

6 Enhancements

The recommendations below are designed to enhance the value of the site for wildlife, as encouraged through the National Planning Policy Framework (2019), and to help achieve meaningful biodiversity net gain in the context of both national and local biodiversity priorities and targets:

- 1) A new hedgerow is to be planted on the northern boundary as mitigation for foraging and commuting bats. To provide additional enhancements, make this a native species-rich hedgerow with scattered trees to increase foraging opportunities and habitat connectivity around the site for wildlife more generally. Locally sourced, native fruit and berry bearing species such as hazel *Corylus avellana*, apple *Malus* spp., hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, guelder rose *Viburnum opulus*, gorse *Ulex europaeus* and spindle *Euonymus europaeus* are recommended. Refer to **Appendix 14** for further suitable species.
- 2) Install two Schwegler 1B General Bird Boxes and / or Sparrow Terraces onto retained suitably mature trees and / or new buildings at least 3m above the ground, avoiding direct sunlight (not directly south-facing) and prevailing wind.
- 3) Install two Schwegler IFF and/or 2F Bat Boxes onto retained suitably mature trees and / or new buildings. Install the bat boxes at least 5m above the ground and face in a southerly direction, so that they receive sun for part of the day. Place boxes clear of any obstructions to allow access for bats (e.g. over-hanging branches).
- 4) Provide two insect houses in sheltered, warm locations e.g. within any new flower beds within communal areas along the southern site boundary to provide over-wintering sites for beneficial insects such as lady birds and lacewings, which typically prey on pest species.
- 5) Create and maintain a swathe of infrequently cut grassland along the southern boundary within the communal area close to the proposed pond location. This will provide relatively undisturbed habitat for invertebrates, birds and reptiles. The swathe should be a minimum of 1m wide and sown with a wildflower seed mix (e.g. Emorsgate EL1).
- 6) Create additional log piles and / or hibernacula, by creating a pile of rubble and wood from native hardwood species to provide reptile and amphibian refuge and hibernation opportunities. Locate this / these on the southern site boundary, in the area around the pond that will be minimally disturbed on completion. Dead wood habitats provide important egg laying and larval habitat for invertebrates and refugia / foraging for amphibians.
- 7) Avoid the use of slug pellets and use environmentally safe wood preservatives (for sheds and fences etc.).
- 8) Plant up additional areas (e.g. the communal areas to the south and north of the site) with suitable native species of local provenance.
- 9) Enhance the on-site pond for a variety of wildlife, including amphibians, reptiles, invertebrates and mammals. The proposed removal of many of the large, overhanging trees will help to open up the pond to more sunlight and reduce the accumulation of leaf litter and associated nutrients. As the existing pond dries out during the amphibian breeding season, it should be enlarged, ideally to a minimum of 25 square metres, with a central depth of 30-50cm, becoming shallower at the margins to allow easy access by wildlife. Plants should be allowed to naturally colonise the pond. See **Appendix 13** for an example of a wildlife pond, which shows

gradual changes in gradient from a deeper centre to shallow margins. The pond will remain outside of the curtilage of new houses and will be fenced off from public access to minimise disturbance to wildlife.

10) Incorporate Sustainable Urban Drainage Systems (SuDS) within the development. Relevant examples of SuDS are listed below. SuDS can increase biodiversity by introducing a series of habitats for wildlife use.

- Proposed buildings within the site, including any cycle or bin stores could have green roofs or green walls. A range of different designs, aimed at increasing biodiversity within urban locations are available (**Photos 6.1 and 6.2**); and
- Incorporate rain gardens within hardstanding and parking bays (**Photo 6.3**).

Photo 6.1: Bin store with a green roof and invertebrate houses in the walls (Green Roof Shelters, 2016).



Photo 6.2: Cycle store with a green roof, invertebrate houses and bird boxes installed within the walls (Green Roof Shelters, 2016).



Photo 6.3: Example of a rain garden within hardstanding (Integrity Land Works, 2014).



7 Conclusions

With the incorporation of the proposed mitigation there will be, on the whole, negligible negative impacts on ecological receptors as a result of the proposed development. This, combined with the enhancement measures proposed will ensure compliance with all relevant wildlife legislation and national and local planning policies.

The measures above can be secured by planning condition, with the addition of a Section 106 agreement to secure the long-term viability of the off-site reptile receptor site.

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Appendix 1 Legislation & Planning Policy

Legislation

Conservation of Habitat and Species (Amendment) (EU Exit) Regulations (CHSR) 2019

The *CHSR 2019* transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

The purpose of the 2019 amendments applied to the legislation were to ensure the continued functionality of the Regulations once the UK has left the European Union, with no policy changes included.

Wildlife & Countryside Act (WCA)

The *WCA 1981*, as amended by the *Countryside and Rights of Way Act (CROW) 2000* and the *Natural Environment and Rural Communities Act (NERC) 2006*, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act.

Sites of Special Scientific Interest (SSSI) are designated under this Act.

Special Protection Areas (SPA) are strictly protected sites, designated under the Birds Directive, for rare and vulnerable birds and for regularly occurring migratory species.

Natural Environment & Rural Communities (NERC) Act

The *NERC Act 2006* amends the *CROW Act*, by further extending the requirement to have regard for biodiversity to all public authorities, which includes local authorities and local planning authorities and requires that the Secretary of State consults Natural England (NE) in the publication of the list of living organisms and habitat types deemed to be of principal importance in conserving biodiversity.

Relevant Protected Species Legislation

Species	Relevant Legislation	Level of Protection
Reptiles (adder, grass snake, common lizard & slow-worm)	Partially protected under <i>Schedule 5</i> of the <i>Wildlife and Countryside Act, 1981 (as amended)</i> .	It is an offence to: - intentionally kill or injure these animals. - sell, offer for sale, advertise for sale, possess or transport for the purposes of selling any live or dead animals or part of these animals.
Birds	Protection under the <i>Wildlife and Countryside Act, 1981 (as amended)</i> .	It is an offence to: - intentionally kill, injure or take any wild bird. - intentionally take, damage or destroy nests in use or being built (including ground nesting birds). - intentionally take, damage or destroy eggs. - Species listed on Schedule 1 of the WCA or their dependant young are afforded additional protection from disturbance whilst they are at their nests.
Badger	<i>Protection of Badgers Act, 1992.</i>	It is an offence to: - wilfully kill, injure, take, possess, or cruelly ill-treat a badger, or to attempt to do so. - intentionally or recklessly interfere with a sett.
Bats	European protected species under the <i>Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019</i> . Full protection under <i>Schedule 5</i> of the <i>Wildlife and Countryside Act, 1981 (as amended)</i> . Protected by the <i>Wild Mammals (Protection) Act 1996</i> .	It is an offence to: - intentionally kill, injure, or take any species of bat. - intentionally or recklessly disturb bats. - intentionally or recklessly damage destroy or obstruct access to bat roosts.
Wild Mammals	The <i>Wild Mammals (Protection) Act 1996</i> .	This makes it an offence to: crush or asphyxiate any wild mammal with intent to inflict unnecessary suffering. This may apply during site clearance for development, particularly where burrowing animals such as foxes and rabbits are present, since such animals could be crushed or asphyxiated in their burrows by heavy machinery.

National Planning Policy

National Planning Policy Framework (NPPF)

The NPPF sets out current government policy on biodiversity and nature conservation and places a duty on planners to make material consideration to the effect of a development on legally protected species when considering planning application (MHCLG, 2019). The NPPF also promotes sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within a development, following the principles of the mitigation hierarchy. The goals set out within the NPPF are for developments to minimise impacts on and provide net gains for biodiversity, including at the catchment or landscape scale.

The NPPF works in conjunction with Government Circular *06/2005 'Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System.'*

Regional and Local Planning Policy and Guidance

Local Structure Plans

County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity. These are used by Planning Authorities to inform planning decisions.

Biodiversity Action Plans

The UK Biodiversity Action Plan (UKBAP) was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A 'UK Post-2010 Biodiversity Framework' was published in July 2012, and succeeded the UKBAP. Much of the work for the UK BAP is now focussed at a country level due to devolution and the creation of country-level biodiversity strategies.

The UKBAP lists of priority species and habitats are still valuable reference sources. Notably, they have been used to help draw up statutory lists of priority species and habitats as required under Section 41 of the NERC Act (2006).

UK Post-2010 Biodiversity Framework

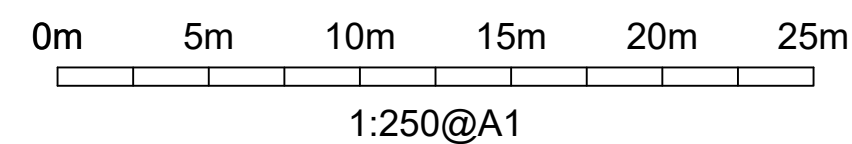
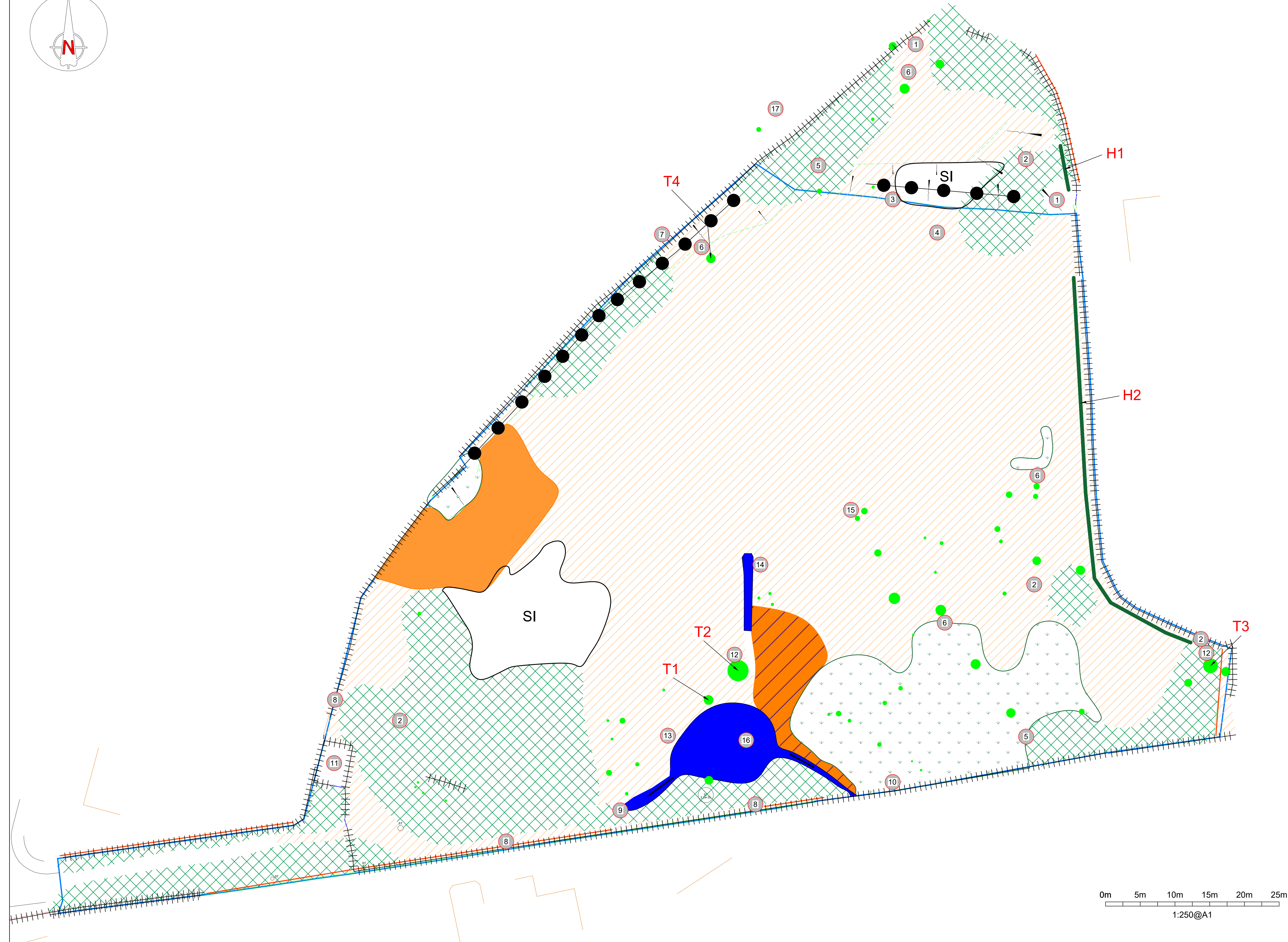
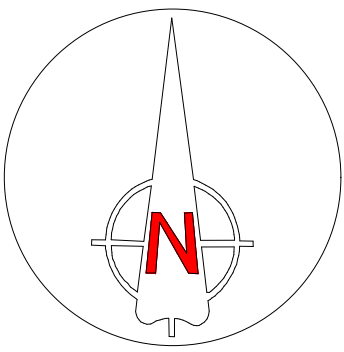
The UK Post-2010 Biodiversity Framework (2012) was produced in response to a change in strategic thinking following the publication of the Convention of Biological Diversity's Strategic Plan for Biodiversity 2011–2020. The Strategic Plan consists of 20 new biodiversity targets for 2020, termed the 'Aichi biodiversity targets' and the launch of the new EU Biodiversity Strategy in May 2011.

