



PRELIMINARY ECOLOGICAL APPRAISAL (PEA)

THE RAVENS

GRAVESHAM, KENT

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Reference	Ref: 1345_R01_PEA
Report status	Information
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Issue date	18th December 2023
Revision history	-
Revision description	-

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1. SUMMARY

- S.1 This report details a Preliminary Ecological Appraisal (PEA) undertaken in respect of proposed development at The Ravens, Rhododendron Avenue, Culverstone, Meopham, Gravesham, Kent DA13 0TU.
- S.2 Proposals include the conversion of the existing stables into a residential dwelling with associated driveway and landscaping.
- S.3 A PEA site visit was undertaken by Native Ecology on 28th November 2023.
- S.4 Habitats within the application site comprise a disused stable building, with areas of other neutral grassland and low lying mixed scrub.
- S.5 Further survey work (detailed in Section 10) is recommended to determine the presence / likely absence of roosting bats in buildings and reptiles within the application site to inform suitable mitigation.
- S.6 Mitigation, without the requirement for further survey work, is recommended for foraging and commuting bats, badger, hedgehog and nesting birds (detailed within Section 11).
- S.7 Section 12 includes recommended appropriate biodiversity enhancement measures which could be included within development proposals.
- S.8 It is recommended that the results of the PEA report and any other further ecological survey work is incorporated into an Ecological Impact Assessment (EclA) report, which should be submitted with the planning application. The EclA report should assess the impacts of proposed development on ecological features and provide an Ecological Mitigation Strategy detailing the measures that will be implemented to avoid, minimise and compensate for impacts.
- S.9 Appendix 1 gives an overview of relevant legislation, which should be read in conjunction with this report.
- S.10 Appendix 2 provides the methodology of Suitability Assessments of structures and trees to support roosting bats.
- S.11 Appendix 3 provides a habitat plan.

2. INTRODUCTION

- 2.1 This report details a Preliminary Ecological Appraisal undertaken in respect of proposed development at The Ravens, Rhododendron Avenue, Culverstone, Meopham, Gravesham, Kent, DA13 0TU. (site centred TQ 64002 63442).
- 2.2 Figure 1, Section 3 provides a site location plan.

COMMISSION

- 2.3 Native Ecology was commissioned by Mrs Sankey in November 2023 to undertake a Preliminary Ecological Appraisal within the application site.

APPLICATION SITE

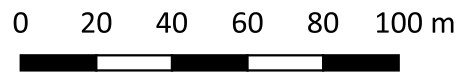
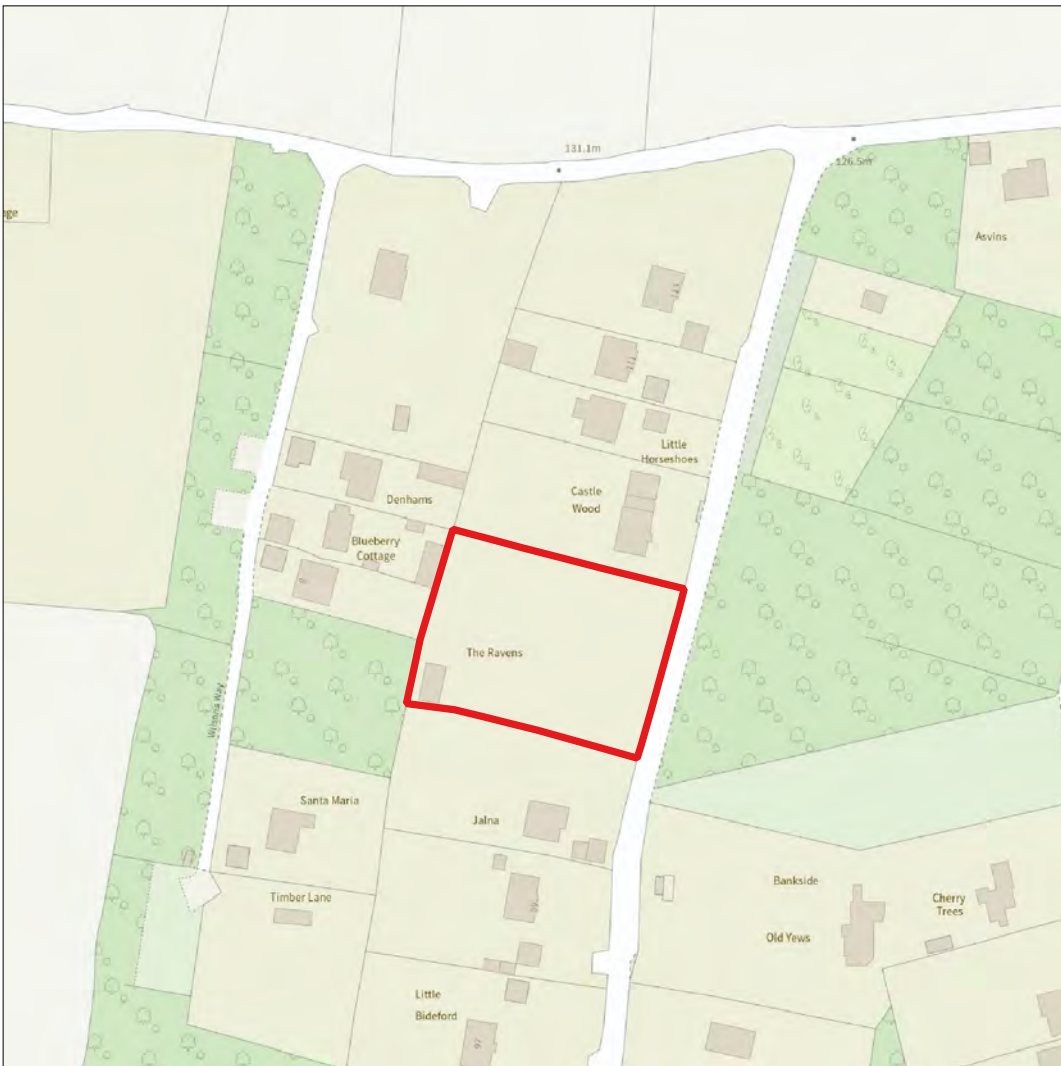
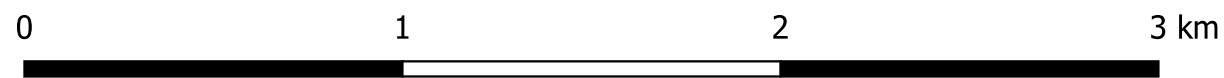
- 2.4 The application site, hereafter referred to as 'the Site', comprises a stables building in the south-west corner, a small area (0.04ha) of other neutral grassland and an area (0.2ha) of low lying mixed scrub. The Site extends to approximately 0.3ha
- 2.5 Figure 2, Section 4 provides an existing site plan (topographical survey plan).

PROPOSED WORKS

- 2.6 Proposals include the conversion of the existing stables building into a residential dwelling along with associated landscaping.
- 2.7 Figure 3, Section 5 provides a proposed site layout plan.

