



# The Ecology Co-op

ENVIRONMENTAL CONSULTANTS

Building B, Lords Wood Barns, Petworth, West Sussex, GU28 9BS

Tel: [REDACTED] - E-Mail: [REDACTED] - Website: [www.ecologyco-op.co.uk](http://www.ecologyco-op.co.uk)

## Mitigation Strategy and Management Plan

Site Name

Princess Royal Barracks Phase 5i

Issue Date

7<sup>th</sup> November 2023

Client

Vail Williams

Author

Rebecca Carter-Whitehead

**Project No: P5784**

The Ecology Co-operation Ltd

Registered Office: Greens Court, West Street, Midhurst, West Sussex, GU29 9NQ

Company number: 8905527





## Document Control

Issue No	Author	Reviewer	Issue Date	Additions/alterations	Notes
Original	<b>Rebecca Carter-Whitehead</b> BSc (Hons)	<b>Kate Priestman</b> MCIEEM, CEnv	07.11.23	N/A	

## Conditions of use

This report has been prepared by The Ecology Co-operation Ltd, with all reasonable skill, care and diligence within the terms of the Contract with the client. This report only becomes the property of the client once payment for it has been received in full.

We disclaim responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client, and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

## About the Author

This report has been prepared by Rebecca Carter-Whitehead, a Consultant Ecologist at The Ecology Co-op, with 7 years' experience. She holds dormouse and great crested newt Level 1 survey licences, and is working as an accredited agent Level 1 bat surveyor.

## About the Reviewer

This report has been reviewed by Kate Priestman, who is a Principal Ecologist with over twenty years' experience. Kate has undertaken bat survey work and reporting, and prepared European Protected Species licences for numerous schemes. As a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Chartered Environmentalist (CEnv), she is bound by CIEEM's code of professional conduct.



## Report Summary

<p><b>Purpose</b></p>	<p>The Ecology Co-op was commissioned by Vail Williams to produce an Ecological Mitigation Strategy and Management Plan for a development of land at Princess Royal Barracks further to a proposal for the change of use of a museum building to a food store and creation of a new access road. Following a Preliminary Ecological Appraisal, including a walkover of the site, further ecological surveys were undertaken, including protected species surveys and desk-top studies, between July 2023 and October 2023 to provide sufficient baseline information for this assessment. This document presents the findings of these surveys, and a full Ecological Mitigation Strategy and Management Plan to inform a reserved matters application to the proposed development.</p>
<p><b>Context</b></p>	<p>The site comprises an old museum building with an associated car park, access road and area of acid grassland and heathland mosaic to the south-east. A barbed wire fence separates the car park from the museum building and grassland. The site borders a road at the south and the southern boundary is formed of a road verge.</p>
<p><b>Impact on protected species</b></p>	<p>The protected species surveys identified habitat on site suitable for reptiles, one tree that has ‘moderate’ potential suitability for roosting bats, although none were present in the roosting features during the assessment, and a single pipistrelle using the museum building as a roost.</p> <p>Reptile surveys began in September 2023, and have yielded no presence of reptiles so far; however, not enough visits have been completed to inform a proper assessment of the presence/likely absence of reptile species on site.</p>
<p><b>Impact on habitats</b></p>	<p>The site consists of hardstanding in the form of a current car park and museum building, and an acid grassland and heathland mosaic habitat to the south-east. Some of this habitat will be lost to the addition of a new access road to the current car park. However, habitat will be retained and enhanced as part of the mitigation and management measures set out in this document.</p>
<p><b>Further recommendations</b></p>	<p>There are no planned works occurring within the loft void, or associated with the porch of the building; however, a pre-commencement inspection of potential bat roosting features (excluding the porch and loft void) should be undertaken by a suitably qualified ecologist, to ensure these features are not being used by bats and therefore can be rendered unsuitable, should any works to the building be required in those areas.</p> <p>Two trees, including the PRF-I potential tree, will require removal. Therefore, the tree will need to be subject to a pre-commencement inspection with an endoscope by a suitably licensed ecologist prior to immediate removal.</p> <p>Further reptile surveys are needed to ensure at least 7 visits have been completed in optimal conditions for a proper assessment of the potential impacts to reptiles.</p> <p>Full details of mitigation and management of the site are provided in Section 5 and Section 6.</p>



## 1 CONTENTS PAGE

1	CONTENTS PAGE .....	IV
2	INTRODUCTION .....	1
2.1	Background.....	1
2.2	Purpose of this Report .....	3
2.3	Policy and Legislation .....	3
3	SURVEY METHODOLOGY .....	4
3.1	Desk Studies.....	4
3.2	Habitat Survey .....	4
3.3	Detailed Botanical Assessment .....	4
3.4	Bats.....	5
3.5	Great Crested Newts and Other Amphibians .....	9
3.6	Reptiles.....	9
3.7	Other Notable Species.....	10
3.8	Invasive Non-native Species .....	10
3.9	Constraints/Limitations to Surveys .....	10
4	ECOLOGICAL BASELINE .....	11
4.1	Designated Sites.....	11
4.2	Habitats.....	11
4.3	Botanical Baseline .....	12
4.4	Bats.....	12
4.5	Great Crested Newts and Other Amphibians .....	16
4.6	Reptiles.....	17
4.7	Invasive Non-native Species .....	19
5	IMPACT ASSESSMENT.....	20
5.1	Designated Sites.....	20
5.2	Priority Habitats .....	21
5.3	Bats.....	21
5.4	Great Crested Newts and Other Amphibians .....	22
5.5	Reptiles.....	22
5.6	Other Notable Species.....	22
5.7	Invasive Non-native Species .....	23
6	CONSTRUCTION PHASE MITIGATION MEASURES .....	23



6.1	Toolbox Talk and General Housekeeping .....	23
6.2	Badgers .....	24
6.3	Roosting Bats .....	24
6.4	Reptiles.....	25
7	HABITAT CREATION AND BIODIVERSITY ENHANCEMENT .....	27
7.1	Acid Grassland and Heathland Mosaic Habitat .....	27
7.2	Wildflower/Scrub Verges .....	27
7.3	Species-rich Native Hedgerow and Tree Planting.....	27
7.4	Enhancements for Bats, Birds, and Invertebrates .....	28
	APPENDIX 1 – LEGISLATION AND POLICY .....	30
	APPENDIX 2 – LOCAL PLANNING POLICY FOR SURREY HEATH BOROUGH COUNCIL .....	35
	APPENDIX 3 – IMPORTANCE OF ECOLOGICAL FEATURES .....	36
	APPENDIX 4 – BOTANICAL ASSESSMENT .....	37
	APPENDIX 5 – GREAT CRESTED NEWT SURVEY RESULTS .....	39
	APPENDIX 6 – ARTIFICIAL LIGHTING AND WILDLIFE .....	40
	APPENDIX 7 – FIELD OF VIEW FROM THE NIGHT VISION CAMERAS	43



## 2 INTRODUCTION

### 2.1 Background

The Ecology Co-op was commissioned to produce an Ecological Mitigation Strategy and Management Plan of the land at Princess Royal Barracks by Vail Williams. This report presents the findings of baseline ecological surveys and desk-study research and assesses the likely impacts and significance of effects of the proposed works in relation to protected/notable species, habitats and designated sites.

This site measures 0.82ha and is situated on the northern outskirts of Deepcut, Surrey GU16 6SJ. The site currently comprises an old museum building, associated car park and greenspace. It is situated on the edge of a new housing estate at Deepcut Barracks, surrounded by mature woodland to the east, south and west. The central grid reference for the site is SU 90622 57585. Figure 1 shows the boundary of the site and local context.

The proposed development includes a change of use of the existing museum building to a convenience store, improvements to the existing car parking area and creation of a new access road into the site at the south (Figure 2).

The Ecology Co-op undertook a Preliminary Ecological Appraisal (PEA)<sup>1</sup> at Princess Royal Barracks on 28<sup>th</sup> June 2023. Based on the findings of this assessment, presence/likely absence surveys for botany, bats, reptiles, and a further assessment of identified waterbodies for the presence of great crested newt *Triturus cristatus* were recommended.