The framework sets a structure for action across the UK between now and 2020, including a shared vision and priorities for UK-scale activities to help deliver the Aichi targets and the EU Biodiversity Strategy. A major commitment by Parties to the Convention of Biological Diversity is to produce a National Biodiversity Strategy and/or Action Plan (NBSAP).

Natural England Standing Advice

Natural England has adopted national standing advice for protected species. It provides a consistent level of basic advice which can be applied to any planning application that could affect protected species. It replaces some of the individual comments that Natural England has provided in the past to local authorities.

Appendix 2 Phase I Habitat Map



DAVID ARCHER ASSOCIATES ARCHITECTURAL CONSULTANTS		
Project: Land within field at Cold Harbour Blackhouse Hill Hythe Kent		
Client: Hobbs Parker		
Drawing: Phase 1 Habitat Plan		
Based on: Topographical Survey		
Drawing No:	P1 HP 01	Rev:
Date:	Feb 2021	Scale:
		1: @250 A1
		Drawn:
		MR
SITE BOUNDARY		
A2.1 DENSE CONTINUOUS SCRUB		
A2.2 SCATTERED SCRUB		
B.6 POOR SEMI-IMPROVED GRASSLAND		SI
C1.2 CONTINUOUS BRACKEN		
G.1 STANDING WATER		
J2.1.2 SPECIES- POOR INTACT HEDGEROW		
C3.1 TALL RUDERAL		
J.2.3.5 WALL		
TARGET NOTE		
J2.4 FENCE		
B5 MARSHY GRASSLAND		
A3.1 BROAD-LEAVED SCATTERED TREES		
J2.8 EARTH MOUND		
H1 HEDGE NUMBERS (H1-H2)		H1
T1 TREE NUMBERS (T1-T4)		T1
David Archer Associates: 01223 597766 david@daa-architecture.co.uk The original of this drawing was produced in colour – a monochrome copy should not be relied upon. ©This drawing is copyright & must not be reproduced without consent from David Archer Associates.		

Target Notes

1. Compost Heap (adjacent to the site)
2. Rabbit burrows
3. Fox scat
4. Trough of water
5. Area of dense bamboo cover
6. Log pile
7. Mammal path
8. Human/mammal path
9. Drain
10. Push through, within wire fencing
11. Substation
12. Fallen tree
13. Scattered dead wood
14. Water draining from site towards pond
15. Snipe
16. Pond 1
17. Badger latrine

Appendix 3 Species Assessment Methodology

Amphibians

The site was assessed on 7th January 2020 for suitability to support amphibians such as the legally protected great crested newt and the notable common toad *Bufo bufo*. The assessment was undertaken in accordance with the *Herpetofauna Workers' Manual* (Gent & Gibson, 2003) and the *Great Crested Newt Conservation Handbook* (Langton, *et al.*, 2001).

Based on Natural England (2015) guidance, surveys of land greater than 250m from the nearest water-body are normally appropriate when all of the following conditions are met:

- a) Maps, aerial photos, walkover surveys or other data indicate that the water-bodies have potential to support a large great crested newt population;
- b) The development footprint contains particularly favourable habitat, especially if it constitutes the majority available locally;
- c) The development would have a substantial negative effect on that habitat; and
- d) There is an absence of dispersal barriers.

The proposed development meets all of the above conditions, and as such, consideration was given to water-bodies on and within 500m of the site using OS maps and aerial images.

Habitat Suitability Index (HSI)

A HSI was applied to some of the water-bodies on and within 500m of the site on 7th January and 17th January 2020. An updated HSI of the water-pond on-site was completed on 19th March 2020, to ascertain if the pond holds water during the active newt season.

The PEA and initial HSI surveys were undertaken by Senior Ecologist Emily Sullivan, who is licenced to survey for great crested newts (2015-17729-CLS-CLS). The updated Habitat Suitability Index (HSI) assessment of the water-body on-site, Pond 1, was conducted on 19th March 2020 by Principal Ecologist Claire Munn, who is licensed to survey for great crested newts (2015-19145-CLS-CLS).

The HSI provides a method for assessing the suitability of a water-body for breeding great crested newts and gives an index between zero and one.

Low scores indicate unsuitable habitat and one indicates optimal habitat (Oldham, *et al.*, 2000). Ten suitability indices are used to calculate the score, each representing a factor considered to affect the probability of great crested newts breeding within a water-body. The final scores were then compared against a categorical scale of habitat suitability for breeding great crested newts, as follows (ARG UK, 2010):

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good

- >0.8 = excellent

Reptiles - PEA

The site was assessed for suitability to support reptiles during the PEA undertaken for the adjacent application site on 7th July 2019 with reference to the *Herpetofauna Workers' Manual* (Gent & Gibson, 2003) and *Froglife Advice Sheet 10 An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation* (Froglife, 1999).

Reptiles – Presence / Likely Absence

The reptile surveys were undertaken by Field Ecologist Toby Munn (surveys 1-3 & 6-7) and Senior Ecologist Emily Sullivan (surveys 4-5) who are both suitability trained and experienced to undertake reptile surveys.

76 felt mats measuring at least 0.5 x 0.5m were placed within suitable reptile habitat within the site on 5th August 2019 (**Appendix 5**). This equates to a density of 81 refuges / ha, which exceeds the minimum density recommended in standard guidance (JNCC, 2003; Froglife, 1999).

In addition, 30 mats (of the same size) were placed within suitable reptile habitat within the adjacent application site at the same time (**Appendix 5**). As both sites are connected, it is considered likely that reptiles present within either site are part of the same population of reptiles. When both sites are considered together the 106 mats equates to a density of 96.4 Refuges / ha, which exceeds the minimum density recommended in standard guidance (JNCC, 2003; Froglife, 1999).

Seven survey visits took place between 29th August and 26th September 2019, in temperatures of 17-22°C, and in dry conditions with no – moderate levels of wind (**Table A3.1**). Reptile activity depends on the weather conditions and therefore the air temperature, wind, rain, and cloud cover were recorded during each survey visit.

The ecologist slowly approached each refuge and searched for reptiles basking on top and sheltering beneath. The habitat between the refuges was also checked for reptiles during each survey visit. The species, life stage, and sex were recorded where possible upon each reptile sighting.

Table A3.1: Reptile survey dates and weather conditions

Survey Visit	Date (2019)	Weather Conditions
Refuges laid	5 th August	N / A
1	29 th August	Dry, 22°C, 25% cloud, 1B.
2	3 rd September	Dry, 20°C, 90% cloud, 0-1B.
3	5 th September	Dry, 18-21°C, 5% cloud, 0-1B.
4	17 th September	Dry, 16-18°C, 5-10% cloud, 1-2B.
5	19 th September	Dry, 18°C, 25% cloud, 2B.
6	24 th September	Dry, 19°C, 90% cloud, 4B.
7	26 th September	Dry, 17-18°C, 50% cloud, 2-3B.

Population Size Class Assessment

The population size class for each reptile species was based on the maximum number of adults seen on a single survey visit using 10 refuges / ha, as shown in **Table 3.2**. This was also used to inform whether the site is a Key Reptile Site (Froglife 1999).

It is considered that more survey effort is unlikely to yield any more significant information about the reptile population size(s). The population assessment has therefore been based on the seven presence / likely absence survey visits, considered appropriate for this site's habitats and location.

Table A3.2: Population assessment scores (Froglife, 1999).

Species	Low Population	Good Population	Exceptional Population
Grass Snake <i>Natrix helvetica</i>	<5	5 – 10	>10
Common Lizard <i>Zootoca vivipara</i>	<5	5 – 20	>20

Badgers

The site and a 30m zone around the site (where accessible), were surveyed for badger evidence such as setts, latrines, pathways, footprints, snuffle holes and badger hairs. Any setts recorded were classified according to published criteria (Harris, *et al.*, 1989).

Breeding Birds

The survey was conducted over four visits. The visit dates and weather conditions for each visit are included within **Table A3.3**.

The survey was conducted using methodology based on the Common Birds Census (CBC) developed by the British Trust for Ornithology (BTO) (Gilbert *et al.*, 1998). CBC involves the mapping of species registrations. This enables the extent of individual species territories to be defined with reasonable accuracy and provides more detailed results than BBS. Standard CBC requires 8-10 visits spread through the season, but it is considered that four visits under optimal weather conditions, across the breeding season and undertaken by an experienced surveyor is sufficient to gain a valid indication of breeding species and territories.

A transect route (**Figure A3.1**) was walked, covering all suitable habitats on-site, and the location and behaviour of each bird was registered on an individual visit map. Five 10-15 minute long listening/watching stops (red circles shown in **Figure A3.1**) were made along the transect route. The transect route was reversed between visits and often walked more than once to maximise the chance of detecting species and observing activity. The resulting visit maps were analysed to enable the numbers and distributions of breeding territories to be determined for each species.

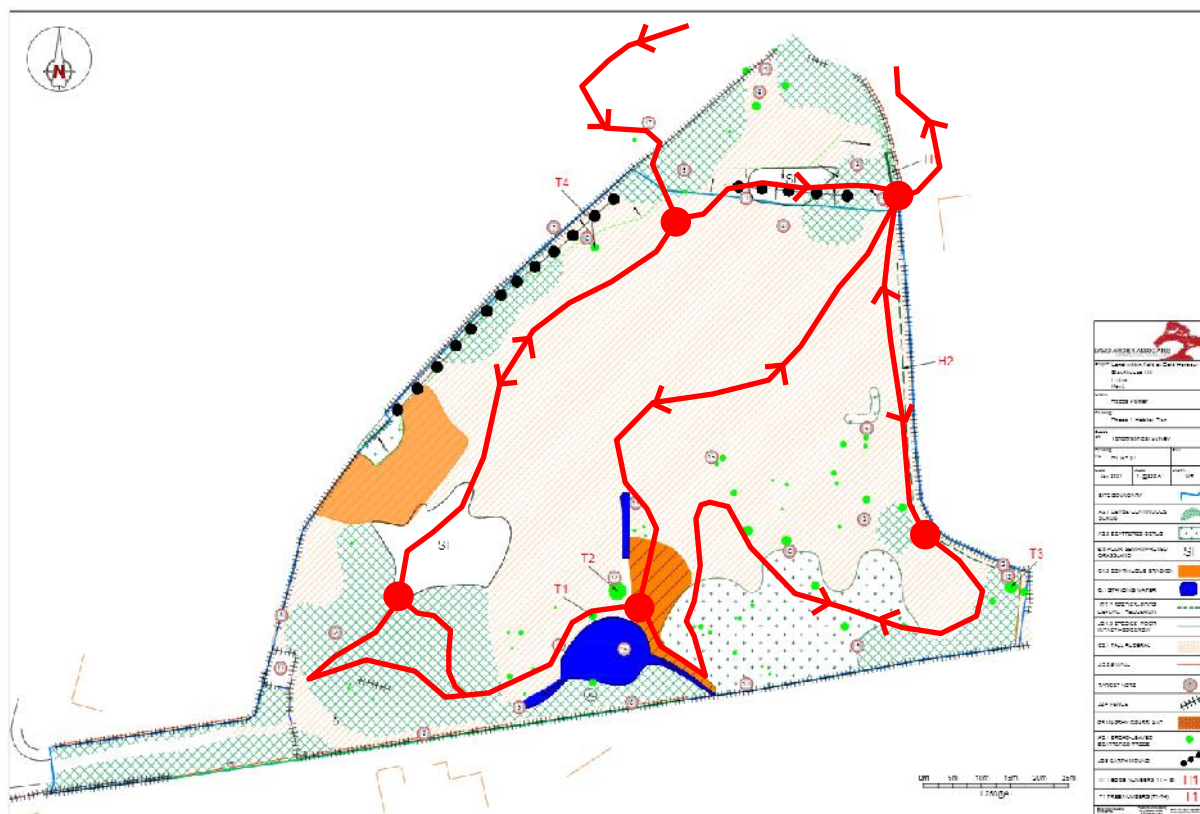
Each visit commenced in the early morning when bird territorial activity is generally greatest for most species and noise and disturbance relatively light.

Table A3.3: Breeding bird survey dates and weather conditions

Survey Visit	Date (2020)	Survey Times	Weather Conditions
1	27 th March	06:50 - 09:00	Dry, 6-9°C, 0% cloud, 2B.

2	21 st April	05:30 - 08:30	Dry, 10-11°C, 0% cloud, 0-3-4B.
3	18 th May	05:30 - 08:30	Dry, 10-14°C, 10% cloud, 1-2B.
4	15 th June	06:00 - 09:00	Dry, 15-17°C, 80% cloud, 0B.

Figure A3.1: Breeding bird survey transect route.



Bats

Potential for the site to support roosting, foraging and commuting bats was assessed in line with the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists Good Practice Guidelines* (Collins, 2016).

Roosting

Trees proposed for removal were surveyed on 27th April 2020, for evidence of bats and Potential Roost Features (PRFs), and then assigned a level of suitability for roosting bats as outlined in **Table A3.4**. PRFs include woodpecker holes, rot holes, hazard beams, cracks and splits, knot holes, cavities, loose bark, and partially detached ivy (Andrews, 2013).

The tree PRA was completed by Claire Munn (WML-CL18- Level 2, bat licence number 2015-12515-CLS-CLS).

A detailed endoscope inspection was completed by Emily Sullivan (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS) on 15th May 2020 of the single feature identified within the sycamore tree located within the G1 grouping on-site.

Table A3.4: Classifying the bat roosting suitability of trees (Collins, 2016).