PURPOSE OF REPORT

- 2.8 This report aims to provide general advice on ecological constraints associated with proposed development within the site and includes recommendations for mitigation and further survey work, where required.
- 2.9 The objectives of the report are to:
- Describe the current ecological conditions present within the site.
 - Identify any key ecological constraints to the proposed development both with regards protected species and sites.
 - Identify where mitigation will allow significant ecological effects to be avoided or minimised wherever possible.
 - Identify any further ecological surveys required in order to assess the possible impact on protected and important / notable species.
 - Recommend ecological enhancements to be incorporated into the development proposals.



 native ecology PROMOTING BIODIVERSITY INTEGRATION	
Site Location Plan	
The Ravens Rhododendron Avenue Culverstone	
Drawing ref:	Figure 1
Revision:	-
Date:	18/12/2023
Scale:	1:20,000 (Main canvas)
Paper size:	A3

4. EXISTING SITE PLAN



Figure 2. Existing site plan (Graham Simpkin Planning, Drawing No. 02, dated 12.06.2023).

5. PROPOSED SITE LAYOUT

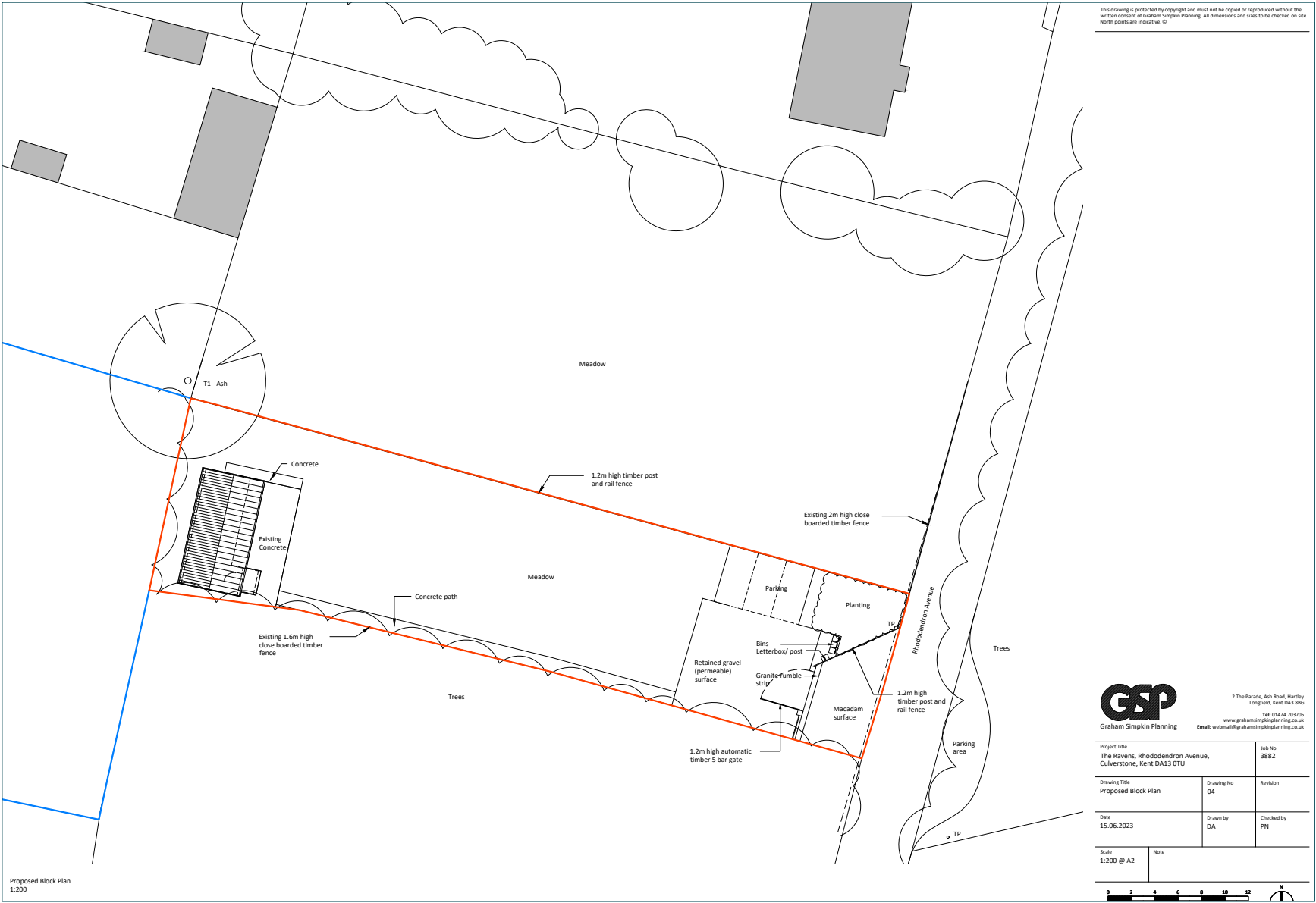


Figure 3. Proposed site layout plan (Graham Simpkin Planning, Drawing No. 04, dated 15.06.2023).

6. METHODOLOGY

DESK STUDY

Zone of Influence

- 6.1 The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the proposed project and associated activities (CIEEM, 2017a). This report provides an assessment of the effects of a proposed development on protected or ecologically valuable sites, habitats or species where these effects extend beyond the development boundary of the site.

Designated sites

- 6.2 Potential impacts to designated sites, including National Site Network (NSN) sites and SSSIs, have been considered.
- 6.3 The Multi Agency Geographic Information for the Countryside (MAGIC) website was used to obtain information about statutory designated sites of international importance such as Special Protection Areas (SPA) within 7.2km of the Site.
- 6.4 Information was obtained about statutory designated sites of national importance such as Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR) within 2km of the Site and ancient woodland within 500m of the Site.
- 6.5 Kent Landscape Information System (KLIS) was used to identify Local Sites, such as Local Wildlife Sites (LWS), located within 1km of the Site.

Data search

- 6.6 Records were obtained from the Kent Reptile and Amphibian Group (KRAG) within 1km of the Site in November 2023.
- 6.7 Ordnance survey maps, the Multi Agency Geographic Information for the Countryside (MAGIC) website and aerial images were used to identify waterbodies within 250m of the Site boundary. MAGIC Map was also used to obtain information on locations where European Protected Species Mitigation (EPSM) Licences for great crested newt have been issued by Natural England within 1km of the Site.

FIELD STUDY

- 6.8 A Preliminary Ecological Appraisal site visit was undertaken by Miriam Anderson and Jack Fox of Native Ecology on 28th November 2023.