The site, as part of a wider area, has been subject to a number of baseline and updated ecological surveys between 2009 and 2015 by AMEC and NPA<sup>2,3</sup>. These surveys were to inform a larger outline application for a major residential-led development of 1,200 new dwellings, which was subsequently approved in April 2014 (planning reference: 12/0546). Condition 15 of the application required the production of a sitewide Ecological Management Strategy, which was produced in August 2015<sup>4</sup>.

Most relevant to the present development is the identification of a 'low status' common pipistrelle *Pipistrellus pipistrellus* and brown long-eared bat *Plecotus auritus* roost in Building 82. This is the museum building within the present development site that is proposed to be converted to a food store.

---

<sup>1</sup> The Ecology Co-op (2023) *Princess Royal Barracks Phase 5i: Preliminary Ecological Appraisal*

<sup>2</sup> AMEC (2012). *Environmental Statement – Chapter 12*.

<sup>3</sup> NPA (2015). *Update Ecological Survey Report – Princess Royal Barracks, Deepcut*

<sup>4</sup> Nicholas Pearson Associates (2015). *Ecological Management Strategy – Princess Royal Barracks, Deepcut*.





**Figure 1.** An aerial image showing the location of the site. The approximate site boundary is outlined in red. Image produced courtesy of Google maps (map data ©2023 Google).



**Figure 2.** The proposed plans for the works at Deepcut Barracks. Plan modified from Ubique Architects, dated 1<sup>st</sup> November 2023 (drawing no. PD13-P2).



## 2.2 Purpose of this Report

Following the recommendations of the PEA, The Ecology Co-op undertook further protected species surveys for botany, bats, reptiles, and a further assessment of nearby waterbodies for great crested newts.

The purpose of this report is to:

- present the findings of surveys and desk-study research (baseline ecological information);
- identify and evaluate ecologically important features present on the site and within the zone of influence of the proposed development;
- describe the potential impacts of the proposed development and determine the significance of effects on these ecologically important features;
- set out the proposed impact avoidance, mitigation, compensation measures that will be undertaken to reduce significant adverse effects to an acceptable level;
- outline the habitat creation and enhancement measures that will be put into place as part of the proposed development. These are designed to ensure that the proposals contribute to both local and national biodiversity objectives.

This report is intended for submission as part of the planning application for the proposed development.

The surveys and report were carried out and produced at the request of Vail Williams and were supervised by Rozel Hopkins BSc, MSci (Hons), and Rebecca Carter-Whitehead BSc (Hons).

## 2.3 Policy and Legislation

Legal protection applying to relevant bird, mammal, herpetofauna and invertebrate species and current nature conservation planning policy is outlined in Appendix 1 of this report.

Where possible, this report provides information on how the development proposal will be designed to meet the requirements of both the National Planning Policy Framework (NPPF) and local planning policy. Details of the NPPF is provided in Appendix 1 and relevant local planning policy by Surrey Heath Borough Council is provided in Appendix 2.





### 3 SURVEY METHODOLOGY

The following sections describe the methods used in the desk study and protected species/habitat survey(s). All survey methods are in accordance with current best practice guidance for the respective species/taxonomic group and any limitations encountered during the survey are explained in section 3.9.

#### 3.1 Desk Studies

A search for pre-existing records of protected species, priority species for conservation and invasive non-native species was requested from the Surrey Biodiversity Information Centre (SBIC) within a radius of 1km of the site.

A search of on-line mapping resources was undertaken to identify the location of any features of potential ecological interest including ponds within 250m (relevant to great crested newts), watercourses (relevant to riparian mammals and crayfish for example) and connectivity to woodland, scrub, and hedgerow networks (relevant to bats and dormice *Muscardinus avellanarius* for example) in the wider landscape around the site. The connectivity of the site to these features, buildings and other semi-natural habitats are also relevant to species such as bats, great crested newts and reptiles.

The MAGIC website resource ([www.magic.gov.uk](http://www.magic.gov.uk)) was used to identify the location of designated sites for nature conservation and European Protected Species (EPS) licences granted in relation to the survey site.

The desk study findings are presented in full in the Preliminary Ecological Appraisal document for this site.

#### 3.2 Habitat Survey

A site walkover survey was undertaken on 28<sup>th</sup> June 2023, during which the habitats contained within the site were described and evaluated. The dominant species and indicators of important habitat types such as ancient woodland or unimproved grassland, were recorded.

Data was gathered through a site walkover survey and use of on-line aerial photography to broadly categorise the habitats present.

As part of the Preliminary Ecological Appraisal, the site features were evaluated for their potential to support legally protected species and observations of any important plant communities, bird assemblages or other potentially valuable ecological features were recorded. Details of the preliminary survey methods for each legally protected species are given below and any specific limitations to the survey(s), such as access constraints, are set out in section 3.9.

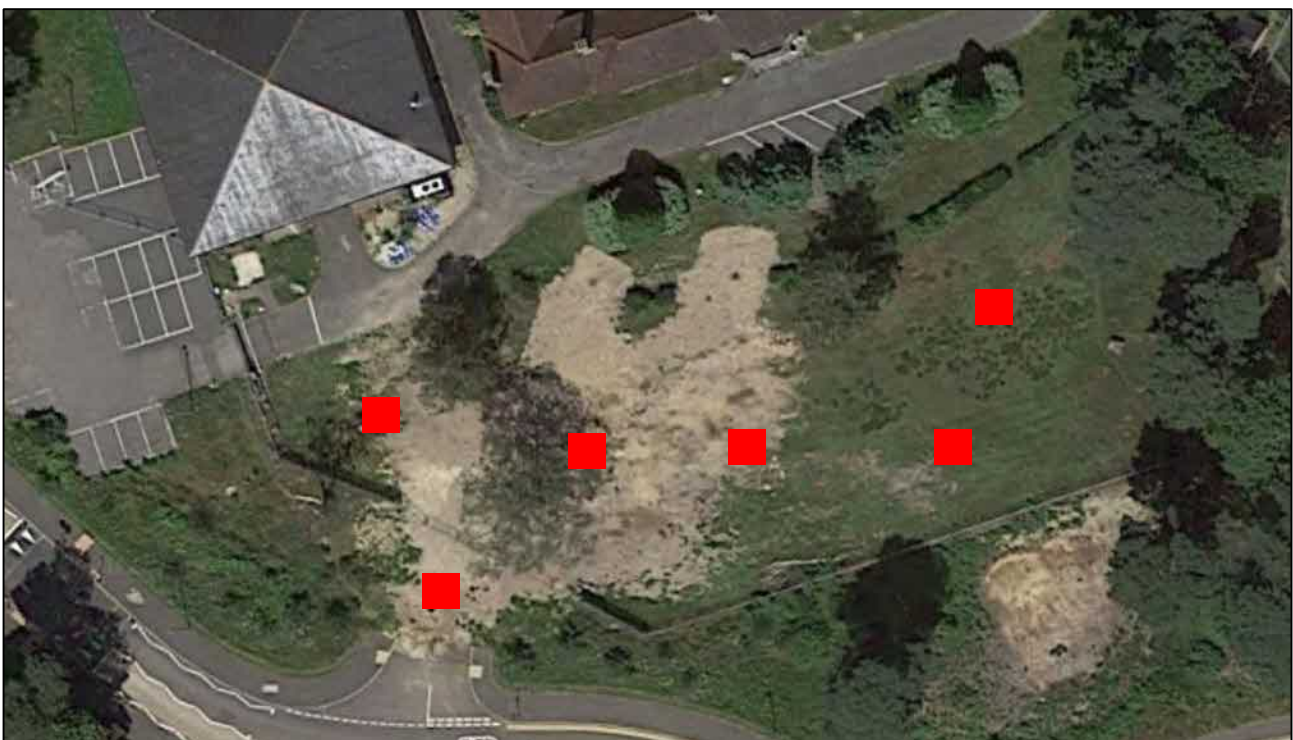
#### 3.3 Detailed Botanical Assessment

As an extension to the walkover survey, a botanical survey was undertaken on 8<sup>th</sup> September 2023 to assess the acid grassland and heathland mosaic habitat. The aim of the survey was to list the dominant species composition and, using acid grassland and heathland indicator species, general vegetation structure and



landform, divide the site into various stand types and look for evidence to support its classification of acid grassland and heathland mosaic. The walkover surveys were undertaken by Paul Whitby BSc (Hons), MCIEEM, CEcol, and Rebecca Carter-Whitehead. Locations of the quadrats can be seen below in Figure 3.