Negligible roosting suitability	Trees with few, if any, features suitable for roosting.
Low roosting suitability	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate roosting suitability	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat. These trees are unlikely to support a roost of high conservation status.
High roosting suitability	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Foraging and Commuting

The site was assessed for its suitability to support foraging and commuting bats according to **Table A3.5**.

Table A3.5: Classifying the suitability of bat foraging and commuting habitat (Collins, 2016).

Negligible	Negligible habitat features on-site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated or poorly connected to habitat in the surrounding landscape. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in parkland) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that bats may use for commuting such as tree-lines and scrub or linked back gardens. Habitat that connects to the wider landscape that bats may use for foraging such as trees, scrub grassland and water.
High	Continuous, high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, tree-lines and woodland edge. High quality habitat that is well-connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Nocturnal Surveys

The nocturnal bat surveys were undertaken by the following suitability experienced staff:

Dusk/ Emergence Survey 1 (Tree 14)

- Emily Sullivan BSc (Hons) CIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS); and
- Kieron Sullivan (1 year experience).

Dusk/ Emergence Survey 2 (Tree 3 and Tree 13)

- Emily Sullivan BSc (Hons) CIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS);
- Kieron Sullivan (1 year experience); and

- Cali Tardivel (10+ years' experience).

Dawn/ Re-entry Survey (Tree 3, Tree 13 and Tree 14)

- Emily Sullivan BSc (Hons) CIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS);
- Kieron Sullivan (1 year experience);
- Claire Munn BSc (Hons) MSc MCIEEM (WML-CL18- Level 2 bat licence number: 2015-12515-CLS-CLS and 12 years' bat survey experience);
- Toby Munn (7+ years' experience); and
- Cali Tardivel (10+ years' experience).

Dusk/ Emergence Survey 3 (Tree 13 and Tree 14)

- Emily Sullivan BSc (Hons) CIEEM (WML-CL18- Level 2, bat licence number 2015-10287-CLS-CLS);
- Claire Munn BSc (Hons) MSc MCIEEM (WML-CL18- Level 2 bat licence number: 2015-12515-CLS-CLS and 12 years' bat survey experience)
- Toby Munn (7+ years' experience); and
- Kieron Sullivan (1 year experience).

All surveys were completed in line with standard guidance (Collins, 2016). The emergence surveys commenced fifteen minutes before sunset and continued for 1.5 hours after sunset. The re-entry survey commenced 1.5 hours before sunrise and finished 15 minutes after sunrise. Refer to **Table A3.6** for the survey dates and weather conditions.

Surveyors were situated at key points around each tree to give suitable coverage, as shown in **Appendix 8**. The hand-held equipment used included Echo Meter Touch 2 Pro and Elekon BatLoggerM recorders. Surveyors recorded any bat activity observed within the site, including species, flight direction and behaviour. Infra-red cameras with additional infra-red lamps were also used on each tree being surveyed, which was deemed necessary due to the high levels of darkness under the tree canopies. The footage was watched back in full after each survey to ensure no roosting bats had been missed by the survey team.

Bat calls were then analysed using Kaleidoscope and BatExplorer software.

Table A3.6: Times and weather conditions of the emergence / re-entry surveys.

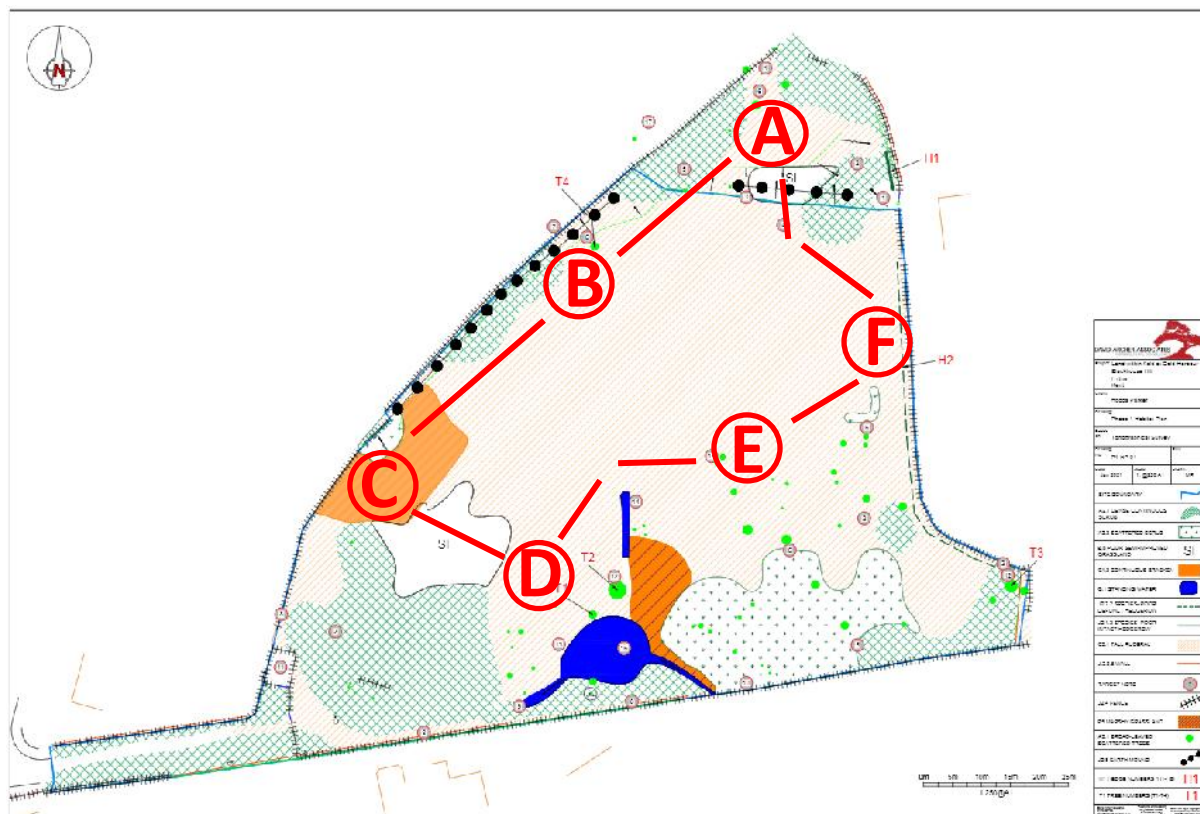
Date (2020)	Tree surveyed	Sunrise (24 hrs)	Sunset (24 hrs)	Survey Duration	Weather Conditions
15 th May	Tree 14	-	20:42	20:27-22:12	Dry, 10°C - 9°C, 0% cloud, 0B.
12 th June	Trees 3, 13 and 14	04:41	-	03:11-04:56	Dry, 15°C - 17°C, 0-2B, 90-100% cloud.
15 th July	Trees 3 and 13	-	21:04	20:49-22:34	21°C - 20°C, 100% cloud, 1-2B, light showers at 22:00, 22:04 – 22:09 and 22:28.
12 th August	Trees 13 and 14	-	20:22	20:07-21:38	Dry, 26°C - 24 °C, 0-2B, 75-100% cloud.

Bat Activity Surveys - Manual Transects

The transect was walked at a slow steady pace covering suitable habitats within the site, incorporating c. 6 equally spaced three-minute listening stops (**Figure A3.2**). The transect started at a different

location during each survey. The dusk activity surveys began at sunset and continued for two hours; and the dawn activity survey began 2 hours before sunrise and finished at sunrise. Surveyors noted any audio and visual observations of bat activity wherever possible.

Table A3.2: Plan showing the transect route (red line) walked during each of the transect activity surveys in May, July and September 2020, with stopping points indicated by the circled letters.



The surveyors used BatloggerM detectors to record bat activity. Sonograms of bat calls were later analysed using BatSound software. **Table A3.7** shows the dates, times and weather conditions for each of the manual transects.

Table A3.7: Bat activity manual transect survey dates, times and weather conditions.

Date (2020)	Sunrise (24 Hrs)	Sunset (24 Hrs)	Survey Duration	Weather Conditions
15 th May	-	20:39	20:39 – 22:39	Dry, 11°C - 9°C, 0% cloud, 0-1B.
15 th July	-	21:04	21:04 – 23:04	21°C - 20°C, 100% cloud, 1-2B, light showers at 22:00, 22:04 – 22:09 and 22:28.
4 th September	06:15	-	04:15 – 06:15	Dry, 15°C, 10-40% cloud, 0B.

Bat Activity Surveys - Automated Surveys

Two automatic Anabat Express bat detectors were deployed for five consecutive nights in spring (April/May), summer (June/July/August) and one was deployed for autumn (September/October) to record bat passes at along the transect. One bat detector (Anabat 2) was placed within the horse chestnut tree (Tree 1) along the north-western border of the site and the second (Anabat 13) was placed within one of the sycamore trees within the collection of scattered sycamore trees within the

more central/south-eastern portion of the site (**Figure A3.3**). Although only one static detector was required for the transect surveys, two were deployed within spring and summer to further support the bat records obtained during the activity surveys. The time the detectors were left to record in July 2020 was extended beyond five days due to sub-optimal weather experienced, in an attempt to counter any limitations experienced by poor weather during the core recording period. AnalookW software was used to analyse sonograms of the bat calls recorded to identify the species and number of bat passes. **Table A3.8** shows the dates, times and weather conditions for each of the automated surveys.

Figure A3.3: Plan showing the location of the two automatic Anabat Express bat detectors deployed on-site.

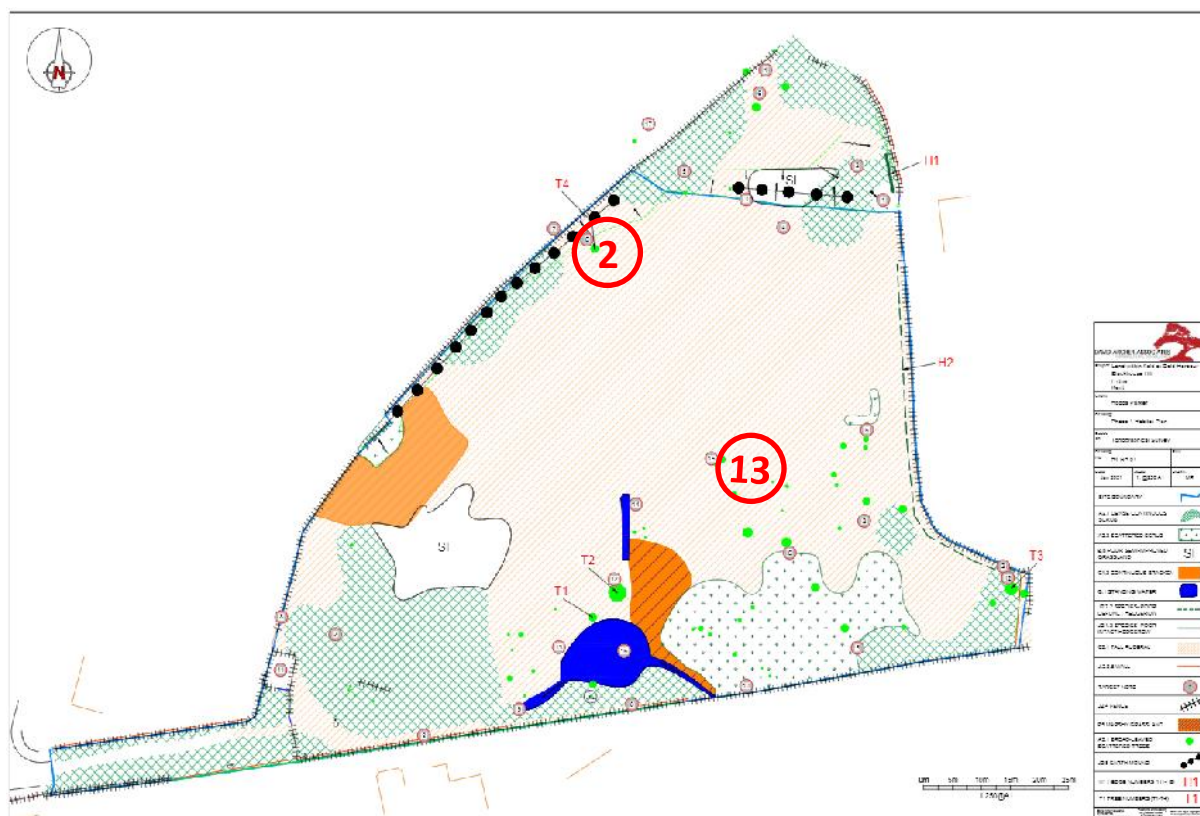


Table A3.8: Bat activity automated survey dates, times and weather conditions.

Date (2020)	Average Weather Conditions Temperature (°C), Wind (km/h) and Rain (mm)
23 rd - 27 th April	8-13°C; 9-17 km/h; 0.0 mm
4 th July – 13 th July	13-18°C; 11 - 30km/h; 1.7 mm
10 th -14 th September	15-19°C; 6-21km/h; 0.0 mm

Evaluation and Impact Assessment

The evaluation of any bat roosts and foraging / commuting habitat is made with reference to *Valuing Bats in Ecological Impact Assessment* (Wray, et al., 2010) and the *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial and Freshwater* (CIEEM, 2016). Refer to **Appendix 12** for the method of evaluation.