Table 1. Survey details

Survey date	28th November 2023
Surveyor	Miriam Anderson BSc (Hons) & Jack Fox BSc (Hons)
Time on site	13:15 - 14:19
Weather	4°C, 40% cloud cover, light breeze, no rain, ground damp

UK Habitat Classification 2.0

- 6.9 Habitats within the Site were mapped and classified in accordance with the The Professional Edition of the UK Habitat Classification 2.0.
- 6.10 There are 5 levels of hierarchy, which provide an increasing level of detail. For the purpose of this assessment, habitats have been mapped for Primary Habitats up to Level 4.
- 6.11 Secondary codes have been assigned, where appropriate. These Secondary Codes allow recording of additional information, linked to the Primary Habitats. In some cases, habitat types are defined by a Secondary Code only, where Primary Habitats do not sufficiently represent the habitat present.

Protected species and habitats

- 6.12 During the survey the species and habitats identified within the Site were recorded. An assessment was also made as to the presence or potential presence of protected, important or Nationally Rare species.
- 6.13 Protected species and habitats considered include those listed under the Schedules of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and of the Wildlife and Countryside Act 1981.
- 6.14 In addition, an assessment has been made as to the possible impacts of the proposed development on nature conservation interests, in accordance with information relevant to the National Planning Policy Framework and Local Planning Policy.

Bats

Preliminary Roost Assessment (bats)

- 6.15 A systematic search of the exterior and interior of buildings within the site was undertaken to identify potential bat access points and roosting places and to locate any evidence of bats such as bat droppings, urine staining and fur-oil staining. The inspection included exterior features of the buildings, such as sills, window panes, walls and the ground beneath potential access points to look for signs of bats, such as droppings.
- 6.16 The suitability of roosting habitat and foraging and commuting habitat within the site was assessed following recommendations provided within Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th edition, Bat Conservation Trust (Collins, 2023) (see Appendix 2 for suitability assessment and survey effort required for structures and trees).

Badger

- 6.17 During the site survey any badger field signs observed were recorded and mapped. These included; sett entrances, latrines, pathways, snuffle holes, footprints, and push-throughs.

Reptiles

- 6.18 The suitability of habitats within the Site to support reptiles was assessed during the Preliminary Ecological Appraisal site visit. Any incidental sightings were recorded.

Hazel dormice

- 6.19 The suitability of habitats within the Site to support hazel dormice was assessed during the Preliminary Ecological Appraisal site visit. Any incidental sightings or field signs, such as natural nests, were recorded.

Great crested newt

- 6.20 The level of survey effort and data collection required to support a Planning Application or European Protected Species Mitigation (EPSM) Licence for great crested newts is relative to the potential impact. For EPSM Licence applications, typically ponds within 250m of the construction zone are surveyed for the presence (and population assessment) of great crested newts.
- 6.21 Following the guidance of Natural England (2021) waterbodies located beyond 250m from the development are only surveyed if all of the following conditions are met:
- ponds have potential to support a large great crested newt population;
 - the development footprint contains particularly favourable habitat, especially if it constitutes the majority available locally;
 - the development would have a substantial negative effect on that habitat; and
 - there is an absence of dispersal barriers.
- 6.22 Based on the listed criteria above, a proportionate survey area for the Site includes the assessment of any ponds within 250m of the construction zone.

Riparian mammals

- 6.23 The suitability of habitats within the Site to support riparian mammals (such as beaver, otter and water vole) was assessed during the Preliminary Ecological Appraisal site visit. Any incidental sightings or field signs were recorded.

Habitats and Species of Principal Importance

- 6.24 An assessment was made as to the likely presence of Habitats and Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and birds on the Red and Amber lists of birds of conservation concern.

LIMITATIONS

- 6.25 This report aims to provide general advice on ecological constraints associated with the development of the site, it does not include detailed information on particular species or species groups but instead makes recommendations for further, species-specific surveys required.
- 6.26 In accordance with CIEEM guidance, consideration should be given to the validity of survey data after a period of 12 month from the date of the survey. This may require a site visit to assess whether ecological conditions within the site have changed and may require further ecological survey work due to the transient nature of some protected species.

7. CURRENT ECOLOGICAL CONDITIONS

DESIGNATED SITES

Statutory Sites of International Importance

- 7.1 There is one Special Area of Conservation (SAC) located within 7.2km of the Site.

Table 2. Details of Statutory Sites of International Importance within 7.2km of the site boundary.

Designation	Site name	Distance and direction from site	Qualifying features
SAC	North Downs Woodlands	2.9km east	Qualifies under the Habitats Directive for supporting Annex I habitat that are a primary reason for selection of this site beech forests (<i>Asperulo-fagetum</i>) and English yew (<i>Taxus baccata</i>) woods of the British Isles. Qualifies under the Habitats Directive for supporting Annex I habitat present as a qualifying feature, but not a primary reason for selection of this site semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) -(important orchid site). (JNCC, 2015)

- 7.2 According to the Impact Risk Zones for Ramsar Sites, Special Areas of Protection (SPA), SACs and SSSIs shown on Natural England's MAGIC map application, the planning application type means there is no requirement for the Local Planning Authority to consult with Natural England during the planning process regarding statutory designated sites.

- 7.3 No further survey work or mitigation is required for Statutory Sites of International Importance.

Statutory Sites of National Importance

- 7.4 There are no Statutory Sites of National Importance within 2km of the Site.

Non-statutory sites

Local Sites

- 7.5 There is one Local Wildlife Sites (LWS) located within 1km of the site:

- Happy Valley, Meopham LWS lies approximately 0.1km to the south-west. It is unlikely that the proposed development will impact the LWS either directly or indirectly due to the small scale and nature of proposals and the distance between sites.

- 7.6 No further assessment or mitigation is proposed for Local Sites.

Ancient Woodland

- 7.7 There are six parcels of ancient woodland located within 500m of the Site.
- Round Wood, separated into two parcels of ancient replanted woodland, approximately 50m west of the Site.
 - Ridge Wood/High Reed, an area of ancient replanted woodland, approximately 180m south-east of the Site.
 - Crowcrofts/Copicar Woods, an area of ancient and semi-natural woodland, approximately 326m north-east of the Site.
 - Willowlands Wood, an area of ancient and semi-natural woodland, approximately 430m East.
 - Steeles Wood, an area of ancient and semi-natural woodland, approximately 470m North of the Site.
- 7.8 It is unlikely that the proposed development will impact the ancient woodland either directly or indirectly due to the small scale and nature of proposals.
- 7.9 No further assessment or mitigation is proposed in relation to ancient woodland.

HABITATS WITHIN THE SITE

Habitats of Principal Importance

- 7.10 A parcel of un-named lowland mixed deciduous woodland (approximately 1ha) lies 6m east, with strong connectivity to parcels of ancient woodland within the surrounding area. This habitat lies outside of the Site boundary with an unsealed road separating the sites.
- 7.11 Due to the scale and nature of proposals, it is unlikely that the development will impact the deciduous woodland directly. However, without suitable mitigation measures the proposed development may impact the deciduous woodland indirectly.
- 7.12 Habitats of Principle Importance are considered further in Section 9.