Following the walkover survey, the quadrat data was run through Modular Analysis of Vegetation Information System (MAVIS)<sup>5</sup>. This program is able to assign National Vegetation Classification (NVC) codes to further categorise the habitats present. On this occasion, the southern quadrat outside the fencing was not included in the MAVIS analysis, as the species composition is very different to the acidic grassland in the bulk of the site. The road verge has historically been sown with a wildflower mix, and evidence suggests it has been managed as such through yearly cutting.



**Figure 3.** An aerial image of the site, showing the positions of randomised quadrats (red squares). Images produced courtesy of Google maps (map data ©2023 Google).

### 3.4 Bats

There are 18 species of bat resident in the UK, each with their own specific habitat requirements. Bats can use a wide range of features for roosting purposes including loft spaces, cavity walls, loose tiles, mortice joints and cracks/gaps in a variety of built structures. They can also be found in trees with holes, splits, cracks, cavities, ivy and loose bark. Bats are generally active at night and utilise a wide range of habitats for foraging and commuting between roost sites, hibernation sites and foraging habitats. Linear features such as hedgerows, woodland edges, even fences can be important for navigation between roosting and foraging habitats.

<sup>5</sup> UK Centre for Ecology & Hydration <https://www.ceh.ac.uk/services/modular-analysis-vegetation-information-system-mavis>



### 3.4.1 Natural Roost Features – Trees

All trees likely to be affected directly or indirectly by the proposed development were subject to a ground-based visual inspection to identify potential roost features, followed by climbing inspections where necessary and safe, to look for evidence of roosting bats and to further assess the suitability of the feature. Trees with features are categorised as either PRF-I, features suitable for individual or low numbers of bats, or PRF-M, features suitable for maternity colonies.

### 3.4.2 Built Structures

A detailed ground based visual assessment was carried out, looking for features with potential to support roosting bats (e.g. gaps under tiles, soffits, cracks or gaps in brickwork and cladding) and any evidence indicating the presence of bats, such as rub marks, staining or droppings beneath potential roost features. Where possible and safely accessible, internal inspections of potentially suitable enclosed loft spaces were made to search for evidence of use by bats (live bats, dead bats, droppings, rub marks or staining of timbers). Each feature was categorised for its potential to support roosting bats as shown in Table 1 in accordance with best practice guidance<sup>6</sup>.

**Table 1.** Characterising potential roost features in buildings.

Category	Description
Negligible	A tree with negligible roosting habitat features likely to be used by bats.
Low	A tree of sufficient size to potentially support roosting features, but with none seen from the ground or features identified of limited roosting potential.
Medium	A tree with one or more potential roost sites that could be used by bats due to their size, conditions and surrounding habitat, but unlikely to support a roost of high conservation status such as a maternity or hibernation roost.
High	Trees with one or more potential roost sites that appear suitable for large numbers of bats or use as maternity or hibernation roosts.

### 3.4.3 Emergence/Re-entry Surveys

In accordance with survey findings and best practice guidance, three emergence/re-entry surveys were undertaken on 31<sup>st</sup> July, 16<sup>th</sup> August, and 31<sup>st</sup> August 2023. The surveys were carried out using methodology provided by the Bat Conservation Trust<sup>6</sup>.

The surveys focused on all features identified during the initial assessment as potential roosting sites or access points for bats, with surveyors positioned according to Figure 4. From these locations, surveyors could see all features potentially suitable for roosting bats that were identified during the initial bat scoping survey. Surveyors were positioned to start surveillance at approximately 30 minutes before sunset and continued until at least one and a half hours after sunset and up to two hours depending on the level of activity.

The surveyors recorded any bat activity on or around the potential roosting entry/exit features. All surveys were undertaken during weather conditions suitable for bat activity and at ambient temperatures above 10°C. The

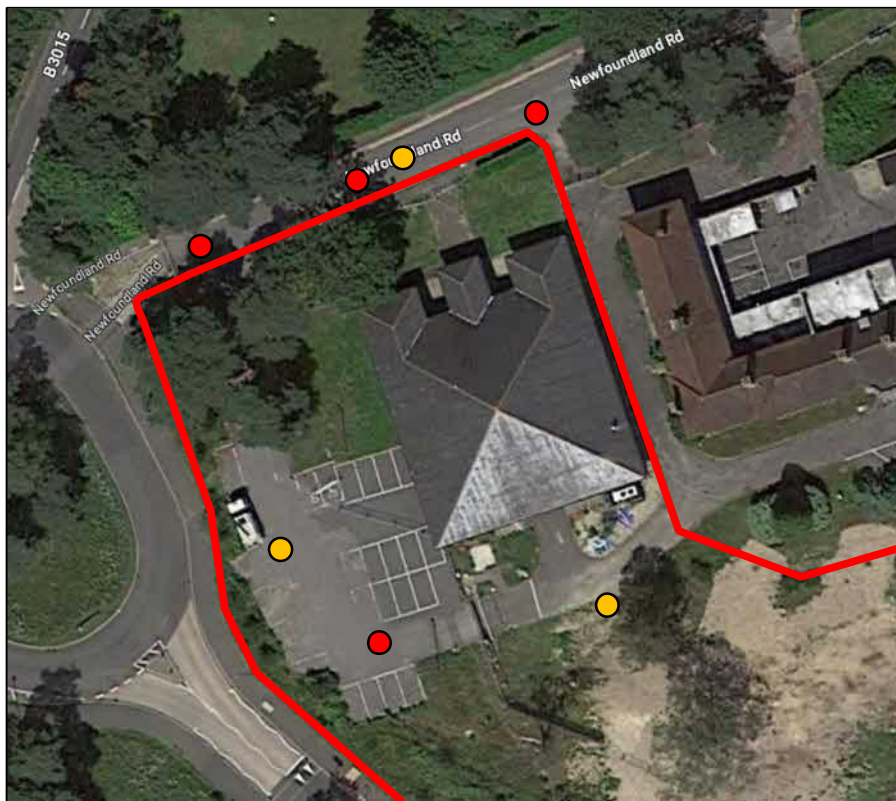
<sup>6</sup>Collins, J.(ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.



surveyors recorded bat activity using 'Echo Meter Touch' bat detectors featuring auto-identification of bat species and automatically triggered recording for later review. An example of the darkest points for each camera on each survey is presented in Appendix 7.

The following equipment was used to support this survey:

- 4 x Echometer Touch 2 Pro detectors with Apple recording devices;
- 1 x SiOnyx Black night vision camera;
- 2 x Canon XA 20 night vision camera;
- 1 x Nightfox Red night vision camera; and
- Multiple infra-red flood lamps and infra-red torches with focused beams.