Hazel Dormouse

The site was assessed for potential to support the hazel dormouse, in accordance with the *Dormouse Conservation Handbook* (Bright, *et al.*, 2006). Dormice typically use connected woodland, hedgerows and scrub that contain suitable food plants. Aerial images were used to assess the connectivity of any suitable habitat on the site to woodland and hedgerows within the wider area.

Nest Tube Survey

Fifty dormouse nest tubes were placed between 15-20m apart and 1-2m high within the scrub and hedges within and adjacent to the site in April, 2020. Refer to **Figure A3.4** for a plan of the nest tube locations. The tubes were suspended with wire underneath horizontal tree / shrub branches (**Figure A3.5**). The nest tubes were subsequently checked by placing a bung over the open end of the tube and carefully pushing the wooden tray out, to check for hazel dormice and their evidence.

The nest tubes were checked during the day in dry weather conditions, monthly between May and September 2020 (inclusive) to achieve a robust survey effort. Nest tube surveys are based on a points system which varies throughout the year as per the dormouse's life cycle. More points are available for surveys that span May and August / September as dormice are more likely to occupy nest tubes during these months. A survey must achieve at least 20 points for it be considered thorough by Natural England. The points for the Index of Probability in relation to the surveys carried out at this site are shown in **Table A3.9**.

Figure A3.4 Dormouse nest tube locations.



Figure A3.5 Dormouse nest tube (Bright *et al.*, 2006).

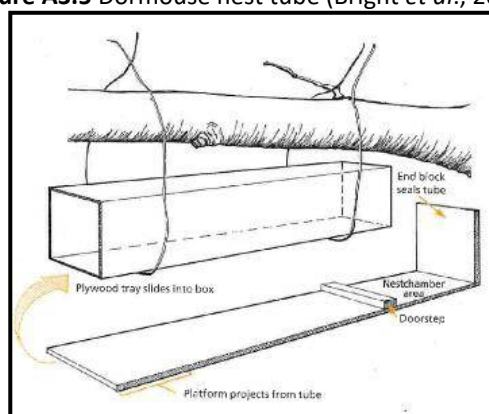


Table A3.9: Index of probability of finding dormice in nest tubes per month (Bright *et al.*, 2006).

Month	Index of Probability	Survey Date (2020)
April	1	21 st tubes set out
May	4	20 th
June	2	23 rd
July	2	23 rd
August	5	17 th
September	7	17 th (tubes collected)
Survey Score:		21

Other Species

The site was assessed for suitability to support other protected and notable fauna species / assemblages including invertebrates and mammals.

Invasive Species

The site was searched for invasive plants such as giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Fallopia japonica*, and rhododendron *Rhododendron ponticum*.

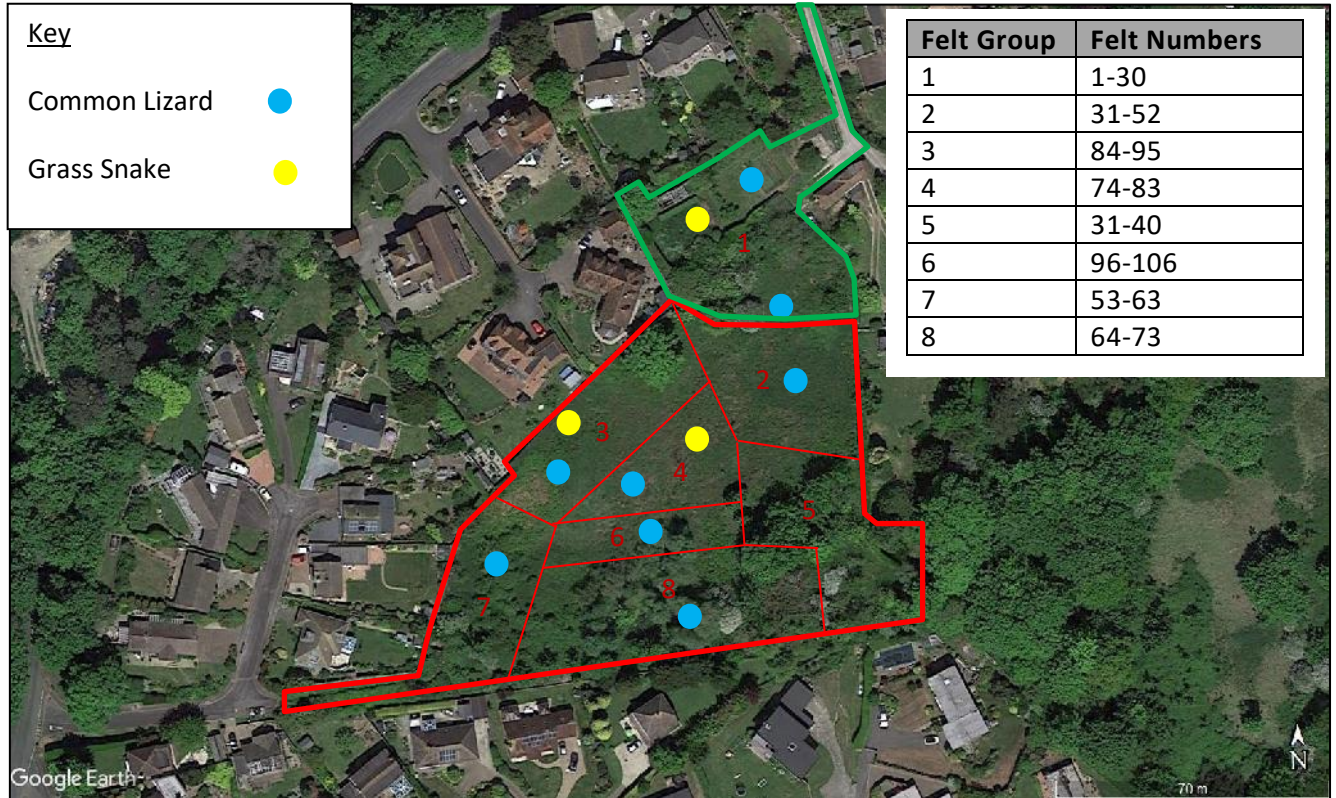
Appendix 4 Habitat Suitability Index Scores

Table A4: Waterbody Habitat Suitability Index Scores

Suitability Index	Pond 1		Pond 2	Pond 3	Pond 4
Date of HSI	07.01.2020	19.03.2020	17.01.2020	07.01.2020	17.01.2020
Field location	1.0	1.0	1.0	1.0	1.0
Pond area	0.6	0.1	0.05	0.05	0.12
Pond drying	0.1	0.1	0.1	0.9	0.9
Water quality	0.33	0.33	0.33	0.33	0.33
Shade	1.0	0.7	1.0	1.0	1.0
Fowl	1.0	1.0	1.0	1.0	1.0
Fish	1.0	1.0	1.0	0.01	0.01
Ponds	1.0	1.0	1.0	1.0	1.0
Terrestrial habitat	0.67	1.0	0.67	0.67	0.67
Macrophytes	0.8	0.8	0.85	0.3	0.35
HSI SCORE:	0.63	0.53	0.50	0.35	0.39
Pond Suitability:	Average	Below average	Below average	Poor	Poor

Appendix 5 Reptile Survey Results

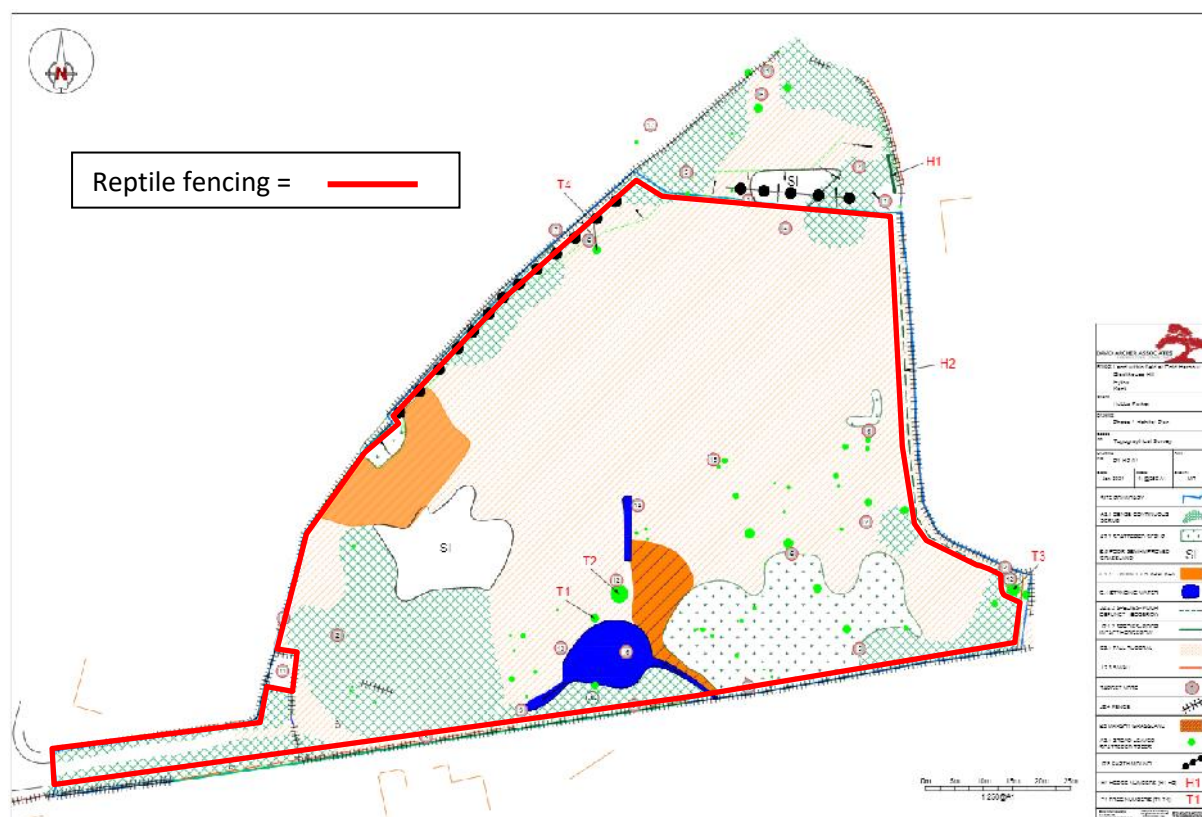
Figure A5.1: Location of reptile refugia and corresponding felt numbers across the application site (red boundary) and adjacent field (green boundary).



Reptile presence within each felt group is indicated by a single blue/yellow dot (for exact numbers, age and sex of reptiles please refer to **Table 4.5**). Felt group 1 is located within the adjacent application site (within green outline) and felt groups 2-8 are situated within the current application site (red outline).

Appendix 6 Reptile Fencing Plan

Figure A6.1: Application site boundary showing proposed location of reptile exclusion fencing



Appendix 7 Reptile Receptor Site

Figure A7.1: Reptile receptor site location in relation to suitable reptile habitat within the proposed application site (Google Earth, 2020). A potential current planning application may be forthcoming for the land in the same ownership to the north of the current application site. As the reptiles across both areas form part of the same population, a receptor site has been identified which could receive reptiles from both sites, subject to planning permission being granted for both applications. The portion of the overall receptor area applicable to this planning application is that shown to the south within the wider, yellow-outlined area. Arrows indicate sloping land.



Photos A7.1-3: Proposed receptor site (photos taken on 12th October 2020)

Photo A7.1: Receptor site looking north



Photo A7.2: Sloping bank adjoining receptor site to the west



Photo A7.3: Sloping bank adjoining receptor site to the east



Figure A7.2: Proposed enhancements to be established prior to reptile translocation with indicative locations, to be confirmed on-site by the ecologist (Google Earth, 2021)



Photos A7.4-9: Example of hibernaculum and log pile construction

Photo A7.4: Topsoil set aside and inert hardcore and larger logs placed at base of hibernaculum



Photo A7.5: Brash and logs being added to hibernaculum



Photo A7.6: Final brash added to hibernaculum



Photo A7.7: Hibernaculum complete with soil and turves



Photo A7.8: Log pile with larger logs at core prior to fresh brash being added



Photo A7.9: Fresh brash added to log pile to make it blend in and be less prone to disturbance