Other habitats

Buildings

- 7.13 There is one building present within the Site. Table 3 (overleaf) provides photographs and building descriptions.

Table 3. Description of buildings within the Site.

Building no. & name	Description	Photograph
B1	Building B1 consists of breeze block elevations, with external timber cladding and timber soffit boxes. The roof is pitched with clay tiles and lined with bitumen felt. Internally the building has a timber structure and is utilised for storage purposes and consists of three sections.	

7.14 Table 4 below describes the habitats present within the Site in accordance with UK Habitat Classification 2.0.

Table 4. Habitat types present within the Site, including level (UKHab), size and description (continues overleaf).

HABITAT TYPE				DESCRIPTION
Level 2 label	Level 3 label	Level 4 label	Level 5 label / Secondary codes	
Urban (u)	Built-up areas and gardens (u1)	Developed land; sealed surface (u1b)	Buildings (u1b5)	For full building descriptions see Table 3.
		Artificial unvegetated, unsealed surface (u1c)	Bare ground (510)	An unvegetated track provides vehicular access to the Site from the south-east corner up to Building B1. The track extends into the northern section of the Site due to small amounts of recent vegetation clearance.
Grassland (g)	Neutral grassland (g3)	Other neutral grassland (g3c)	Recent management	Along the eastern boundary of the Site comprises a small area (0.04ha) of other neutral grassland; species include perennial ryegrass (<i>Lolium Perrene</i>), cocksfoot (<i>Dactylis glomerata</i>), false oatgrass (<i>Arrhenatherum elatius</i>), yarrow (<i>Achillea millefolium</i>), clover (<i>Trifolium sp.</i>), hawksbeard (<i>Crepis capillaris</i>), cinquefoil, ribwort plantain (<i>Plantago lanceolata</i>).
			Ruderal / ephemeral (81)	The borders of the grassland area consist of ruderal / ephemeral vegetation; species include hazel (<i>Corylus avellana</i>), elder (<i>Sambucus nigra</i>), bramble (<i>Rubus fruticosus</i>), thistle (<i>Cirsium spp</i>), bedstraw (<i>Galium spp</i>), common nettle (<i>Urtica diotica</i>).

HABITAT TYPE				DESCRIPTION
Level 2 label	Level 3 label	Level 4 label	Level 5 label / Secondary codes	
Heathland and shrub (h)	Dense scrub (h3)	Mixed scrub (h3h)		Dominating the Site is an area (0.2ha) of mixed scrub dominated by bramble with saplings of hawthorn (<i>Crataegus monogyna</i>), sycamore (<i>Acer pseudoplatanus</i>) and hazel. Ruderal species present include common nettle (<i>Urtica dioica</i>), lambs ear (<i>Stachys byzantina</i>), moss (<i>Bryophyta</i> sp), ribwort plantain (<i>Plantago lanceolata</i>), thistle, cleavers (<i>Galium aparine</i>), speedwell (<i>Veronica</i> Sp.), bristly oxtongue (<i>Helminthotheca echinoides</i>), dogwood (<i>Cornus sanguinea</i>), ragwort (<i>Jacobaea vulgaris</i>), rose (<i>Rosa</i> sp.). There is also a dense area of willowherb (<i>Epilobium hirsutum</i>) and buddleja (<i>Buddleja davidii</i>), present within the centre of the Site.

SURROUNDING HABITATS

- 7.16 The Site is situated in a rural area, north-west of the village Culverstone Green. Surrounding habitats include a number of ancient and deciduous woodlands, interconnected by hedgerows that bound residential properties. Wider surrounding areas include arable and pastoral farmland, the M26 lies approximately 4.2km to the south and the River Medway 6.6km east.

PROTECTED AND NOTABLE SPECIES

Bats - Roosting habitat

Buildings - Preliminary Roost Assessment

Table 5. Results of Preliminary Roost Assessment

Building	Potential roost features	Suitability for roosting bats
B1	Gaps in timber cladding.	Low

- 7.17 No bats, or evidence of bats, was found during the internal inspection of the building. Internally the building is well sealed with the exception of a single small opening. Externally, gaps within the timber cladding were recorded on the northern elevation.

Roosting bats - Trees

- 7.18 No visible potential roost features were recorded in the trees within the Site that will be impacted by the proposed development. No further survey work or mitigation is required for bat roosts in trees.
- 7.19 Roosting bats in buildings are considered further in Section 9.

Foraging and commuting habitat

7.20 Habitats within the Site, including grassland and scrub offer foraging habitat of moderate suitability and commuting habitat of low suitability.

7.21 Foraging and commuting bats are considered further in Section 9.

Hazel dormice

7.22 According to Magic Maps, there are no EPSM licences for hazel dormice within 2km of the Site.

7.23 The scrub within the western portion of the Site has been recently managed and currently comprises mostly bramble below approximately 30cm in height. Therefore it lacks the structural density that hazel dormice require. Currently the Site comprises suboptimal habitat opportunities and therefore the presence of hazel dormice within the Site is unlikely.

7.24 No further survey work or mitigation is recommended for hazel dormice.

7.25 However, should the scrub within the Site be left unmanaged, the habitat may become more suitable and dormouse surveys may be required. Dormice are considered further in Section 9.

Riparian mammals

7.26 There is no suitable habitat for otter, beaver or water vole within the Site. No further survey work or mitigation is required for riparian mammals.

Badger

7.27 During the survey, no badger setts were recorded however, signs of badger foraging within the Site were present across the grassland area.

7.28 Badger are considered further in Section 9.

Hedgehog

7.29 Habitats within the Site and surrounding area provide foraging opportunities for hedgehog, which may be present in the locality.

7.30 Hedgehog are considered further in Section 9.

Birds

7.31 Due to the habitats present, no Schedule 1 birds are expected to nest within the Site.

7.32 The mixed scrub within the Site provides suitable nesting habitat for a number of common bird species as well as red and amber listed birds such as wren (red).

7.33 A single nest was recorded within the Building B1 during the site visit.

7.34 Birds are considered further in Section 9.

Reptiles

- 7.35 Data obtained from Krag include one historical record of a single common lizard within 1km of the Site in 2010, located approximately 0.81km south. No recent records (within 10 years) were included. However, reptile survey effort within the local area is considered to be below average. Results should be interpreted with caution.
- 7.36 The grassland and scrub within the Site provide suitable habitat for reptiles such as common lizard, slow worm and grass snake, which may therefore be present.
- 7.37 Reptiles are considered further in Section 9.

Great crested newt

- 7.38 According to MAGIC map application there have been no recent EPSM licences obtained for great crested newt within 1km of the Site. In addition, data obtained from Krag include no records of great crested newt within 1km of the Site. However, amphibian survey effort within the local area is considered to be below average. Results should be interpreted with caution.
- 7.39 The grassland and mixed scrub provide areas of terrestrial habitat of moderate suitability for great crested newt.
- 7.40 There are no waterbodies present within the Site. According to OS maps, MAGIC map and aerial images, there are no waterbodies present within 250m of the Site boundary.
- 7.41 Due to the lack of waterbodies within the surrounding landscape, great crested newts are unlikely to be present within the Site.
- 7.42 No further survey work or mitigation is recommended for great crested newt.