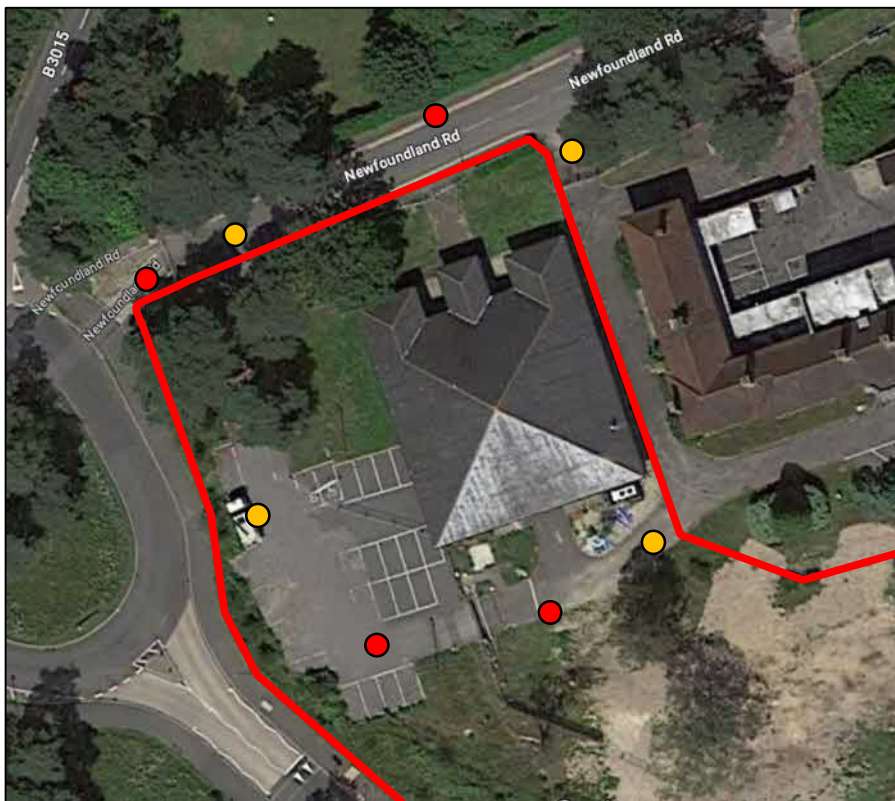


**Figure 4.** An aerial image of the site, showing the positions of surveyors (red dots) and infrared cameras (yellow dots) on 31/07/2023. Images produced courtesy of Google maps (map data ©2023 Google).





**Figure 5.** An aerial image of the site, showing the positions of surveyors (red dots) and infrared cameras (yellow dots) on 16/08/2023. Images produced courtesy of Google maps (map data ©2023 Google).



**Figure 6.** An aerial image of the site, showing the positions of surveyors (red dots) and infrared cameras (yellow dots) on 31/08/2023. Images produced courtesy of Google maps (map data ©2023 Google).



### 3.5 Great Crested Newts and Other Amphibians

Great crested newts require ponds for breeding that meet a series of habitat criteria including good quality water, aquatic plants and an absence of predatory fish. The ponds must have good connectivity to semi-natural terrestrial habitats that provide their invertebrate food sources and suitable safe places to rest and hibernate outside the breeding season. Great crested newts tend to occur more frequently in areas of high pond density across the landscape in ‘metapopulations’ where habitat occupancy ebbs and flows according to changes in conditions.

Common toad *Bufo bufo* is a priority species in England under Biodiversity 2020: A strategy for England’s wildlife and ecosystem services and under section 41 of The Natural Environment and Rural Communities (NERC) Act 2006, where UKBAP species were recognised as of principal importance for the conservation of biodiversity. This species should therefore be considered during planning and development. No surveys have been undertaken at the site that specifically target common toad but a record has been made if they are found during any other site visit/survey.

#### 3.5.1 Habitat Suitability Assessment

The desk study revealed two potential ponds and two ditches within 500m of the site boundary. Where ponds were visible from public rights of way or access permission was granted, they were assessed for their potential to support great crested newts using the Habitat Suitability Index (HSI) (Oldham et al, 2000).

The HSI values were used in combination with professional judgement to select the waterbodies, if any, to be carried forward for the further surveys.

### 3.6 Reptiles

The common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis* grass snake *Natrix natrix* and adder *Vipera berus* are widespread species that can be found in many semi-natural habitats, such as rough grassland, scrub, heathland and open woodland where there is good vegetation cover, an abundance of invertebrate, amphibian or small mammal prey and areas of open ground for basking.

Standard reptile presence/likely absence surveys involve setting out artificial refugia (reptile ‘mats’) in potentially suitable habitat. Reptile mats are pieces of roofing bitumen felt approximately 1m x 0.5m in size, which absorb heat from the sun more rapidly than the surrounding vegetation and provide cover and basking places attractive to reptiles. These are then checked for presence of animals under suitable weather conditions. They are placed in areas of potentially suitable habitat at an approximate density of 20 per ha, or 20m apart along linear features. There are no up-to-date best practice guidelines for reptile surveys, but a minimum of seven survey visits under suitable weather conditions is generally considered to be adequate when determining their presence/likely absence, and 15–20 visits are used to calculate a ‘peak count’ for population size class assessment.

A total of 20 roofing felt mats were used in this survey (see Figure 7). The mats were left *in situ* for a minimum of 2 weeks to ‘bed in’ and allow reptiles to locate them before the first check. The mats were checked over the





period September to October 2023, and all observations of reptiles were recorded, together with the weather conditions, temperature and time of day.



**Figure 7.** Location of reptile refuges (identified with red dots). Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

### 3.7 Other Notable Species

The site's habitats were broadly assessed for their potential to support species of principal importance for nature conservation (Section 41 NERC Act 2006) and other notable species. This includes mammals such as harvest mouse *Micromys minutus*, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, and many bird species. The site was broadly assessed for its potential to support important invertebrate assemblages with specific attention paid to features such as standing dead-wood, wet flushes, bare earth banks and botanically rich areas.

### 3.8 Invasive Non-native Species

No specific surveys for invasive non-native species (INNS) were undertaken. However, the presence of any invasive non-native species encountered during other fieldwork, was recorded.

### 3.9 Constraints/Limitations to Surveys

Surveys record any flora or fauna that is present at the time of the survey visits. It is therefore possible that some species may not have been present during the surveys but may be evident at other times of the year and may appear or disappear from the site if habitat conditions change. For this reason, the surveys are



considered valid for up to eighteen months for badgers and bats, two years for reptiles and three years for great crested newts and dormice. If the habitat conditions change significantly in the intervening period, then it is recommended that the surveys be updated.

The detailed botanical assessment took place in September, which is suboptimal for these surveys. However, this is not believed to be a major constraint as the main habitat types had been identified in the Preliminary Ecological Appraisal walkover earlier in the year, and the important species were still present at the time of the detailed assessment. It is, however, possible that some species may have been missed, particularly due to the unseasonably warm and dry weather in September 2023.

During one of the bat emergence surveys, the IR lights failed on one of the cameras. However, this is not believed to be a major constraint as the survey was very quiet; bat detectors from all surveyors picked up little activity. The location was also cross-referenced by the frame of another camera, covering that location.

## 4 ECOLOGICAL BASELINE

### 4.1 Designated Sites

Surrey Biodiversity Information Centre found four statutory designated sites and five non-statutory Sites of Nature Conservation Importance (SNCIs) located within 1km of the site. The closest of the designated sites is Deepcut Barracks North SNCI, the boundary of which lies directly to the east of the proposed development site. This site has interest for its heath and acid grassland habitats, with 25 plant species typical of grassland of conservation interest in Surrey being recorded on the site, including allseed *Radiola linoides*.

There are four granted EPS licences for mitigation projects within 1km of the site boundary. The closest EPS licence is on the site itself, for the destruction of a brown-long eared and common pipistrelle resting place, dated in 2021 (2020-49683-EPS-MIT).

Priority deciduous woodland habitat, listed under Section 41 of the NERC Act 2007, is located near to the development site. The closest pocket of woodland in this area is located 14m south of the site, on the far side of the road. Maps showing these are available in the Preliminary Ecology Appraisal.

The desk study findings are presented in full in the Preliminary Ecological Appraisal document for this site.

### 4.2 Habitats

The site comprises an old museum building with an associated car park, access road and area of acid grassland and heathland mosaic to the south-east. A barbed wire fence separates the car park from the museum building and grassland. The site borders a road at the south and the southern boundary is formed of a road verge. Two mature silver birch *Betula pendula* trees are located within the grassland.

A more detailed assessment of the habitats on site, including photographs, is available in the Preliminary Ecological Appraisal document for this site.



### 4.3 Botanical Baseline

As an extension to the PEA walkover survey, a detailed botanical survey was undertaken, which provides a full species list for six quadrats identified on site. A full list of the species identified is presented in Appendix 4.