Appendix 8 Bat Roost Survey Results

Table A8.1: Bat emergence / re-entry tree survey results.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
Emergence Survey 1: 15/05/2020 (Tree 14)	
20:52	Soprano pipistrelle HNS; heard to the east of Tree 14.
20:53 & 20:54	Noctule HNS; heard to the east of Tree 14.
20:53	Pipistrelle sp. SNH; seen flying north-west into the centre of the site, passing the northern aspect of Tree 13, travelling from the southern boundary vegetation and towards the tall ruderal vegetation.
20:54	Noctule HNS west and east of Tree 14.
21:05	Pipistrelle sp. (calling at 50kHz) flew from east to west past the southern aspect of Tree 14 and then flew south over the pond towards the boundary vegetation.
21:06 & 21:07	Pipistrelle sp. (calling at 50kHz) HNS; head to the east and west of Tree 14.
21:14	Myotis sp. HNS; heard to the west of Tree 14.
21:18	Myotis sp. HNS; heard to the west of Tree 14.
21:20	Common pipistrelle HNS; heard to the west of Tree 14.
21:20	Pipistrelle sp. (calling at 50kHz) HNS: head to the east of Tree 14.
21:31 & 21:32	Noctule HNS; heard to the east of Tree 14.
21:34 & 21:35	Pipistrelle sp. (calling at 50kHz) HNS: head to the east and west of Tree 14.
21:38 & 21:39	Noctule HNS; heard to the east and west of Tree 14.
21:57	Common pipistrelle HNS; heard to the east and west of Tree 14.
21:58	Common pipistrelle HNS; heard to the east and west of Tree 14.
21:59	Common pipistrelle HNS; heard to the west of Tree 14.
22:00	Bat SNH; seen flying north over the pond towards the field within the centre of the site.
Re-entry Survey 1: 12/06/2020 (Tree 3, Tree 13, Tree 14)	
03:11	Common pipistrelle HNS; heard to the east of Tree 3.
03:27	Long-eared bat (likely brown long-eared) HNS; Heard passing briefly close to the east of Tree 3. No echolocation call heard on detector.
03:28	Brown long eared HNS (likely brown long-eared); heard to the east of Tree 13.
03:47	Noctule HNS; heard to the east and west of Tree 14.
03:48	Noctule HNS; heard to the east of Tree 13.
03:49	Soprano pipistrelle HNS; heard to the east of Tree 3.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
03:49	Common pipistrelle HNS; heard to the east of Tree 13 and Tree 14.
03:50	Common pipistrelle flew over the pond and past southern aspect of Tree 14, travelling from west to east. The bat was seen flying high through the tree tops as it passed.
03:52	Common pipistrelle HNS; heard to the east of Tree 13 and east and west of Tree 14.
03:53	Common pipistrelle HNS; east of Tree 14 and Tree 13.
03:55 & 03:56	Common pipistrelle HNS; heard to the east of Tree 13.
03:57	Common pipistrelle HNS; heard east of Tree 14 and heard foraging close to the surveyor east of Tree 13.
03:58	Common pipistrelle HNS; heard to the east of Tree 13.
03:59	Common pipistrelle HNS; east of Tree 13 and Tree 14.
04:00	Common pipistrelle flew over the pond to the west of Tree 14, travelling north towards the centre of the field. Also heard to east of Tree 13, likely same bat.
04:01	Common pipistrelle foraging over the pond to the west of Tree 14 and left flying in a westerly direction.
04:02 & 04:03	Soprano pipistrelle HNS; heard to the east of Tree 3.
04:02 – 04:04	Common pipistrelle along the southern border of the site, the pond on-site and the scattered trees within neighbouring gardens to the south of the site. Bat was seen moving east and west along the southern border and over the pond.
04:04	Soprano pipistrelle flew over the pond to the west of Tree 14, travelling west.
04:04	Common pipistrelle HNS; heard to the east of Tree 3.
04:05	Soprano pipistrelle HNS; heard to the east of Tree 13.
04:07 & 04:08	Common pipistrelle HNS; heard to the east of Tree 3.
Emergence Survey 2: 15/07/2020 (Tree 2, Tree 3, Tree 13)	
20:58 & 20:59	Noctule HNS; heard to the east of Tree 13.
21:06	Common pipistrelle HNS; heard to the east of Tree 13.
21:10	Soprano pipistrelle HNS; heard east of Tree 13.
21:11	Two soprano pipistrelles foraging north east of Tree 13.
21:12	Soprano pipistrelle HNS east of Tree 13.
21:13	Common pipistrelle and soprano pipistrelle HNS; heard to the east of Tree 13.
21:14	Three bats including, common pipistrelle and soprano pipistrelle, foraging to the east of Tree 13.
21:14	Common pipistrelle HNS; heard to the east of Tree 3.
21:15	Common pipistrelle flew west past Tree 13, passing through the boundary vegetation on-site.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
21:15 and 21:16	Soprano pipistrelle HNS; heard to the east of Tree 13.
21:17	Soprano pipistrelle HNS; heard to the east of Tree 13.
21:19 & 21:22	Common pipistrelle HNS; heard to the east of Tree 13.
21:24	Common pipistrelle foraging east of Tree 13.
21:25	Common pipistrelle flew east past the northern aspect of Tree 13, moving through the southern boundary vegetation.
21:27	Soprano pipistrelle HNS; heard to the east of Tree 3.
21:28 & 21:29	Soprano pipistrelle HNS; heard to the east of Tree 13.
21:35	Common pipistrelle HNS; heard to the east of Tree 13.
21:39	Common pipistrelle HNS; heard to the east of Tree 13.
21:40	Common pipistrelle foraging east of Tree 13.
21:42	Pipistrelle sp. (calling at c.50kHz) & Noctule HNS; heard to the east of Tree 13.
21:43	Noctule HNS; heard to the east of tree 13.
21:44	Common pipistrelle HNS; heard foraging east of Tree 13.
21:45	Common pipistrelle HNS; heard foraging east of Tree 13.
21:45	Soprano pipistrelle HNS; heard foraging east of Tree 13.
21:49	Common pipistrelle HNS; heard foraging east of Tree 13.
21:50	Myotis bat HNS; heard to the east of Tree 13.
21:51	Common pipistrelle heard foraging east of Tree 13.
21:53 & 21:57 & 21:58	Noctule HNS; heard east of Tree 13.
22:00	Common pipistrelle HNS; heard to the east of Tree 13.
22:12	Noctule HNS; heard to the east of Tree 13 and Tree 3.
22:20	Serotine HNS; heard to the east of Tree 13.
22:22 & 22:23	Noctule HNS; heard to the east of Tree 13.
22:24	Bat (likely pipistrelle sp.) SNH; seen flying through the scattered trees within the south-east corner of the site towards the golf course.
22:27	Common pipistrelle HNS; heard to the east of Tree 13.
Emergence Survey 3: 12/08/2020 (Tree 13 and Tree 14)	
20:40	Common pipistrelle commuting through the southern boundary trees, travelling north-east, past Tree 14 and away in a westly direction over the pond.
20:43	Noctule HNS; heard commuting to the west of Tree 14 and east of Tree 13.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
20:44	Common pipistrelle HNS; heard to the east of Tree 14.
20:45	Common pipistrelle HNS; One – two bats heard foraging to the east of Tree 13.
20:46	Soprano pipistrelle commuting through the southern boundary trees, travelling north-east, past Tree 14 and away in a westly direction over the pond. Likely same bat observed foraging around the southern boundary trees and small clearing to the east of Tree 13.
20:47	Two common pipistrelle bats foraging over the pond and within the southern boundary trees to the east of Tree 13.
20:48	Common pipistrelle HNS; heard to the east of Tree 13.
20:48	Soprano pipistrelle bat foraging over the pond.
20:49	Common pipistrelle foraging over the pond within the southern border of the site.
20:49 – 20:50	Common pipistrelle and soprano pipistrelle bat foraging around the southern boundary trees and small clearing to the east of Tree 13.
20:52	Bat (likely pipistrelle sp.) SNH; commuting through the southern boundary vegetation, travelling east to west.
20:53	Myotis HNS; single pass, foraging, heard to the east of Tree 13.
20:53	Common pipistrelle foraging over the pond within the southern border of the site.
20:55	Common pipistrelle commuting over the pond, moving south to north, towards the central area of the site.
21:01 and 21:02	Common pipistrelle HNS; single pass, foraging, heard to the east of Tree 13.
21:06	Serotine or Leisler's HNS; brief pass heard to the east of Tree 13, likely present within central area of the site.
21:06	Common pipistrelle HNS; single pass, foraging, heard to the east of Tree 13.
21:12	Brown long-eared HNS; heard briefly commuting past to the east of Tree 13.
21:14	Likely brown long-eared SNH; seen flying west to east over the southern boundary tree canopy.
21:16	Brown long-eared HNS; heard briefly to the east of Tree 13.
21:22	Common pipistrelle HNS; brief pass heard to the west of Tree 14.
21:23	Brown long-eared HNS; heard briefly to the east of Tree 13 and west of Tree 14.
21:28	Brown long-eared HNS; heard briefly to the east of Tree 13.
21:29	Soprano pipistrelle HNS; heard to the east of Tree 13, likely distant pass.

Figure A8.3: Bat surveyor map for 15th July 2020 (adapted from the Phase 1 Plan, 2021).

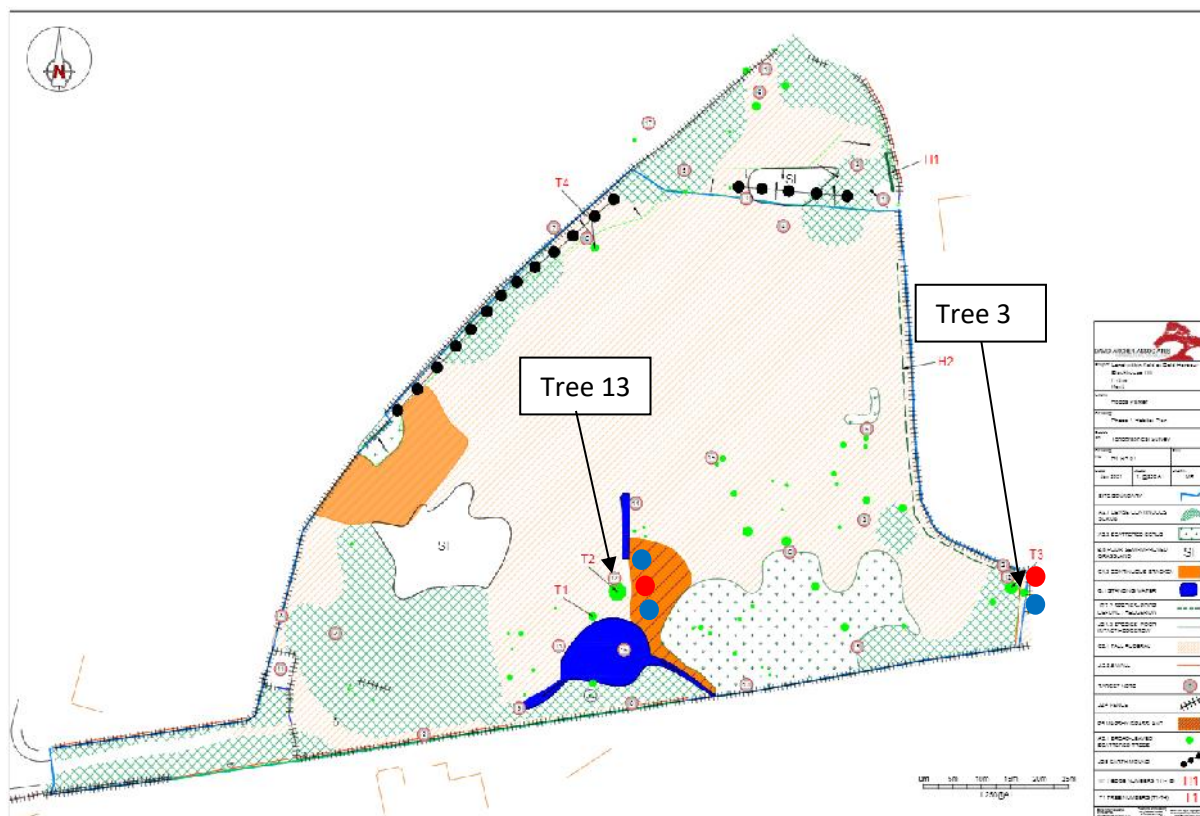
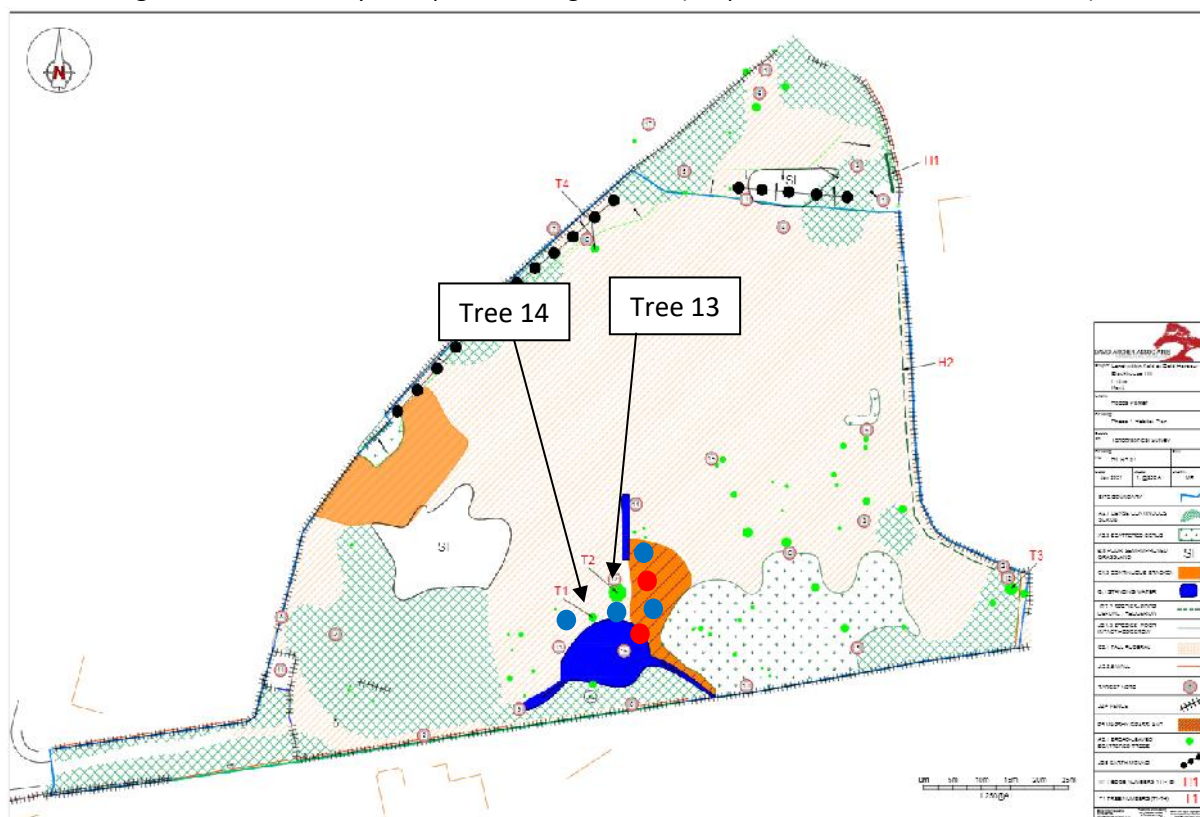


Figure A8.4: Bat surveyor map for 13th August 2020 (adapted from the Phase 1 Plan, 2021).