Invertebrates

- 7.43 Features within the Site, such as the grassland and scrub, provide suitable habitat to support a range of common and widespread invertebrates. Protected or rare invertebrates are unlikely to be present due to the habitat types present.
- 7.44 No further survey work or mitigation is recommended for invertebrates.

Flora

- 7.45 Due to the past and present management of the Site, the areas of habitat are unlikely to support protected plant species. No evidence of Schedule 9 plants was found during the Site survey.
- 7.46 No further survey work or mitigation is recommended for flora.

8. PHOTOGRAPHS



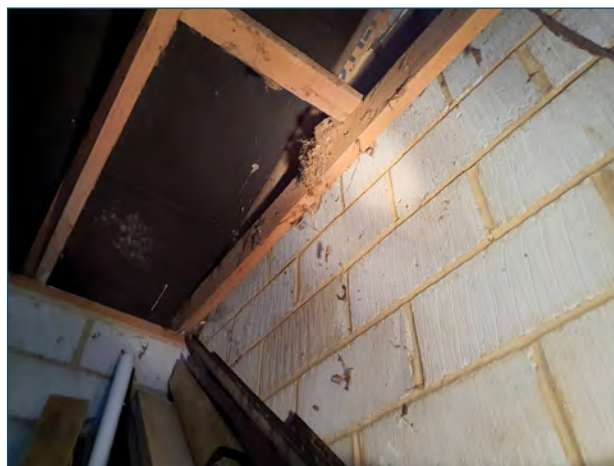
Photograph 1. unsealed and unvegetated surface utilised for vehicle access.



Photograph 2. Low lying mixed scrub located across the majority of the Site.



Photograph 3. A small pile of brash (deposited from another location).



Photograph 4. An existing bird nest recorded within Building B1.



Photograph 5. Badger trails present within the eastern section of the Site.



Photograph 6. Snuffle holes were observed within the eastern section of the Site.

9. ECOLOGICAL CONSTRAINTS

- 9.1 The potential impacts of the proposed development on those Ecological Features that have not been scoped out in Section 7 are considered below.

HABITATS OF PRINCIPAL IMPORTANCE

Lowland mixed deciduous woodland

- 9.2 The area of lowland mixed deciduous woodland, which lies within 6m of the eastern Site boundary and within the ownership boundary, will not be impacted directly by proposals.
- 9.3 However, due to the close proximity, indirect impacts cannot be entirely ruled out. Therefore, precautionary mitigation without the need for further survey work is outlined within Section 11.

PROTECTED AND NOTABLE SPECIES

Roosting bats

- 9.4 Building B1 was assessed as providing low suitability for roosting bats.
- 9.5 Since proposals include the conversion of building B1, further survey work is recommended to determine the presence or likely absence of roosting bats (detailed within Section 10).

Foraging and commuting bats

- 9.6 Habitats within the Site, including other neutral grassland and mixed scrub are assessed overall as providing low - moderate suitability for foraging and commuting bats.
- 9.7 Development proposals do not include the severance of any potential habitat corridors for bats and therefore are unlikely to impact on foraging and commuting bats. No further survey work is recommended.
- 9.8 Bats are nocturnal and rely on dark habitat corridors for foraging and commuting, therefore indirect impacts could occur through spillage of artificial lighting associated with parking and buildings within the Site post-construction.
- 9.9 Precautionary mitigation to avoid impacts through the careful design of lighting is recommended within Section 10. Enhancement measures, outlined within Section 11, have the potential to improve the value of habitats within the Site for foraging and commuting bats.

Hazel dormice

- 9.10 Currently, the habitat within the Site is suboptimal for dormice. However, should the scrub within the Site be left unmanaged, the habitat may become more suitable and dormice (potentially present within the surrounding area) which may then utilise habitats within the Site. Precautionary mitigation is recommended in Section 11.

Badger

- 9.11 During the survey, no setts were recorded within the Site or within the accessible 30m of the Site boundary. However, signs of badger were present within the Site in the form of badger trails and snuffle holes.
- 9.12 In the absence of appropriate precautionary measures, although unlikely, individual badger could be harmed during the construction phase.
- 9.13 Precautionary mitigation to minimise the risk of harming individual badgers during construction works is detailed in Section 11.

Hedgehog

- 9.14 Development proposals are unlikely to impact on local hedgehog populations and therefore no further survey work is required. However, in the absence of suitable mitigation, individual hedgehogs may be harmed during works.
- 9.15 Precautionary mitigation to reduce the risk of killing or injuring individual hedgehog is detailed within Section 11.

Nesting birds

- 9.16 Given the small area of suitable bird nesting habitat within the Site, it is unlikely that development proposals will impact bird populations within the locality. No further survey work for nesting birds is recommended.
- 9.17 The mixed scrub and building B1 within the Site provide suitable nesting habitat for common and widespread bird species, as well as those listed as Red and Amber within the Birds of Conservation Concern such as wren (Red).
- 9.18 The scrub will be removed as part of proposals and the building will be converted as part of development proposals. Therefore, mitigation measures to avoid impacts to nesting birds through the timing of works are outlined within Section 11.
- 9.19 Enhancement measures, outlined within Section 12, have the potential to improve the value of habitats within the Site for birds.

Reptiles

- 9.20 The grassland and mixed scrub provide suitable habitat for reptiles such as common lizard, slow worm and grass snake.
- 9.21 Proposals include the conversion of these habitats into residential garden. This would likely result in the killing or injury of reptiles, if present. Therefore, a reptile presence / likely absence survey is recommended to determine any required suitable mitigation measures (detailed in Section 10).

10. FURTHER SURVEY WORK

- 10.1 Further survey work is recommended to determine the presence or likely absence of roosting bats and reptiles within the Site to inform suitable avoidance, mitigation, compensation and enhancement measures.

ROOSTING BATS

Presence / likely absence surveys

- 10.2 Bat emergence / re-entry surveys are recommended to determine the presence or likely absence of roosting bats. Bat surveys should be undertaken in accordance with Bat Conservation Trust Good Practice Guidelines (Collins, 2023).
- 10.3 As building B1 provides low suitability, the following survey effort is required:

Survey effort and timing

- One dusk emergence survey between May and August.

- 10.4 Should a roosting bat(s) be found to be present, in order to provide sufficient data on which to design suitable mitigation and compensation measures, a total of three surveys will be required to be undertaken between May and September, with at least two surveys undertaken between May and August. Surveys would need to be spaced at least three weeks apart.

REPTILES

Presence / likely absence surveys

- 10.5 A reptile presence / likely absence survey is recommended.
- 10.6 Artificial cover objects (ACOs), comprising a mixture of bitumen felt and coruline, should be placed within areas of suitable reptile habitat within the Site. ACOs will be left for at least 10 days prior to the first survey visit

Survey effort and timing

- March - September (July and August sub-optimal)
- Seven visits to be undertaken in appropriate weather conditions on non-consecutive days.