Of the species identified on site, mouse-ear hawkweed *Pilosella officinarum* and dwarf gorse *Ulex gallii* were notable, as these are species typical of heathland and moorland. Dwarf gorse in particular is restricted to lowland heathland habitats in Dorset, Hampshire, Sussex, Surrey and Kent and is therefore quite rare in the UK.

The desk study identified several sites nearby that contain dwarf gorse. These include Frith Hill SNCI (40m west), Frimley Fuel Allotment SNCI (430m north), and Thursley, Ash, Pirbright and Chobham Special Area of Conservation (870m east).

After running the quadrat data through MAVIS, the NVC codes produced were H8, with 33.25% confidence, and H8b, with 32.30% confidence. H8 is *Calluna vulgaris* – *Ulex gallii* heath. H8b is a further classification of this habitat, *Danthonia decumbens* subcommunity, which is defined by well-developed dwarf gorse and bell heather *Erica cinerea* with abundant heath grass *Danthonia decumbens*, alongside frequent common bent *Agrostis capillaris*, sheep's fescue *Festuca ovina*, and small amounts of sweet vernal grass *Anthoxanthum odoratum* and red fescue *Festuca rubra*. Usually, the majority rough cover between the shrubs is composed of mixtures of these species.

Due to the local significance of the species identified, there will be **site-level loss** in the absence of mitigation. Provided the management plan in Section 6 is followed, this can be reduced to a **neutral** level impact.

## 4.4 Bats

### 4.4.1 Natural Roost Features – Trees

Two trees on site were subject to ground-level tree assessments at the time of visit (named Tree 6 and Tree 7 to reflect the report by Keen Consultants<sup>7</sup>). These are all described in Table 2, together with any features with the potential to support roosting bats.

---

<sup>7</sup> Keen Consultants (2023). *Tree Survey for land at former Museum, Deepcut, GU26 6SJ*



**Table 2.** Trees with potential roost features for bats

Tree ref.	Species	Description of features	Survey findings
Tree 6	Silver birch	A mature tree with codominant stems within the grassland area. Flaking bark was seen on both the underside and topside of the northern stem. A small rot hole was also identified on a south-facing section of the southern stem at a height of around 1.5m. All features seen were superficial and no further survey is required.	Negligible suitability
Tree 7	Silver birch	A mature silver birch tree within the grassland area. Two woodpecker holes were identified at a height of 1.5m on the west and eastern faces. These appeared to connect to an internal cavity that runs through the trunk. A small rot hole was also identified on the western side of the trunk at a height of around 4m.	PRF-I



**Figure 8.** Aerial image indicating the location of trees with bat roosting potential within the application site. Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).





#### 4.4.2 Built Structures

The PEA identified potential roost features on site associated with the built structure. Further survey work was recommended comprising of three emergence surveys of the building. The potential roosting features are detailed in Table 3 below.

**Table 3.** Potential roost features for bats in buildings

Building	Description of features	Survey findings
Old Museum Building	<p>A brick building of a complex structure with a slate hipped roof. Generally, the building is in good repair, however, there are a large number of lifted, slipped and cracked slate tiles across the roof, particularly close to the hips. In addition, gaps were identified due to missing mortar under hip tiles on the south and northern elevations. Access points were also seen under hip tiles and between the soffit box and wall top on the southern and western elevations.</p> <p>Internally, the building is single-storey with a central atrium and multiple side rooms. The central atrium has a vaulted ceiling and therefore no loft voids. However, the side rooms have suspended ceilings with traditional loft voids above. A number of the ceiling tiles were broken, slipped or missing, allowing inspection into small areas of the loft from the ground. It appeared as if the lofts were mostly lined with bitumen or plastic sheeting with rockwool on the floor. No evidence of bats could be seen from the ground but may have been missed due to the lack of safe access into the voids.</p>	Moderate bat roost suitability

#### 4.4.3 Pre-existing Records

The biodiversity records search indicates the presence of common pipistrelle *Pipistrellus pipistrellus* and brown long-eared bat *Plecotus auritus* within 1km of the site. The closest of these was a brown long-eared bat recorded as being located approximately 55m north of the site in July 2004.

There are four granted EPS licences for mitigation projects within 1km of the site boundary. The closest EPS licence is on the site itself, for the destruction of a brown-long eared *Plecotus auritus* and common pipistrelle *Pipistrellus pipistrellus* resting place, dated in 2021 (2020-49683-EPS-MIT).

#### 4.4.4 Emergence Survey Results

The dates, times, weather conditions, temperatures and personnel for each survey visit are presented in Table 4 below.



**Table 4.** Summary of reptile surveys.

Date	Survey timings	Temp. degrees centigrade, weather conditions throughout survey	Surveyors
31/07/2023	Start time: 20:29 Sunset: 20:59 End time: 22:35	Max/min temp: 18/14°C. 30% cloud cover and light breeze (BF1)	Rozel Hopkins Holly Waters Kelly Jones Richard Angliss
16/08/2023	Start time: 19:53 Sunset: 20:23 End time: 22:08	Max/min temp: 18/16 °C. 30% cloud cover and still (BF0)	Rebecca Carter-Whitehead Ben Small Kelly Jones Linda Pryke
31/08/2023	Start time: 19:22 Sunset: 19:52 End time: 21:22	Max/min temp: 16/15°C. 100% cloud cover and still (BF0)	Rebecca Carter-whitehead Holly Waters Richard Angliss Nathan Dixon

The following descriptions summarise bat activity and emergence from the building for each survey visit.

### 31<sup>st</sup> July 2023

There were moderate levels of general bat activity. One bat emergence was seen.

The first bat detected was a common pipistrelle commuting across the site at 22 minutes before sunset. A common pipistrelle emerged from the northern aspect of the building around the porch at 21:16. There was near constant activity from common pipistrelles across the site, which including social calling and foraging. A noctule *Nyctalus noctula* was heard passing through the site at 22:15 and 22:19.

### 16<sup>th</sup> August 2023

General bat activity was markedly low. No bat emergences were seen.

The first bat heard was a common pipistrelle from 25 minutes after sunset. It was a single bat that foraged around the site until the end of the survey. A serotine bat *Eptesicus serotinus* and a soprano pipistrelle *Pipistrellus pygmaeus* were both heard at 21:06. A noctule bat *Nyctalus noctula* was heard at 21:18, and a *Plecotus* species bat passed through the site at 21:43.

### 31<sup>st</sup> August 2023

There were moderate levels of general bat activity. No bat emergences were seen.

The first bat observed was a common pipistrelle seen flying from east to west across the rear (southern aspect) of the building at 27 minutes after sunset. As with the previous surveys, this was followed by constant common pipistrelle activity on the site with social calls and foraging. A *Plecotus* species bat was heard at 20:49, 21:01 and 21:22. A noctule bat passed through the site at 21:05.





#### 4.4.5 Interpretation

The building has limited value to bats due to artificial illumination at night in the associated car park, however one emergence was recorded. The habitats contained on the site have some value to foraging bats as there a mosaic habitat providing a varied assemblage of invertebrates. Further connectivity of the site through the treelines present offers further foraging opportunities and linear features for commuting.

Bats are opportunistic and will exploit a range of habitats across the landscape in response to the rise and fall of insect populations. These surveys indicate that the habitats contained on the site are utilised intermittently as part of the wider landscape by common and widespread bat species.

As such, the development site is not considered to be important to bats beyond the **local level**.