Appendix 9 Bat Activity Survey Results

Table A9.1: Bat Transect Results from 15th May 2020

Recording	Date and Time	Species Text	Notes
31640022	15/05/2020 20:52	Pipistrellus pygmaeus	D. Bat flew south-west along southern boundary tree line.
31640024	15/05/2020 20:52	Nyctalus noctula	D. Passing. HNS.
31640030	15/05/2020 20:55	Pipistrellus pipistrellus	E. Bat flew from the northern portion of the site, over the tall ruderal within the central area of the site and through the scattered trees within the southern portion of the site. The same bat then flew through the site, travelling north, briefly heard foraging.
31640037	15/05/2020 21:07	Pipistrellus pygmaeus	A – B. Passing. HNS.
31640055	15/05/2020 21:20	Pipistrellus pipistrellus	E. Foraging within and around the scattered sycamore trees within the south-eastern portion of the site, then flew north towards the single horse chestnut tree along the northern border of the site.
31640056	15/05/2020 21:20	Pipistrellus pipistrellus	E. Foraging within and around the scattered sycamore trees within the south-eastern portion of the site, then flew north towards the single horse chestnut tree along the northern border of the site.
31640071	15/05/2020 21:31	Nyctalus noctula	A. Single pass. HNS.
31640072	15/05/2020 21:31	Nyctalus noctula	A. Single pass. HNS.
31640076	15/05/2020 21:36	Eptesicus serotinus	B. Single pass, brief and faint. HNS.
31640079	15/05/2020 21:38	Nyctalus noctula	C. Single pass, brief and faint. HNS.
31640080	15/05/2020 21:38	Nyctalus noctula	C. Single pass, brief and faint. HNS.
31640081	15/05/2020 21:38	Nyctalus noctula	C. Single pass, brief and faint. HNS.
31640082	15/05/2020 21:38	Nyctalus noctula	C. Single pass, brief and faint. HNS.
31640083	15/05/2020 21:38	Myotis spec.	C. Pass, brief. HNS.
31640101	15/05/2020 21:56	Eptesicus serotinus	A. HNS.
31640102	15/05/2020 21:56	Eptesicus serotinus	A. HNS.
31640103	15/05/2020 21:56	Eptesicus serotinus	A. HNS.
31640104	15/05/2020 21:56	Eptesicus serotinus	A. HNS.
31640105	15/05/2020 21:56	Eptesicus serotinus	A. HNS.

31640106	15/05/2020 21:56	Eptesicus serotinus	A. HNS.
31640109	15/05/2020 21:58	Pipistrellus pipistrellus	B. Single pass. HNS.
31640124	15/05/2020 22:13	Nyctalus noctula	E. HNS.
31640143	15/05/2020 22:32	Pipistrellus pipistrellus	D. Faint call heard. HNS.

Table A9.2: Bat Transect Results from 15th July 2020

Recording	Date and Time	Species	Notes
31650022	15/07/2020 21:13	Pipistrellus pipistrellus	A. HNS. Distant pass.
31650024	15/07/2020 21:14	Pipistrellus pygmaeus	A. Foraging on N boundary by bamboo and veg garden.
31650025	15/07/2020 21:14	Pipistrellus pygmaeus	A. Foraging on N boundary by bamboo and veg garden
31650026	15/07/2020 21:14	Pipistrellus pygmaeus	A. Foraging on N boundary by bamboo and veg garden
31650027	15/07/2020 21:14	Pipistrellus pygmaeus	A. Foraging on N boundary by bamboo and veg garden
31650029	15/07/2020 21:14	Pipistrellus pygmaeus	A. Foraging on N boundary by bamboo and veg garden
31650031	15/07/2020 21:15	Pipistrellus pygmaeus	A. Foraging on N boundary by bamboo and veg garden
31650036_1	15/07/2020 21:15	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650038	15/07/2020 21:16	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650039	15/07/2020 21:16	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650040	15/07/2020 21:16	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650041	15/07/2020 21:16	Pipistrellus pygmaeus	B. Foraging around horse chestnut tree & bamboo on N boundary.
31650042	15/07/2020 21:17	Pipistrellus pygmaeus	B. Foraging around horse chestnut tree & bamboo on N boundary
31650044	15/07/2020 21:17	Pipistrellus pipistrellus	B. Foraging pass E-W past horse chestnut tree.
31650045	15/07/2020 21:18	Pipistrellus pipistrellus	B. Foraging pass E-W past horse chestnut tree.
31650049	15/07/2020 21:20	Pipistrellus pygmaeus	C. Foraging around horse chestnut tree & bamboo on N boundary
31650050	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.
31650051	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.
31650052	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.

31650053	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.
31650054	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.
31650055	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.
31650057	15/07/2020 21:21	Pipistrellus pygmaeus	C. Foraging in open above field.
31650058	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650059	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650060_2	15/07/2020 21:22	Pipistrellus pipistrellus	C. Foraging in open above field.
31650060_1	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650061	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650062_1	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650062_2	15/07/2020 21:22	Pipistrellus pipistrellus	C. Foraging in open above field.
31650063	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650064	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650065	15/07/2020 21:22	Pipistrellus pygmaeus	C. Foraging in open above field.
31650066	15/07/2020 21:23	Pipistrellus pipistrellus	C. Foraging in open above field.
31650067	15/07/2020 21:23	Pipistrellus pygmaeus	C. Foraging in open above field.
31650069	15/07/2020 21:23	Pipistrellus pygmaeus	C. Foraging in open above field.
31650070_1	15/07/2020 21:23	Pipistrellus pygmaeus	C. Foraging in open above field.
31650071_1	15/07/2020 21:23	Pipistrellus pygmaeus	C. Foraging in open above field.
31650072_1	15/07/2020 21:23	Pipistrellus pygmaeus	C. Foraging in open above field.
31650073	15/07/2020 21:23	Pipistrellus pygmaeus	C. Foraging in open above field.
31650074_1	15/07/2020 21:24	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650074_2	15/07/2020 21:24	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650075_1	15/07/2020 21:24	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650075_2	15/07/2020 21:24	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650076	15/07/2020 21:24	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.

31650077	15/07/2020 21:24	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650078	15/07/2020 21:24	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650079	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650080	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650081	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650082	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650083	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650084	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650085	15/07/2020 21:25	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650086	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650087	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650088	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650089	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650090	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650091	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650092	15/07/2020 21:26	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650093_1	15/07/2020 21:26	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650093_2	15/07/2020 21:26	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650094	15/07/2020 21:27	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650095	15/07/2020 21:27	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650095	15/07/2020 21:27	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650097_1	15/07/2020 21:27	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650097_2	15/07/2020 21:27	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650099_1	15/07/2020 21:27	Pipistrellus pipistrellus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650099_2	15/07/2020 21:27	Pipistrellus pygmaeus	D. Foraging in open above field - one common pip and two soprano pips at same time.
31650100	15/07/2020 21:28	Pipistrellus pygmaeus	D-E. Foraging in open above field - one common pip and two soprano pips at same time.

31650101	15/07/2020 21:28	Pipistrellus pygmaeus	D-E. Foraging in open above field - one common pip and two soprano pips at same time.
31650102	15/07/2020 21:28	Pipistrellus pygmaeus	D-E. Foraging in open above field - one common pip and two soprano pips at same time.
31650103	15/07/2020 21:28	Pipistrellus pygmaeus	D-E. Foraging in open above field - one common pip and two soprano pips at same time.
31650106_1	15/07/2020 21:30	Pipistrellus pipistrellus	D-E. Foraging in open above field - one common pip and two soprano pips at same time.
31650106_2	15/07/2020 21:30	Pipistrellus pygmaeus	D-E. Foraging in open above field - one common pip and two soprano pips at same time.
31650107	15/07/2020 21:30	Pipistrellus pipistrellus	E. Foraging along tree line on S boundary.
31650111	15/07/2020 21:32	Pipistrellus pygmaeus	E-F. Foraging along tree line on S boundary.
31650112	15/07/2020 21:32	Pipistrellus pygmaeus	E-F. Foraging along tree line on S boundary.
31650113	15/07/2020 21:32	Pipistrellus pygmaeus	E-F. Foraging along tree line on S boundary.
31650114	15/07/2020 21:33	Pipistrellus pygmaeus	F. Foraging in NE corner of site.
31650115	15/07/2020 21:33	Pipistrellus pygmaeus	F. Foraging in NE corner of site.
31650116	15/07/2020 21:33	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field.
31650117	15/07/2020 21:33	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650118	15/07/2020 21:33	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650119	15/07/2020 21:34	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650120	15/07/2020 21:34	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650121	15/07/2020 21:34	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650122	15/07/2020 21:34	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650123	15/07/2020 21:34	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650124_1	15/07/2020 21:35	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650125	15/07/2020 21:35	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650126	15/07/2020 21:35	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650127	15/07/2020 21:35	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650128	15/07/2020 21:35	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650129	15/07/2020 21:35	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650130	15/07/2020 21:36	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field

31650131	15/07/2020 21:36	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650134	15/07/2020 21:36	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650136_1	15/07/2020 21:37	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650138	15/07/2020 21:37	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650139	15/07/2020 21:37	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650140	15/07/2020 21:37	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650141	15/07/2020 21:37	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650142	15/07/2020 21:38	Pipistrellus pipistrellus	F. Foraging in E of site, along hedge and in open over field
31650143	15/07/2020 21:38	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650144	15/07/2020 21:38	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650145	15/07/2020 21:38	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650146	15/07/2020 21:39	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650147	15/07/2020 21:39	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650148	15/07/2020 21:39	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650149_2	15/07/2020 21:39	Pipistrellus pygmaeus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650149_1	15/07/2020 21:39	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650150_1	15/07/2020 21:40	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650150_2	15/07/2020 21:40	Pipistrellus pygmaeus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.

31650151	15/07/2020 21:40	Pipistrellus pygmaeus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650151_2	15/07/2020 21:40	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650152	15/07/2020 21:40	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650153	15/07/2020 21:40	Pipistrellus pipistrellus	A. 3 pips (at least 1 common and 1 soprano) foraging near N boundary over damp area, ruderals and trees.
31650154	15/07/2020 21:41	Pipistrellus pygmaeus	B. Foraging in open and along tree line to N.
31650155	15/07/2020 21:41	Pipistrellus pygmaeus	B. Foraging in open and along tree line to N.
31650158	15/07/2020 21:41	Pipistrellus pipistrellus	B. Foraging in open over field.
31650160	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650161	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650162_2	15/07/2020 21:42	Pipistrellus pygmaeus	B. Foraging in open and tree line to N.
31650162_1	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650163	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650164	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650165	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650166	15/07/2020 21:42	Pipistrellus pipistrellus	B. Foraging in open over field.
31650167	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650168	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650169	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650170	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650171	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650172	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650173	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650174	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.

31650175	15/07/2020 21:43	Pipistrellus pipistrellus	B. Foraging in open over field.
31650176	15/07/2020 21:43	Pipistrellus pygmaeus	B. Foraging in open and along tree line to N.
31650177	15/07/2020 21:44	Pipistrellus pipistrellus	B. Foraging in open over field.
31650178	15/07/2020 21:44	Pipistrellus pipistrellus	B. Foraging in open over field.
31650179	15/07/2020 21:44	Pipistrellus pygmaeus	B. Foraging in open and along tree line to N.
31650180	15/07/2020 21:44	Pipistrellus pygmaeus	B. Foraging in open and along tree line to N.
31650182_1	15/07/2020 21:44	Nyctalus noctule	B-C. Passing. HNS.
31650182_2	15/07/2020 21:44	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650183	15/07/2020 21:45	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650184	15/07/2020 21:45	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650185	15/07/2020 21:45	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650186	15/07/2020 21:45	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650187	15/07/2020 21:45	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650189	15/07/2020 21:45	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650190	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650191	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650192	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650193	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650194	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650195	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650196	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650197	15/07/2020 21:46	Pipistrellus pipistrellus	B-C. Foraging in open above field.
31650198_2	15/07/2020 21:46	Pipistrellus pipistrellus	C. Foraging in open above field.
31650198	15/07/2020 21:46	Pipistrellus pygmaeus	C. Foraging in open above field.
31650199	15/07/2020 21:46	Pipistrellus pipistrellus	C. Foraging in open above field.
31650200	15/07/2020 21:46	Pipistrellus pipistrellus	C. Foraging in open above field.