11. AVOIDANCE AND MITIGATION MEASURES

THE MITIGATION HIERARCHY

- 11.1 A process should be adopted within the design stage of the project to avoid, mitigate and compensate for potential negative ecological impacts, this process is known as the 'mitigation hierarchy'.
- 11.2 Negative ecological impacts should be avoided wherever possible, for example by making amendments to the proposed layout. Where avoidance is not possible, mitigation to reduce the impact should be considered, for example through the avoidance of sensitive seasons, such as the bird nesting season.
- 11.3 Avoidance and mitigation is most effective when considered as early as possible within a scheme, allowing for measures to be integrated into the design, an appropriate time line to be developed and for alternatives to be considered.
- 11.4 If all measures have been considered for avoidance and mitigation, as last resort compensation measures should be proposed to address unavoidable and residual impacts.

HABITATS OF PRINCIPAL IMPORTANCE

Lowland mixed deciduous woodland

- 11.5 In order to avoid any possible accidental impacts to the nearby deciduous woodland the following precautionary measures should be adhered to during the construction phase:
- No construction should be carried out within the root protection zone of adjacent and nearby trees.
 - At least one site worker and/or ecologist should provide the roles of Ecological Clerk of Works (ECOW) and should work with the site manager and contractors to ensure that all precautionary avoidance measures are adhered to during works.
 - No construction material should be stored within 5m of the deciduous woodland.
 - No refuelling, repairs or maintenance to vehicles or machinery that include engine fuel, hydraulic or lubrication systems should be undertaken within 10m of the deciduous woodland.
 - If appropriate, dust suppression measures should be employed throughout works.
 - A spill management plan should be in place throughout works.
 - Any waste materials should be safely stored and removed from the Site as soon as possible.
- 11.6 Species which are invasive in woodland, such as rhododendron (*Rhododendron sp*), cherry laurel, creeping bell flower (*Campanula rapunculoides*) and Spanish blue-bell (*Hyacinthoides hispanica*), should not be included in the planting plan for any part of the Site.

PROTECTED AND NOTABLE SPECIES

- 11.7 Appropriate mitigation for roosting bats in buildings and reptiles will be informed by further survey work for these species groups.

Foraging and commuting bats

Careful lighting design

- 11.8 Boundary habitats should not be illuminated by artificial lighting.
- 11.9 In order to reduce a low potential, indirect impact on foraging and commuting bats to negligible, mitigation to reduce any effects of artificial lighting should be implemented, as far as possible and where applicable, in accordance with guidance issued by the Bat Conservation Trust and Institute of Lighting Professionals (ILP, 2023):
- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.
 - LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
 - A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component .
 - Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
 - Internal luminaires should be recessed where installed in proximity to windows to reduce glare and light spill.
 - Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
 - Column heights should be carefully considered to minimise light spill and glare visibility.
 - Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.
 - Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt
 - Where appropriate, external security lighting should be set on motion- sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate
 - Where appropriate, use a Central Management System (CMS) with additional web-enabled devices to light on demand.
 - The use of bollard or low-level downward-directional luminaires is strongly discouraged.
 - If all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

Hazel dormice

- 11.10 Should the scrub within the Site be left unmanaged, the habitat may become more suitable and could therefore be utilised by dormice that may be present within surrounding habitats.
- 11.11 Therefore, it is recommended that the current management regime is adhered to prior to development works. Vegetation management works should be undertaken outside of the bird nesting season.
- 11.12 Should the scrub habitat be left unmanaged for more than one season, advice should be sought from an experienced ecologist as to the requirement for dormouse presence / absence surveys prior to development works.

Badger

- 11.13 Due to the mobile and itinerant nature of badgers and the relative ease in which badgers can excavate new setts, the following precautionary mitigation will be implemented pre-construction or ground works:
- A daytime walkover survey will be undertaken within 2 weeks of the start of works to monitor any new signs of the presence of badger and confirm whether mitigation measures remain suitable.
 - The survey will determine the current status of badger setts within the Site and ensure that any new setts within the Site are identified, allowing an appropriate time frame to implement any required suitable mitigation measures prior to the start of works.
- 11.14 The following mitigation should be implemented during construction works to avoid harm to individual badgers:
- All holes and excavations should be covered over each night to prevent animals from being trapped or injured.
 - If this is not possible, a structure/plank should be placed into the hole to enable animals to escape.

Hedgehog

- 11.15 The following mitigation should be implemented for hedgehog during the clearance of any vegetation within the Site in order to avoid harm to individual animals:
- A toolbox talk to contractors prior to the start of works should be undertaken to inform site workers of the potential presence of hedgehog within the Site.
 - Care should be taken when clearing vegetation to avoid harming hedgehog that may be sheltering within the site.
 - If a hedgehog is found (without young) within the site between April and October inclusive then it should be carefully relocated to an area outside the development site that offers immediate shelter.
 - If a nesting hedgehog with young is found between May and October inclusive (breeding season) then an ecologist should be contacted immediately for advice.
 - If a hibernating hedgehog is found between November and March inclusive (hibernation season) then an ecologist should be contacted immediately for advice.

11.16 The following mitigation should be implemented for hedgehog during the construction phase:

- All holes and excavations should be covered over each night to prevent animals from being trapped or injured.
- If this is not possible, a structure/plank should be placed into the hole to enable animals to escape.
- Any removal of building materials or other debris, should be undertaken with care to prevent harm to hedgehog.
- If any hedgehogs are found during the construction phase they should be carefully relocated to an area outside the development site that offers immediate shelter.

11.17 The following mitigation will be implemented for hedgehog post-development:

- Any close board fencing to be used will be fitted with small openings within gravel boards to allow hedgehogs access throughout the site. At least one entrance hole will be fitted into each boundary.

Nesting Birds

Avoid impact to nesting birds

11.18 The following mitigation should be implemented to avoid impact to nesting birds:

- Works to any vegetation and the building should be undertaken outside of the bird nesting season.

11.19 If impacts to very small areas of vegetation and the building are unavoidable between March and September, then the following mitigation should be undertaken:

- A nesting bird survey should be undertaken by a suitably experienced ecologist within at least 48hours prior to any impacts.
- A watching brief should be carried out by a suitably experienced ecologist during any works that impact suitable vegetation within the site.
- If nesting/nest-building birds are found, no works should commence/continue that are likely to damage or significantly disturb a nest until the young have fully fledged.

11.20 Works undertaken during the bird nesting season may result in significant delays to the development programme if activities need to cease due the presence of an active nest. It is important to note that many bird species, such as blackbirds and robins are multiple brooders and may therefore nest within the Site for a number of months.

12. SUGGESTED ENHANCEMENT MEASURES

- 12.1 It is recommended that ecological enhancement measures are included as part of development proposals. Possible habitat enhancement measures are outlined below.