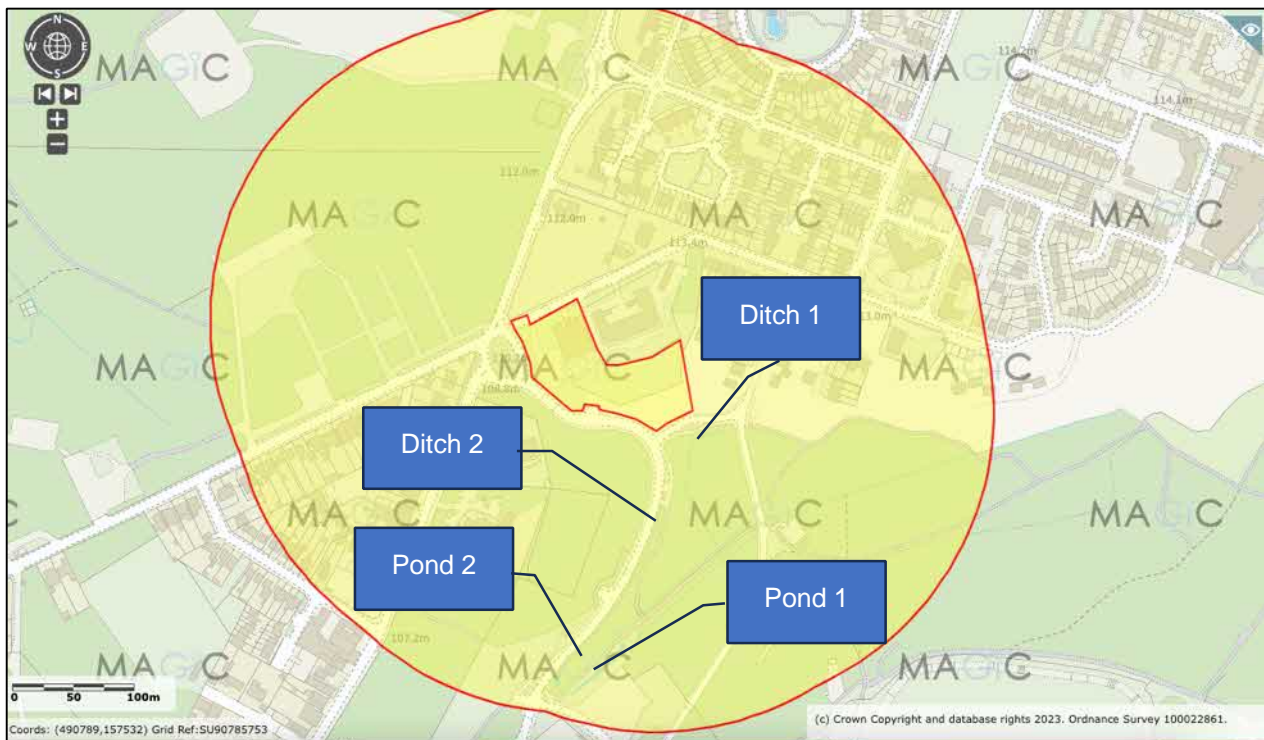
### 4.5 Great Crested Newts and Other Amphibians

#### 4.5.1 Habitat Suitability, eDNA Testing and Field Survey Results

Table 525 presents a summary of all surveys undertaken at ponds within 250m of the proposed development boundary that were identified in the desk study. The location of each pond is presented in Figure 9. Full HSI scores are presented in Table 4, Appendix 5.

**Table 52.** Summary of great crested newt assessments and surveys.

Ref.	NGR	Distance/ direction	Description	HSI value	Interpretation
Ditch 1	SU 90722 57540 (closest section to site)	18m south	Ditch system located within mature woodland. Sections are culverted under roads and paths.	0.43	Poor
Ditch 2	SU 90700 57507 (closest section to site)	60m south	Ditch system located within mature woodland edge.	0.43	Poor
Pond 1	SU 90663 57378	170m south	Pond within mature woodland, connected to Ditch 1	0.35	Poor
Pond 2	SU 90645 57387	210m south	Pond within mature woodland, connected to Ditch 2	0.30	Poor



**Figure 9.** Waterbodies within 250m of the site (shown with red outline). Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

#### 4.5.2 Pre-existing Records

No amphibian records were returned by the Surrey Biodiversity Information Centre.

#### 4.5.3 Interpretation

The site walkover concluded that Ditches 1 and 2 are connected and part of the same run off system, with Ponds 1 and 2 at the end of this system within the woodland. These waterbodies can be discounted as they are clearly unsuitable for great crested newts, and have been dry on both visits. No waterbodies were carried forward for eDNA testing. Full presence/absence field surveys are not required. Based on these factors, the site is considered to be of **negligible** importance to great crested newts.

### 4.6 Reptiles

#### 4.6.1 Survey Results

The survey findings, dates and conditions are presented in



Table6 below.



**Table 6.** Reptile survey results.

Date	Start time	Air temp. °C	Weather conditions	Results
14/09/2023	10:00	21	80% humidity, bright sun	No reptiles found
19/09/2023	11:00	18	81% humidity, overcast	No reptiles found
22/09/2023	10:30	16	83% humidity, passing clouds	No reptiles found
06/10/2023	11:30	18	84% humidity, passing clouds	No reptiles found

#### 4.6.2 Pre-existing Records

No reptile records were identified within 1km of the site, however records for sand lizard and smooth snake were identified within a 10km square overlapping the site by SBIC. This means that these species are present within the wider landscape.

#### 4.6.3 Interpretation

The surveys found no presence of reptiles to date. However, given that the minimum number of surveys has not been completed, an assessment of the site for reptiles cannot be given at this point. Further reptile surveys must be completed in 2024 for an accurate assessment to be provided.

### 4.7 Invasive Non-native Species

#### 4.7.1 Survey Results

Buddleia shrubs were identified within the site boundaries, and the further botanical surveys on site also revealed Canadian fleabane *Erigeron canadensis* in two of the six quadrats. Although neither species are listed on Schedule 9 of the Wildlife and Countryside Act, they are non-native and invasive species. No other invasive species were identified.

#### 4.7.2 Pre-existing Records

The Surrey biodiversity records search indicates the presence of Japanese knotweed *Fallopia japonica*, montbretia *C. x crocosmiiflora*, three-cornered garlic *Allium triquetrum*, variegated yellow archangel *Lamium galeobdolon subsp. argentatum* and Indian balsam *Impatiens glandulifera* within 1km of the site.

#### 4.7.3 Interpretation

Care should be taken to prevent the plants found on site from spreading beyond the site boundary. While these species are not listed under Schedule 9 of the Wildlife and Countryside Act, it is not therefore an offence to allow them to spread, but doing so could cause ecological damage beyond the site.



## 5 IMPACT ASSESSMENT

In this section, the predicted impacts and effects of the proposed scheme are described for each important ecological feature in turn. This is based on the best available information, both on the baseline ecological condition and on the method of construction, timescale and other development/planning constraints known at the time. The significance of the impact on nature conservation is recorded in accordance with CIEEM guidance and the degree of uncertainty relating to the occurrence and severity of an impact is discussed.

This assessment is based on the most up to date available plan shown on Figure 2: “Princess Royal Barracks Proposed Site Plan” (Drawing number 795-SK90, dated October ’23), as supplied by Ubique Architects on 12<sup>th</sup> October 2023.

The proposed development includes a change of use of the existing museum building to a convenience store, improvements to the existing car parking area and creation of a new access road into the site at the south.

Activities that will occur during the proposed construction and operational phases that could give rise to significant ecological impacts include:

### **Construction:**

- direct harm from pollution, noise, lighting, vibration and the movement of people and construction machinery;
- soil compaction;
- habitat severance caused by construction works on-site; and
- habitat destruction during site clearance activities (e.g. grass cutting, removal of trees).

### **Post construction/operation:**

- permanent habitat loss;
- chronic disturbance from noise, lighting, vibration and the movement of people, vehicles on-site; risk of traffic collisions;
- increased recreational use of adjacent habitats leading to soil compaction, human/dog disturbance, littering, physical damage to trees; and
- increase in numbers of people and pets on site.

## 5.1 Designated Sites

### 5.1.1 Impact Characterisation

Four statutory and five non-statutory designated sites are located within 1km of land at Princess Royal Barracks. The closest of these is Deepcut Barracks North SNCI, located adjacent to the eastern boundary of the site. Frith Hill SNCI is also located 40m to the west.