31650202	15/07/2020 21:47	Pipistrellus pipistrellus	C. Foraging in open above field.
31650204	15/07/2020 21:47	Pipistrellus pipistrellus	C. Foraging in open above field.
31650205_2	15/07/2020 21:47	Pipistrellus pygmaeus	C. Foraging in open above field.
31650205_1	15/07/2020 21:47	Pipistrellus pipistrellus	C. Foraging in open above field.
31650206_1	15/07/2020 21:47	Pipistrellus pipistrellus	C. Foraging in open above field.
31650206_2	15/07/2020 21:47	Pipistrellus pygmaeus	C. Foraging in open above field.
31650207	15/07/2020 21:47	Pipistrellus pipistrellus	C. Foraging in open above field.
31650208	15/07/2020 21:48	Pipistrellus pipistrellus	C. Foraging in open above field.
31650209	15/07/2020 21:48	Pipistrellus pipistrellus	C. Foraging in open above field.
31650210	15/07/2020 21:49	Pipistrellus pipistrellus	C. Foraging in open above field.
31650211	15/07/2020 21:49	Pipistrellus pipistrellus	C. Foraging in open above field.
31650212	15/07/2020 21:49	Pipistrellus pygmaeus	C. Foraging in open above field.
31650213	15/07/2020 21:49	Pipistrellus pipistrellus	C. Foraging in open above field.
31650214	15/07/2020 21:49	Pipistrellus pipistrellus	C. Foraging in open above field.
31650215	15/07/2020 21:50	Pipistrellus pipistrellus	C. Foraging in open above field.
31650216	15/07/2020 21:50	Pipistrellus pipistrellus	C. Foraging in open above field.
31650217	15/07/2020 21:50	Pipistrellus pygmaeus	C. Foraging in open above field.
31650218	15/07/2020 21:50	Pipistrellus pygmaeus	C. Foraging in open above field.
31650219_2	15/07/2020 21:51	Pipistrellus pipistrellus	D. Foraging in open above field.
31650219_1	15/07/2020 21:51	Pipistrellus pygmaeus	D. Foraging in open above field.
31650220	15/07/2020 21:51	Pipistrellus pygmaeus	D. Foraging in open above field.
31650221_1	15/07/2020 21:51	Pipistrellus pipistrellus	D. Foraging in open above field.
31650221_2	15/07/2020 21:51	Pipistrellus pygmaeus	D. Foraging in open above field.
31650222	15/07/2020 21:51	Pipistrellus pygmaeus	D. Foraging in open above field.
31650223_2	15/07/2020 21:51	Pipistrellus pygmaeus	D. Foraging in open above field.
31650223_1	15/07/2020 21:51	Pipistrellus pipistrellus	D. Foraging in open above field.

31650224	15/07/2020 21:51	Pipistrellus pipistrellus	D. Foraging in open above field.
31650225	15/07/2020 21:51	Pipistrellus pipistrellus	D. Foraging in open above field.
31650226	15/07/2020 21:52	Pipistrellus pipistrellus	D. Foraging in open above field.
31650227	15/07/2020 21:52	Pipistrellus pipistrellus	D. Foraging in open above field.
31650228	15/07/2020 21:52	Pipistrellus pipistrellus	D. Foraging in open above field.
31650229	15/07/2020 21:52	Pipistrellus pipistrellus	D. Foraging in open above field.
31650230	15/07/2020 21:52	Pipistrellus pipistrellus	D. Foraging in open above field.
31650231	15/07/2020 21:52	Pipistrellus pipistrellus	D. Foraging in open above field.
31650232	15/07/2020 21:53	Pipistrellus pipistrellus	D. Foraging in open above field.
31650233	15/07/2020 21:53	Pipistrellus pipistrellus	D. Foraging in open above field.
31650234	15/07/2020 21:54	Pipistrellus pipistrellus	D. Foraging in open above field.
31650235	15/07/2020 21:54	Pipistrellus pipistrellus	D. Foraging in open above field.
31650236	15/07/2020 21:54	Pipistrellus pipistrellus	D. Foraging in open above field.
31650237	15/07/2020 21:54	Pipistrellus pipistrellus	D. Foraging in open above field.
31650238	15/07/2020 21:54	Pipistrellus pipistrellus	D. Foraging in open above field.
31650241	15/07/2020 21:55	Plecotus auritus	E. Brief pass. HNS.
31650244	15/07/2020 21:59	Nyctalus noctule	F. Passing. HNS.
31650257	15/07/2020 22:10	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650259	15/07/2020 22:10	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650260	15/07/2020 22:10	Pipistrellus pipistrellus	B. Foraging nearby. HNS.
31650265	15/07/2020 22:18	Myotis spec.	C-D. Passing. HNS.
31650283	15/07/2020 22:25	Nyctalus noctula	E. Passing. HNS.

Table A9.3: Bat Transect Results from 4th September 2020

Recording	Timestamp	Species Text	Notes
31650001	4/9/2020 4:20	Plecotus auritus	A. HNS
31650021	4/9/2020 4:26	Pipistrellus pipistrellus	B. Brief pass and single social call.
31650022	4/9/2020 4:26	Pipistrellus pipistrellus	B. Brief social call
31650052	4/9/2020 4:49	Pipistrellus pygmaeus	A-B. Passing. HNS.
31650055	4/9/2020 4:51	Pipistrellus pygmaeus	B. Passing, distant, plus social calls. HNS.
31650097	4/9/2020 5:13	Plecotus auritus	A. Passing. HNS.
31650103	4/9/2020 5:17	Pipistrellus pipistrellus	A-B. Two bats. Foraging around trees on NE site boundary
31650122	4/9/2020 5:24	Pipistrellus pipistrellus	C. Foraging pass. HNS.
31650125	4/9/2020 5:25	Pipistrellus pipistrellus	C. Foraging pass. HNS.
31650130	4/9/2020 5:28	Pipistrellus pipistrellus	C-D. Commuting nearby. HNS.
31650132	4/9/2020 5:29	Pipistrellus pipistrellus	D. Commuting nearby. HNS.
31650133	4/9/2020 5:29	Pipistrellus pipistrellus	D. Commuting nearby. HNS.
31650134	4/9/2020 5:29	Pipistrellus pipistrellus	D. Commuting nearby. HNS.
31650137	4/9/2020 5:31	Pipistrellus pygmaeus	D. Foraging around scrub to W and then tree line to S, near pond.
31650138	4/9/2020 5:31	Pipistrellus pygmaeus	D. Foraging around scrub to W and then tree line to S, near pond.
31650140	4/9/2020 5:32	Pipistrellus pygmaeus	D. Foraging around scrub to W and then tree line to S, near pond.
31650160	4/9/2020 5:38	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field.
31650161	4/9/2020 5:38	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field
31650162	4/9/2020 5:38	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field
31650164	4/9/2020 5:38	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field
31650165	4/9/2020 5:38	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field
31650166	4/9/2020 5:39	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field
31650167	4/9/2020 5:39	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field
31650168	4/9/2020 5:39	Pipistrellus pipistrellus	E-F. Two bats foraging together along hedge on E boundary and over top (E) part of field

N/A	4/9/2020 5:42	Pipistrellus sp.	F. Non-echolocating pipistrelle flying low S-N over field.
31650171	4/9/2020 5:43	Pipistrellus pipistrellus	F. Passing nearby. HNS.
31650173	4/9/2020 5:44	Pipistrellus pipistrellus	F-A. Foraging near NE corner of site.
31650174	4/9/2020 5:44	Pipistrellus pipistrellus	F-A. Foraging near NE corner of site.
31650175	4/9/2020 5:44	Pipistrellus pipistrellus	F-A. Foraging near NE corner of site.
31650176	4/9/2020 5:44	Pipistrellus pipistrellus	F-A. Foraging near NE corner of site.
31650177	4/9/2020 5:44	Pipistrellus pipistrellus	F-A. Foraging near NE corner of site.
31650178	4/9/2020 5:44	Pipistrellus pipistrellus	F-A. Foraging near NE corner of site.
31650180	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary.
31650183	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650184	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650185	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650186	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650187	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650188	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650189	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650190	4/9/2020 5:45	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650191	4/9/2020 5:46	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650192	4/9/2020 5:46	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650193	4/9/2020 5:46	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650194	4/9/2020 5:46	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650195	4/9/2020 5:46	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650196	4/9/2020 5:46	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650197	4/9/2020 5:47	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650198	4/9/2020 5:47	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650199	4/9/2020 5:47	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary

31650200	4/9/2020 5:47	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650201	4/9/2020 5:47	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650202	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650203	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650204	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650205	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650206	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650207	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650208	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
31650209	4/9/2020 5:48	Pipistrellus pipistrellus	A. Foraging above ruderals & damp area to N of bank on N boundary
N/A	4/9/2020 5:56	Pipistrellus sp.	C. Non-echolocating pipistrelle seen flying above S tree canopy in W direction, over scrub, then NW off site.

Appendix 10 Static Bat Detector Results

Key to abbreviations in tables: Myotis = Myotis species, NathPip = Nathusius' pipistrelle, Pip = unidentified Myotis species, Pip45 = common pipistrelle, Pip55 = soprano pipistrelle, U/k = unknown bat species, Sero = serotine, Pipsoc = pipistrelle social call, Noc = noctule, BLE = brown long-eared.

Table A10.1: April 2020 – Static Detector 2

Date	Species/min							Total species /min
	Myotis	NathPip	Pip	Pip45	Pip55	U/k bat	Sero	
23/04/2020	1	3	1	3			2	10
24/04/2020	1	1		3			1	6
25/04/2020		1				4		5
26/04/2020	2	1			1		1	5
27/04/2020		1					2	3
Total species /min	4	7	1	6	1	4	6	29

Table A10.2: April 2020 – Static Detector 13

Date	Species/min							Total of Species/min
	Myotis	NathPip	Pip	Pip45	Pip55	Pipsoc	Sero	
23/04/2020	1	5		6	1		4	17
24/04/2020	1	1	1	3	1	1		8
25/04/2020	1							1
26/04/2020			1					1
27/04/2020				3	1		1	5
Total Species/min	3	6	2	12	3	1	5	32

Table A10.4: July 2020 – Static Detector 2

Date	Species/min								Total of Species/min
	BLE	Myotis	Noc	Pip	Pip45	Pip55	Pipsoc	Sero	
04/07/2020							1		1
05/07/2020			1	5	7			1	14
06/07/2020		1			21	2		1	25
07/07/2020	1			9	10	2		1	23
08/07/2020									0
09/07/2020									0
10/07/2020									0
11/07/2020				1	20	8	1	1	31
12/07/2020				3	7	3			13
13/07/2020				9	25	9	3	1	47
Total of Species/min	1	1	1	27	90	24	5	5	154

Table A10.5: July 2020 – Static Detector 13

Date	Species/min								Total of Species/min
	BLE	Myotis	Noc	Pip	Pip45	Pip55	Pipsoc	Sero	
04/07/2020	1	4	1		3				9
05/07/2020		6	1		5	5			17
06/07/2020		2			18	1		2	23
07/07/2020		1			16	14			31
08/07/2020		2		1	6	4	1	2	16
09/07/2020		1	1		7	4			13
10/07/2020					4	5			9
11/07/2020					7	8			15
12/07/2020		1	3		8	5			17
13/07/2020	2		2		26	14	1	3	48
Total of Species/min	3	17	8	1	100	60	2	7	198

Table A10.5: September 2020 – Static Detector 13

Date	Species/min										Total of Species/min
	U/k larger bat	BLE	Myotis	Nath Pip	Noc	Pip	Pip45	Pip55	Social pip call	Sero	
10/09/2020	1		20	1	2		9	7	5	1	46
11/09/2020	1		11		1	8	1	7	22		51
12/09/2020		1	13		3	10	5	3	33		68
13/09/2020	2		9		4	7	4	1	8	3	38
14/09/2020			3		1	10	6	8	12	2	42
Total of Species/min	4	1	56	1	11	35	25	26	80	6	245

Appendix 11 Weather Conditions During Static Bat Detector Surveys

Table A11.1: Weather recorded during the April 2020 static detector deployment

Date	Sunset	Sunrise	Temp. °C		Wind speed (km/h)		% Cloud Cover		Rain?
			Min.	Max.	Min.	Max.	Min.	Max.	
23/04/2020	20:11	05:47	10	14	12	18	0	44	N
24/04/2020	20:13	05:45	8	13	13	16	0	81	N
25/04/2020	20:15	05:43	7	10	14	21	0	42	N
26/04/2020	20:16	05:41	8	13	5	11	0	47	N
27/04/2020	20:18	05:39	9	14	2	20	10	49	N

Table A11.2: Weather recorded during the July 2020 static detector deployment

Date	Sunset	Sunrise	Temp. °C		Wind speed (km/h)		% Cloud Cover		Rain?
			Min.	Max.	Min.	Max.	Min.	Max.	
04/07/2020	21:12	04:47	15	18	32 ⁵	44	95	100	Y ⁶
05/07/2020	21:11	04:48	15	19	35 ⁷	47	0	96	Y ⁸
06/07/2020	21:11	04:49	12	18	16	34 ⁹	6	85	Y ¹⁰
07/07/2020	21:10	04:50	12	17	8	26	9	100	Y ¹¹
08/07/2020	21:09	04:51	10	16	17	28	86	100	Y ¹²
09/07/2020	21:09	04:52	16	18	19	37 ¹³	59	100	Y ¹⁴
10/07/2020	21:08	04:53	14	18	8	26	22	100	Y ¹⁵
11/07/2020	21:07	04:54	12	18	2	20	6	49	N
12/07/2020	21:06	04:55	13	18	3	14	0	30	N
13/07/2020	21:05	04:56	14	20	3	25	3	70	N

⁵ Wind speed (within 3 hour intervals) was above optimal (>28km/h) all day.