TREE PLANTING

- 12.2 Tree planting around the boundaries of the Site would benefit nesting birds and foraging bats, amongst other species. Trees that produce fruits, such as *Prunus* and *Sorbus* species, will provide additional foraging habitat for birds within the locality.

HEDGEROW AND NATIVE SCRUB CREATION

- 12.3 Native species-rich hedgerows and scrub could be created around Site boundaries. Species could include hazel, hawthorn, spindle, holly, yew, privet, field rose, dog rose and guelder rose.
- 12.4 Flowering species, such as hawthorn, privet and rose would provide opportunities for nectar feeding invertebrates, such as bumblebees, hover flies and butterflies. Creation of these habitat feature would also benefit bats and dormice by providing additional foraging habitat and birds through additional nesting habitat.

NATIVE AND NECTAR RICH PLANTING PLAN

- 12.5 It is recommended that any planting plans around the building include native, flower rich species, including those that flower in the late and early seasons to enhance the biodiversity value of the site.
- 12.6 The inclusion of climbing plants would add sheltering opportunities for invertebrates and birds. They can also produce nectar rich flowers for butterflies, bees and hover flies and fruit for birds and small mammals.
- 12.7 The inclusion of herbs, such as lavender and sage, would provide nectar for an array of invertebrate species, including bees, butterflies and moths. Providing a range of herb plants would ensure flowering throughout the seasons. The inclusion of plants that produce scent at night would attract night flying invertebrates and as such would also provide foraging opportunities for bats.

BAT BOXES

- 12.8 Development provides an opportunity to enhance the site for bats via provision of roosting opportunities.
- 12.9 An integrated bat box, such as a 1FR Schwegler Bat Tube, or similar, could be installed in building B1. Alternatively, suitable gaps could be created within any external cladding to provide opportunities for crevice dwelling bats.

BIRD BOXES

- 12.10 Bird boxes, including woodcrete exterior or integrated terrace boxes for house sparrows could be incorporated into building B1. Boxes should be located 2-4m in height and arranged so that loose colonies of house sparrows are encouraged. Bird boxes should be located close to eaves and on the north or east elevations to avoid direct sunlight.
- 12.11 Bird boxes suitable for hole nesting species, such as Schwegler 1B (around 32mm) or similar, suitable for species such as nuthatches and great tits could be installed on mature trees within the ownership boundary. Bird boxes should be located on north or east elevations to avoid direct sunlight.

LOG PILES

- 12.12 Log piles could be created around the boundaries of the Site. These habitat features would provide hibernating and sheltering opportunities for amphibians and small mammals, as well as habitat for saproxylic invertebrates, such as stag beetles.

13. REFERENCES

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- Institute of Lighting Professionals & Bat Conservation Trust (2023). Bats and artificial lighting in the UK. Bats and the built environment series. Guidance Note 08/23.
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- UK Habitat Classification Working Group (2018). UK Habitats Classification - Habitat Definitions V2.0 at <http://ecountability.co.uk/ukhabitatworkinggroup-ukhab>.
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14. APPENDIX 1: SUMMARY OF PLANNING POLICY AND LEGISLATION

14.1 Species afforded protection under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 are also known as European Protected Species. European Protected Species include all species of bats, beaver, otter, hazel dormice, great crested newt.

14.2 European Protected Species relate to those listed within the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and are afforded the highest level of protection. These species are also protected under the Wildlife and Countryside Act 1981. Taken together this level of protection makes it an offence to:

- deliberately capture, injure or kill any wild animal of a European protected species,
- deliberately disturb wild animals of any such species
- deliberately take or destroy the eggs of such an animal
- damage or destroy a breeding site or resting place of such an animal

14.3 Disturbance of animals includes in particular any disturbance which is likely:

- to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or
- in the case of animals of a hibernating or migratory species, impair their ability to hibernate or migrate
- to affect significantly the local distribution or abundance of the species to which they belong

14.4 The legislation requires that any derogation be dealt with by licencing through an appropriate licencing body (Natural England in England). In determining whether a licence can be granted the licencing body must apply the requirements of Regulation 53, and in particular, the three tests:

1. Regulation 55(2)(e) states: a licence can be granted for the purposes of “preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment”.

2. Regulation 55(9) states: The relevant licensing body must not grant a licence under this regulation unless it is satisfied—

- (a) that there is no satisfactory alternative; and
- (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

PLANTS

14.5 A number of plant species are protected under Schedule 8 of the Wildlife and Countryside Act 1981. This Schedule lists plant species that are protected under Section 13, which protects from picking and sale of plants or parts of plants listed in Schedule 8.

BIRDS

14.6 All nesting birds are protected under the Wildlife and Countryside Act 1981. With certain exceptions, it is an offence to:

- Kill, injure or take wild birds;
- Take, damage or destroy the nest of wild birds while in use or being built;
- Take or destroy the eggs of wild birds;
- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Birds of Conservation Concern

14.7 After reviewing the status of all bird species in the UK, the leading non-governmental bird conservation organisations agreed priorities for bird conservation. This led to the publication of a list of Birds of Conservation Concern. Bird species are either listed as red, amber or green, depending on their status and conservation objectives. Birds listed as red require urgent, effective conservation action.

BADGERS

14.8 Badgers are protected under the Protection of Badgers Act 1992. Under this legislation it is an offence to:

- Wilfully kill, injure or take a badger (or attempt to do so).
- Cruelly ill-treat a badger.
- Dig for a badger.
- Intentionally or recklessly damage or destroy a badger sett, or obstruct access to it.
- Cause a dog to enter a badger sett.
- Disturb a badger when it is occupying a sett.

COMMON REPTILES

14.9 All common and widespread reptiles, which include viviparous lizard, slow worm, grass snake and adder are protected under the Wildlife and Countryside Act 1981. This makes it an offence to:

- Intentionally or recklessly kill or injure reptiles
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisement to buy or sell any reptile.

INVERTEBRATES

14.10 A small number of invertebrates are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, relating to the designation of SACs, including white-clawed crayfish and Desmoulin's whorl snail.

14.11 A number of invertebrate species also protected under the Wildlife and Countryside Act, such as the heath fritillary and fairy shrimp. Species listed under Schedule 5 are protected from one, some or all of the following:

- Intentional killing, injuring, taking
- Possession or control (live or dead animal, part or derivative)
- Damage to, destruction of, obstruction of access to any structure or place used by a scheduled animal for shelter or protection
- Disturbance of animal occupying such a structure or place
- Offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative)
- Advertising for buying or selling live or dead animal, part or derivative

STATUTORY PROTECTED SITES

14.12 Special Protection Areas and Special Areas of Conservation are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

14.13 Sites of special scientific interest (SSSIs) are protected under the Wildlife and Countryside Act 1981. Natural England is responsible for notifying SSSIs, ensuring they are managed appropriately and assessing and monitoring their condition.