Due to the non-residential nature of the works, which utilises existing infrastructure on the site, and the site’s distance from the statutory designated sites within the area, no direct or indirect impacts from the development



are anticipated. However, impacts to closer non-statutory SNCIs, including Deepcut Barracks North adjacent to the development site, may occur during the construction and operational phases. These impacts may include noise, light and dust pollution during construction. As such, best working practices relating to noise levels, dust suppression through damping, and surface water and operational waste management will help to minimise any risk of significant impacts. Any lighting during the construction phase must be sympathetic to nocturnal wildlife (such as bats and dormice) based on guidelines from the Bat Conservation Trust (summarized in Appendix 3) and run on sensors.

In terms of significant adverse effects resulting from the proposed development, the designated sites are outside the zone of influence in all cases.

### 5.1.2 Significance of Effects

The proposed plans for a new food store will not result in significant effects to the designated sites nearby and are therefore, in the absence of mitigation, considered to **not be significant at either local or regional level**.

## 5.2 Priority Habitats

### 5.2.1 Impact Characterisation

The botanical assessment of the site revealed dwarf gorse is present, a species that is rare in the UK and restricted to lowland heathland habitats across Dorset, Sussex, Surrey, Hampshire and Kent. Therefore, in the absence of mitigation, there could be a **significant impact at local level**.

## 5.3 Bats

### 5.3.1 Impact Characterisation

It is understood that the proposed scheme will not affect the roosting features present on the building that is known to support roosting bats. Therefore, no direct impacts on the bat roost in the building is predicted. Should works be needed on the porch area on the northern aspect, or on the loft void, then further advice from a suitably qualified ecologist should be sought.

The proposed development has potential to result in disturbance to commuting and foraging bats, both during construction and in the long term after completion, through increased artificial lighting, disruption of commuting corridors and direct loss of the acid grassland and heathland mosaic habitat that could be an important source of insect prey for bats.

### 5.3.2 Significance of Effects

Since the surveys did not reveal use of the site by large numbers of foraging bats or the presence of rare species, these impacts before mitigation are **significant at local level**.





## 5.4 Great Crested Newts and Other Amphibians

### 5.4.1 Impact Characterisation

Based on the survey results, the great crested newt is not present in the local area around the proposed development.

### 5.4.2 Significance of Effects

As there are no suitable waterbodies within 250m of the site, in the absence of mitigation, impacts to great crested newts are considered to be **negligible**.

## 5.5 Reptiles

### 5.5.1 Impact Characterisation

The full suite of reptile surveys have not been completed to date, and therefore, an assessment of impacts on reptiles can only be made precautionarily, on the assumption that the habitats are being used by reptiles but they have not been found yet. Further reptile surveys must be completed in 2024, and updated guidance sought.

The proposed development has potential to result in disturbance to reptiles, both during construction and in the long term after completion, through direct loss of the acid grassland and heathland mosaic habitat that could be an important source of insect prey and natural hibernaculum for reptiles.

### 5.5.2 Significance of Effects

Since the surveys are not complete, the presence of reptiles is being assumed, and therefore these impacts before mitigation are **significant at local level**.

## 5.6 Other Notable Species

### 5.6.1 Impact Characterisation

Based on the existing habitats that will be lost to the proposed development, in general it can be concluded that important populations of other notable species are unlikely to be present (Section 9.6.8) and no impacts are likely to occur.

However, the scheme has potential to impact on European hedgehog through habitat loss, though no evidence of this species was found during other survey fieldwork. Most of the existing habitat is sub-optimal for this species due to a lack of ground cover for resting hedgehogs, though the log piles within the acid grassland and heathland mosaic habitat could potentially be used for resting. This habitat will be retained. In the absence of mitigation, there remains a risk of direct harm to hedgehogs during construction activities, if present on the development site. In the long term, the proposed development could result in fragmentation of hedgehog foraging and resting areas as fencing could restrict the movement of hedgehogs.

### 5.6.2 Significance of Effects

The hedgehog has suffered dramatic declines in population in recent decades, although it remains fairly



widespread and has declined less in urban areas than rural areas<sup>8</sup>. There is a high degree of uncertainty of impacts occurring but based on the relatively low habitat quality habitat contained on the site for hedgehogs, the proposed scheme is unlikely to result in impacts that are significant beyond **local level**.

## 5.7 Invasive Non-native Species

### 5.7.1 Impact Characterisation

Buddleia and Canadian fleabane are present within the site. These are invasive and non-native, and left to spread they could quickly overcome the site.

### 5.7.2 Significance of Effects

In the absence of mitigation there could be a **significant impact at site level**.

## 6 CONSTRUCTION PHASE MITIGATION MEASURES

The site, as part of a wider area, has been subject to a number of baseline and updated ecological surveys between 2009 and 2015 by AMEC and NPA<sup>9,10</sup>. These surveys were to inform a larger outline application for a major residential-led development of 1,200 new dwellings, which was subsequently approved in April 2014 (planning reference: 12/0546). Condition 15 of the application required the production of a sitewide Ecological Management Strategy, which was produced in August 2015<sup>11</sup>. The following Mitigation Measures and Habitat Creation and Biodiversity Enhancement plans in Section 6 are designed to address this.

### 6.1 Toolbox Talk and General Housekeeping

All construction staff will be briefed by an Ecological Clerks of Works (ECoW) on their obligations regarding the protection of wildlife and the mitigation measures outlined in this document. They will also be given the contact details of a suitably qualified ecologist if any reptiles, bats, or other wildlife are found during the phases of construction, or when an ecologist is not present on the site. An ecologist will be present for specific works where there is an identified risk of encountering a protected species, for example inspecting the trees with an endoscope for the presence of bats immediately prior to removal (see sections below).

The following measures must be implemented in order to prevent adverse impacts to wildlife as a result of development works:

- all trenches, if present in relation to the access road construction, must be covered at night or have a rough sawn plank placed inside to enable any wildlife to escape should they fall in;
- security lighting should be directed away from the building and all semi-natural habitats and kept to a minimum;
- all chemicals, liquids, fuel oils or waste products, leachates or surface water used or produced by the

---

<sup>8</sup> Warwick, H. (2016) Britain's Hedgehogs: research and the conservation effort in the face of serious decline. *British wildlife* Vol. 28, pp78-86

<sup>9</sup> AMEC (2012). *Environmental Statement – Chapter 12*.

<sup>10</sup> NPA (2015). *Update Ecological Survey Report – Princess Royal Barracks, Deepcut*

<sup>11</sup> Nicholas Pearson Associates (2015). *Ecological Management Strategy – Princess Royal Barracks, Deepcut*.



development should be stored and disposed of correctly according to COSHH regulations. All construction activities should always follow best practice methods and environmental safeguards with no exceptions;

all materials must be stored on raised pallets or on hardstanding to prevent being used by reptiles as resting places.

## 6.2 Badgers

The presence of badgers has not yet been confirmed on site, however obvious mammal runs were identified during the Preliminary Ecological Appraisal walkover. As such, a pre-commencement inspection of the site prior to works starting is required by an ecologist to confirm there is no current evidence of badger activity within the site.

## 6.3 Roosting Bats

### 6.3.1 Rationale

The presence of a common pipistrelle was identified using the building during the emergence surveys. No work is currently planned for the building impacting the loft void or the northern porch area which was identified as the roosting feature. Tree 6 on site was assessed as having 'negligible' potential for roosting bats. Tree 7, however, had a PRF-I identified during the repeat endoscope inspection and therefore a precautionary approach is recommended to ensure any risks to bats remain minimal.

### 6.3.2 Precautionary Working Method Statement

The following measures must be implemented in order to prevent negative impacts to wildlife as a result of development works:

should any works be required to the museum building (excluding the porch area and the loft void as these are confirmed and historical bat roosts), any features identified on the building to have bat roosting potential must be subject to a pre-commencement inspection by a suitably qualified ecologist to ensure no bats are currently using those features. They can then be rendered unsuitable or removed, and works can commence;

all features on Tree 7 to be removed will be checked with an endoscope immediately prior to any tree removal. This must be carried out by a suitably qualified ecologist. If any bats or signs of bat activity are found, works will not proceed until a European Protected Species licence is obtained;

if any bats or signs of bat activity are found on either the tree or building where works are required, works will not proceed until a European Protected Species licence is obtained;

in the unlikely event that a bat is found during works after this stage, all works must be immediately stopped and the feature 'made good'. An ecologist must be contacted who will then re-assess the requirement for a bat EPS licence.