⁶ The time of rain (within 3 hour intervals) was 00:00-06:00, 09:00-15:00 and 21:00, with a maximum of 1.7mm of rain.

⁷ Wind speed (within 3 hour intervals) was above optimal (>28km/h) all day.

⁸ The time of rain (within 3 hour intervals) was 21:00, with a maximum of 0.1mm of rain.

⁹ Wind speed (within 3 hour intervals) was above optimal (>28km/h) from 00:00 – 09:00, with 34km/h recorded at 00:00, 30km/h recorded at 03:00 and 31km/h recorded at 06:00. Wind speed dropped to suitable speeds again at 09:00.

¹⁰ The time of rain (within 3 hour intervals) was 15:00 and 21:00, with a maximum of 0.2mm of rain.

¹¹ The time of rain (within 3 hour intervals) was at 00:00 and 15:00, with a maximum of 0.2mm of rain.

¹² The time of rain (within 3 hour intervals) was 00:00 – 21:00, with a maximum of 13.2mm of rain.

¹³ Wind speed (within 3 hour intervals) was above optimal (>28km/h) from 09:00 – 21:00, with 29km/h – 37km/h experienced from 09:00 – 21:00. At 21:00 the wind speed dropped down to suitable speeds.

¹⁴ The time of rain (within 3 hour intervals) was 09:00 – 21:00, with a maximum of 0.6mm of rain.

¹⁵ The time of rain (within 3 hour intervals) was 03:00, 09:00 – 15:00 and 21:00, with a maximum of 0.8mm of rain.

Table A11.3: Weather recorded during the September 2020 static detector deployment

Date	Sunset	Sunrise	Temp. °C		Wind speed (km/h)		% Cloud Cover		Rain?
			Min.	Max.	Min.	Max.	Min.	Max.	
10/09/2020	19:22	06:22	15	17	3	15	3	71	N
11/09/2020	19:18	06:25	14	18	4	23	5	23	N
12/09/2020	19:15	06:26	13	18	15	27	2	69	N
13/09/2020	19:13	06:28	13	19	4	22	0	18	N
14/09/2020	19:11	06:29	18	23	6	17	0	4	N

Appendix 12 Evaluating Bats in the Wider Ecological Context

The evaluation of the bat population using the site is based on *Valuing Bats in Ecological Impact Assessment* (Wray *et. al.*, 2010).

Where bats (species and number) use certain habitats (to roost, commute or forage), their population is assigned a relative ecological value. The value to the species is partly based on habitat usage and the rarity of the bat species. For commuting routes or foraging areas, the number of roosts nearby is also a factor. Once the value of the bat population is calculated, mitigation for impacts on the bats can be determined.

British bat species have been subdivided into groups, dependant on their abundance within England; common, rarer and rarest.

Table A12.1: Categorising bats by abundance in England.

Rarity	Bat Species
Rarest	Greater horseshoe bat Bechstein's bat Alcathoe's bat Greater mouse-eared bat Barbastelle Grey long-eared bat
Rarer	Lesser horseshoe bat Myotis sp. (Whiskered bat/Brandt's bat Daubenton's bat/Natterer's bat) Leisler's bat Noctule Nathusius' pipistrelle Serotine
Common	Common pipistrelle Soprano pipistrelle Brown long-eared bat

To calculate the score for either commuting routes or foraging areas the numerical values from each column below are added together (**Tables A12.2 and a12.3** below).

Table A12.2: Evaluating commuting routes.

Species	Number of Bats	Roosts / Potential Roosts Nearby	Type & Complexity of Linear Features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or failed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts or close to a SSSI (5)	Well grown and well connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table A12.3: Evaluating foraging areas.

Species	Number of Bats	Roosts / Potential Roosts Nearby	Foraging Habitat Characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts or close to a SSSI (5)	Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

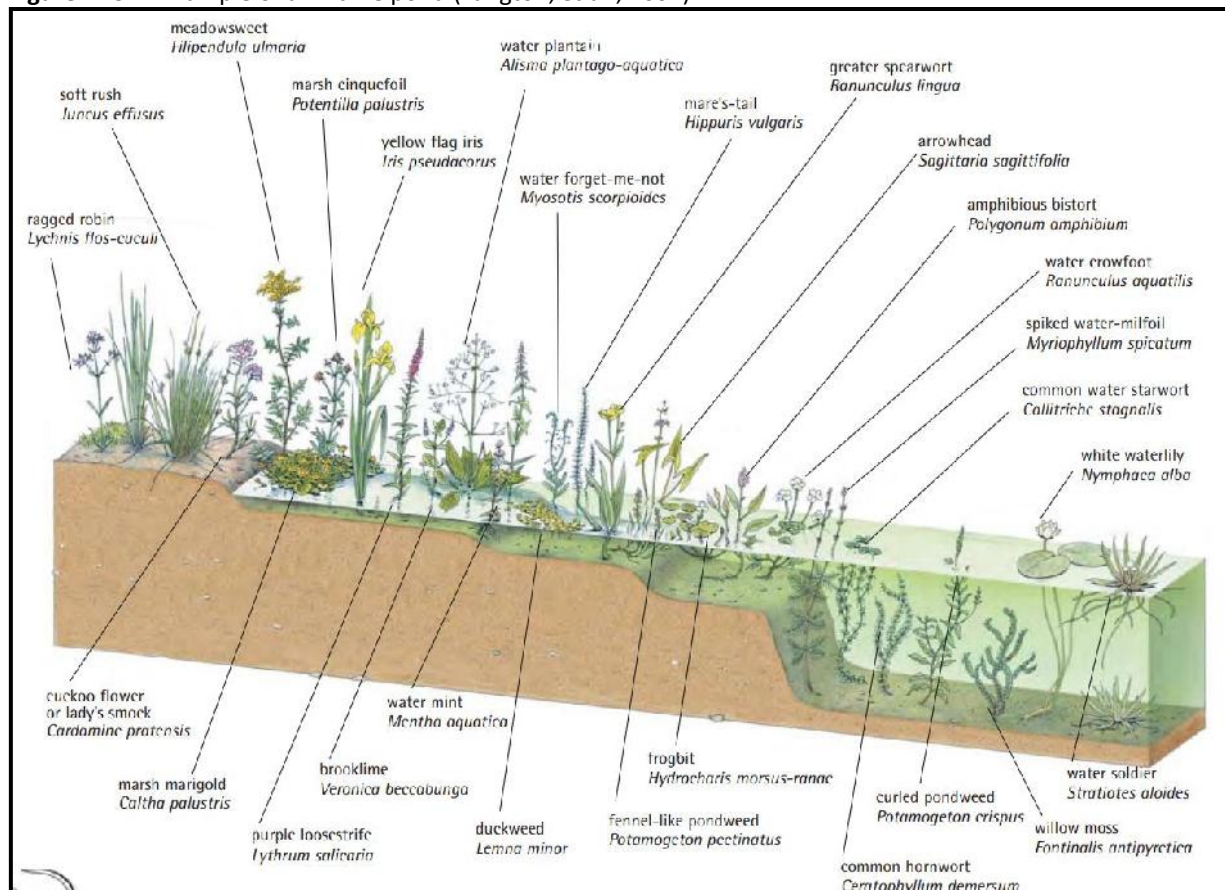
Finally, the evaluation of bat commuting routes and foraging areas on the site is based on the following scoring system.

Table A12.4: Scoring system for valuing commuting and foraging bats.

Geographic Frame of Reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, Local or Parish	11-20
Not Important	1-10

Appendix 13 Wildlife Pond Example

Figure A13.1: Example of a wildlife pond (Langton, *et al.*, 2001).



Appendix 14 Wildlife Friendly Planting

Table A14.1: Native and wildlife-friendly shrubs (Natural England, 2008).

Common Name	Scientific Name
Hazel	<i>Corylus avellana</i>
Elder	<i>Sambucus nigra</i>
Goat willow	<i>Salix caprea</i>
Hawthorn	<i>Crataegus monogyna</i>
Dog rose	<i>Rosa canina</i>
Guelder rose	<i>Viburnum opulus</i>
Gorse	<i>Ulex europaeus</i>
Broom	<i>Cytisus scoparius</i>
Wayfaring tree	<i>Viburnum lantana</i>
Shrubby cinquefoil	<i>Potentilla fruticosa</i>
Raspberry	<i>Rubus idaeus</i>
Alder buckthorn	<i>Frangula alnus</i>
Wild privet	<i>Ligustrum vulgare</i>
Barberry	<i>Berberis × stenophylla</i>
Barberry	<i>Berberis vulgaris</i>
Bell heather	<i>Erica cinerea</i>
Bilberry	<i>Vaccinium myrtillus</i>
Black currant	<i>Ribes nigrum</i>
Blackthorn	<i>Prunus spinosa</i>
Buckthorn	<i>Rhamnus catharticus</i>
Butcher's-broom	<i>Ruscus aculeatus</i>
Cowberry	<i>Vaccinium vitis-idaea</i>
Cross-leaved heath	<i>Erica tetralix</i>
New Zealand holly	<i>Olearia macrodonta</i>
Daphne	<i>Daphne odora</i>
Dogwood	<i>Cornus sanguinea</i>
Field rose	<i>Rosa arvensis</i>
Firethorn	<i>Pyracanthus angustifolia</i>
Flowering Currant	<i>Ribes sanguineum</i>
Gooseberry	<i>Ribes uva-crispa</i>
Hebe 'Midsummer Beauty'	<i>Hebe</i> sp.
Himalayan honeysuckle	<i>Leycesteria formosa</i>
Holly	<i>Ilex aquifolium</i>
Japanese quince	<i>Chaenomeles japonica</i>
Lilac	<i>Syringa vulgaris</i>
Mexican orange	<i>Choisya ternata</i>
Mezereon	<i>Daphne mezereum</i>
Midland hawthorn	<i>Crataegus laevigata</i>
Oregon grape	<i>Mahonia aquifolium</i>
Osier	<i>Salix viminalis</i>
Portugal laurel	<i>Prunus lusitanica</i>
Privet	<i>Ligustrum ovalifolium</i>
Purple willow	<i>Salix purpurea</i>

Common Name	Scientific Name
Snowy mespilus	<i>Amelanchier canadensis</i> , <i>Amelanchier lamarckii</i>
Spindle	<i>Euonymus europaeus</i>
Spurge laurel	<i>Daphne laureola</i>
Sweet briar	<i>Rosa rubiginosa</i>
Wild privet	<i>Ligustrum vulgare</i>

Table A14.2: Native and wildlife-friendly trees (Natural England, 2008).

Common Name	Scientific Name
Pedunculate oak	<i>Quercus robur</i>
Ash	<i>Fraxinus excelsior</i>
Wych elm	<i>Ulmus glabra</i>
Whitebeam	<i>Sorbus aria</i> agg.
Rowan	<i>Sorbus aucuparia</i>
Aspen	<i>Populus tremula</i>
Apple	<i>Malus domestica</i>
Bird cherry	<i>Prunus padus</i>
Common alder	<i>Alnus glutinosa</i>
Crab apple	<i>Malus sylvestris</i>
Crack willow	<i>Salix fragilis</i>
Downy birch	<i>Betula pubescens</i>
Field maple	<i>Acer campestre</i>
Hornbeam	<i>Carpinus betulus</i>
Juniper	<i>Juniperus communis</i>
Large-leaved lime	<i>Tilia platyphyllos</i>
Small-leaved lime	<i>Tilia cordata</i>
Pear	<i>Pyrus communis</i>
Scots pine	<i>Pinus sylvestris</i>
Sessile oak	<i>Quercus petraea</i>
Silver birch	<i>Betula pendula</i>
Sweet chestnut	<i>Castanea sativa</i>
Wild cherry	<i>Prunus avium</i>
Wild service-tree	<i>Sorbus torminalis</i>
Yew	<i>Taxus baccata</i>

Table A14.3: Moth pollinator species (Butterfly Conservation, 2019).

Common Name	Scientific Name
Honeysuckle	<i>Lonicera periclymenum</i>
Jasmine	<i>Jasminum officinale</i>
Evening primrose	<i>Oenothera biennis</i>
Sweet rocket	<i>Hesperis matronalis</i>
Night-scented stock	<i>Matthiola bicornis</i>
Aubretia	<i>Aubretia</i> sp.
Cuckooflower	<i>Cardamine pratensis</i>
Forget-me-not	<i>Myosotis</i> sp.
Honesty	<i>Lunaria annua</i>

Pansy	<i>Viola</i> sp.
Primrose	<i>Primula veris</i>
Wallflower	<i>Erysimum</i> sp.
French marigold	<i>Tagetes</i> sp.
Ice plant	<i>Sedum</i> sp.
Knapweed	<i>Centaurea</i> sp.
Lavender	<i>Lavendula</i> sp.
Marjoram	<i>Origanum vulgare</i>
Michaelmas daisy	<i>Aster amellus</i>
Mint	<i>Mentha</i> sp.
Scabious	<i>Scabiosa</i> sp.
Thyme	<i>Thymus</i> sp.