14.14 National Nature reserves are created to protect important wildlife habitats, while also providing a resource for scientific research and recreation. Declared under the National Parks and Access to the Countryside and the Wildlife and Countryside Act 1981.

NON-STATUTORY PROTECTED SITES

Ancient Woodland

14.15 Land with continuous woodland cover since at least 1600AD. Ancient woods are recognised in UK planning policy, but do not have statutory protection.

NATURAL ENVIRONMENT AND RURAL COMMUNITIES (NERC) ACT 2006

14.16 Following consultation with Natural England, the Secretary of State identified species and habitats considered to be of principal importance for the conservation of biological diversity in England. These species and habitats are listed under Section 41 of the Act. The list is to be kept under review and revisions are made as necessary as part of the progress reports on the Biodiversity Strategy for England.

14.17 Following the Biological Diversity in Japan, 2012, a new initiative in England, 'Biodiversity 2020', replaced the former UK Biodiversity Action Plan Species aiming to reinforce the protection of Section 41 habitats and species.

THE NATIONAL PLANNING POLICY FRAMEWORK

14.18 The National Planning Policy Framework was revised in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied. Within this document, Chapter 15 is titled Conserving and Enhancing the Natural Environment.

14.19 Of particular relevance within this chapter are the following statements:

Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.*

To protect and enhance biodiversity and geodiversity, plans should:

- *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.*

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

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

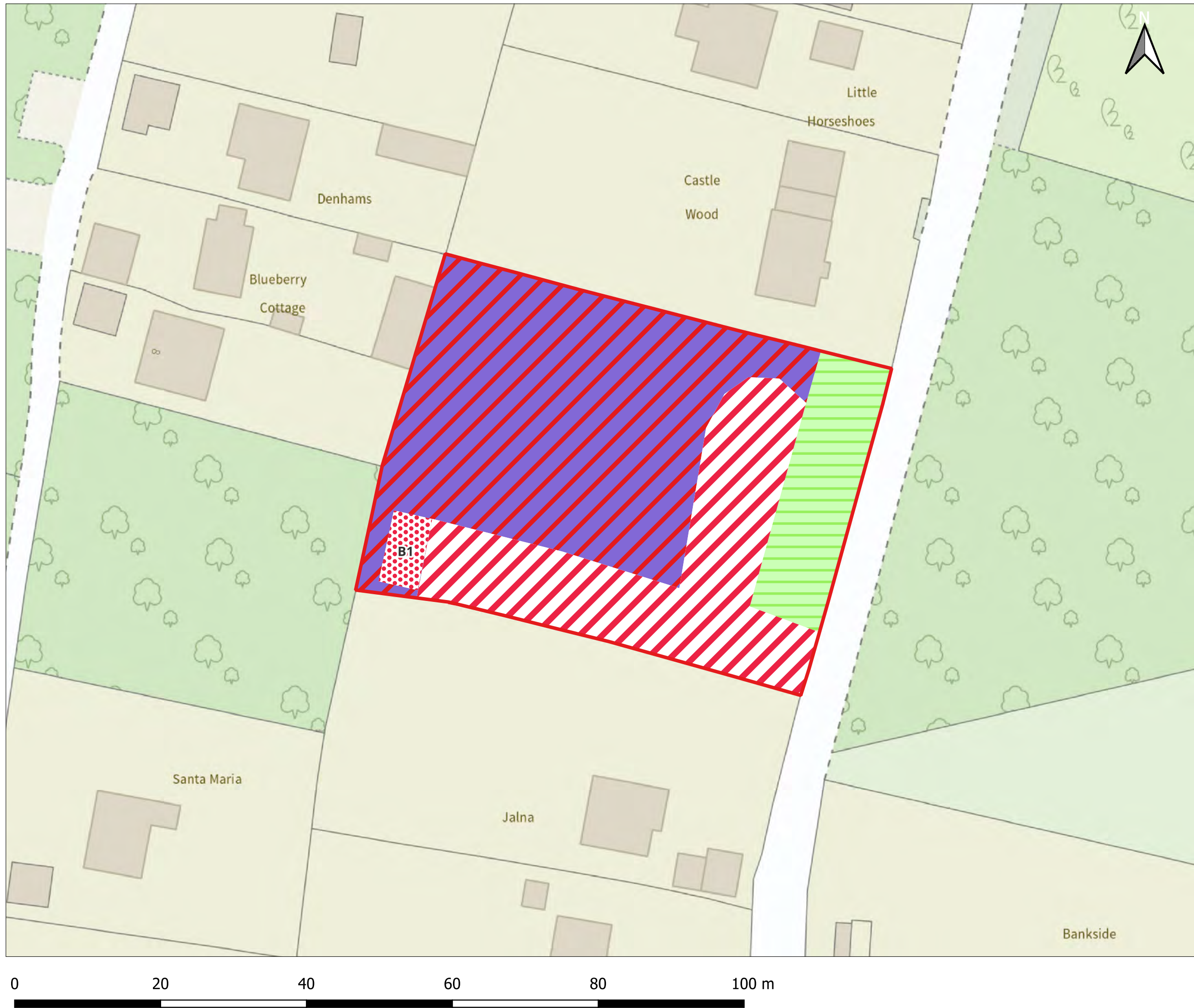
d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

15. APPENDIX 2: SUITABILITY ASSESSMENT OF ROOSTING HABITAT (STRUCTURES AND TREES)

Table 6. Assessing potential suitability of roosting habitat (structures and trees) for bats and survey effort required. Adapted from Bat Surveys for Professional Ecologists, Good Practice Guidelines 4th Edition (Collins, 2023).

Suitability	Description of roosting habitat	Survey effort* and timing
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices / suitable shelter at all ground / underground levels).	None required
Negligible	No obvious habitat features on site likely to be used by roosting bats; however,, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	None required.
Low	A structure or tree with one or more PRF-I roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/ or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).	Buildings/structures: One survey visit. One dusk emergence survey (or dawn re-entry survey if appropriate). Timing: May to August. None required.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Two separate dusk emergence surveys (or dawn re-entry surveys if appropriate). Surveys should be spaced a minimum of three weeks apart. Timing: May to September with at least one survey undertaken between May - August.
High	A structure or tree with one or more PRF-M roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Three separate dusk emergence survey visits (or dawn re-entry surveys if appropriate). Surveys should be spaced a minimum of three weeks apart. Timing: May to September with at least two surveys undertaken between May - August.

* Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures and trees.



Legend

-  Site boundary
-  Other neutral grassland (g3c)
-  Mixed scrub (h3h)
-  Developed land; sealed surface (buildings) (u1b5)
-  Artificial unvegetated, unsealed surface (u1c)

Note:

Habitats mapped based on UK Habitat Classification following Preliminary Ecological Appraisal site visit undertaken on 28/11/2023.



Habitat Plan

The Ravens
Rhododendron Avenue
Culverstone

Drawing ref:	1345_DR01
Revision:	-
Date:	18/12/2023
Scale:	1:500
Paper size:	A3