### 6.3.3 Artificial Lighting

Poorly designed external lighting can have a detrimental impact upon foraging and commuting bats and other nocturnal wildlife. To prevent this, all retained vegetation, including the scrub/wildflower meadow and acid grassland and heathland mosaic habitat to the south-east, must be protected from artificial lighting with no streetlamps or outside lights to face towards these habitats. A lighting plan will be prepared separately by a competent engineer for submission to the planning authority. This should adhere to the most recent guidelines published by the Bat Conservation Trust<sup>12</sup> and include the following measures:

- no 'upward pointing' or bare bulb lights to be installed anywhere on the developed site;
- all external lights upon lampposts must not be more than 3.5m in height and must have shields installed to focus light directly onto areas of need only;
- no external lights are to be installed on the building above a height of 2m and all external lights must have shields to prevent light splash beyond the horizontal (90 degrees from the ground);
- narrow-spectrum light sources must be used to lower the range of species affected by lighting, minimising the use of ultra-violet light;
- white and blue wavelengths of the light spectrum must be avoided to reduce insect attraction (a peak wavelength of >550nm). Where white lights are required, they should be of a warm/neutral colour temperature (<2,700 Kelvin ratings);
- any pedestrian ground lighting must not exceed 3 lux;
- external lighting must be on PIR sensors, which detect large objects only, and are therefore not triggered by passing bats. These should be set to the shortest time duration;
- wall lights and security lights must be 'dimnable' and set to the lowest light intensity. The developed site should make the most of the up-to-date technology available to incorporate this.

## 6.4 Reptiles

### 6.4.1 Rationale

The construction of the new access road to Princess Royal Barracks and surrounding construction zone will result in the loss of a small area of suitable terrestrial habitat. Presence of reptiles has not yet been confirmed as the full suite of surveys has not been completed to date. However, there is still a potential risk of harm to reptiles that may access the construction zone and find suitable resting places beneath construction materials and debris that remain. This action will result in direct impacts to individuals herptiles and a permanent loss of this feature.

Reptile surveys must be completed in 2024 with updated results that recommend updated guidance, therefore the following is a precautionary approach assuming reptiles are present on site but have not yet been found.

### 6.4.2 Fencing

Reptile-proof fencing will be installed and maintained around the active works zone to exclude herptiles from all areas of the construction zone including parking, storage and excavations/working areas. The fencing will meet the following specifications:

---

<sup>12</sup> Bat Conservation Trust and Institute for Lighting Professionals (2023) Guidance Note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



all vegetation along the fence alignment is checked for amphibians by a suitably qualified ecologist and then cut to ground level in two phases; an initial cut to 15cm to encourage animals to move away, followed by a second cut to ground level to remove all cover. All arisings to be removed out of the exclusion zone and composted elsewhere on the site;

a trench, 20cm wide and 20cm deep, will be created using a small-tracked trenching machine or by hand digging. Excavated earth will be piled on the outside edge of the trench so that it is easily backfilled once the fence has been installed. In areas of hard standing, the fence shall be held in place with tight-fitting sandbags;

fence stakes will be positioned every 2m and will be driven into the ground to a depth of at least 30cm to ensure they are secure. The plastic fencing material will be rolled out along the outside edges of the trench and will be lifted into place. The fencing sheet will be attached to the stakes using 2 clout nails and plastic washers at the top and 20cm from the bottom of each stake;

once fixed, the excavated earth will be backfilled along the trench by hand and tightly compacted to prevent animals from digging into it;

the reptile-proof fencing will completely encircle the construction zone and prevent reptiles from gaining access. The fence will be maintained in situ until all construction activities deemed to be a risk to reptiles including landscaping works have been completed;

all maintenance and repairs to the fence will become the responsibility of the works site contractor. The fence will be inspected every day someone is on site, with a record kept of this. Any degradation in the condition of either the stakes or fencing material will be fixed immediately, with an ecologist consulted should a substantial fix be required (e.g. any breach of the fence that would render it ineffective).

### 6.4.3 Capture and Exclusion Methods – ‘Destructive Search’

Once the fencing is in place and given that the degraded terrestrial habitat and frequent disturbance within the construction zone will cause reptiles to be persuaded out, it is proposed that a ‘destructive search’ of all remaining potential resting places would be a sufficient level of effort to exclude reptiles from the site for the remaining duration of construction works.

A destructive search must take place between March and September, with average temperatures between 9 and 18°C, and involves the following steps:

any suitable resting places will be carefully removed by hand, overseen by an ecologist. This includes log piles, rubble, and debris material. Any animals found must be captured and taken to a designated safe area (‘receptor site’) outside the construction zone;

area of grass vegetation will be carefully stripped to a depth of 10cm using a small excavator and overseen by a licensed ecologist. All captured animals will be released into the pre-prepared receptor site.

### 6.4.4 Receptor Site Preparation and Habitat Compensation

The permanent loss of suitable habitats for reptiles must be compensated for by habitat enhancement/creation elsewhere on the site. This will be achieved by enhancing the habitats currently on site through a specific management plan.



The soft landscape design for this area includes regular management of the acid grassland and heathland mosaic habitat, native hedgerow planting, and an area of mid-successional grassland/scrub mosaic. This will be created from existing retained habitat. Before works can begin, a suitable area must be identified for use as the receptor site for any reptiles found during the destructive search.

For more details on these habitat creation and enhancement measures, their ongoing management, and other biodiversity enhancement measures refer to Section 6 of this document.

## **7 HABITAT CREATION AND BIODIVERSITY ENHANCEMENT**

The following sections describe the habitat creation and enhancement features that will be incorporated into the landscape design for the development. These measures compensate for the impacts on ecological features, and address Condition 15 of the application, which required the production of a sitewide Ecological Management Strategy, which was produced in August 2015.

### **7.1 Acid Grassland and Heathland Mosaic Habitat**

The southern end of the site will be retained as per the existing habitat; however, where habitat needs to be removed, this results in effects of local significance with site-level loss. As a result, any remaining habitat should be enhanced. This will comprise of a vegetation cut every two years, taking the sward height no lower than 15cm to ensure the gorse and heather can remain established. This area may also be screened from the rest of site with a small area mix of gorse, broom, wild cherry and hawthorn. This provides a screen from the road while providing a natural linear feature which will be beneficial to wildlife such as bats.

### **7.2 Wildflower/Scrub Verges**

The verges surrounding the site will be retained where possible, as these contained some native species that have arrived as a result of current management. However, the sward will also be overseeded with a wildflower seed mix in order to enhance the number of species within this verge. The long-term management of this area will be minimal, with one vegetation cut every year in late summer after flowering plants have set seed. The positioning of the boundary hedgerow along the western border should ideally be placed along the existing outline of the car park to ensure this area retains value.

### **7.3 Species-rich Native Hedgerow and Tree Planting**

The existing single-line hedgerows along the south-western boundary will be bolstered by planting up with native hedgerow shrubs species.

These features will provide valuable shelter and foraging habitat for bats, birds, reptiles, and hedgehogs as well as act as a wildlife corridor through the site. Species to be used can include:

- broom *Cytisus scoparius*;
- downy birch *Betula pubescens*;





goat willow *Salix caprea*;  
gorse *Ulex europaeus*;  
hawthorn *Crataegus monogyna*;  
hazel *Corylus avellana*;  
holly *Ilex aquifolium*;  
rowan *Sorbus aucuparia*;  
silver birch *Betula pendula*; and  
wild cherry *Prunus avium*.

All native species should be sourced from certified nurseries in the UK, to avoid the spread of disease or pests. Given the arrival of Ash Dieback *Hymenoscyphus fraxineus* (previously known by the names *Chalara fraxinea* and *Hymenoschyphus pseudoalbidus*), it is strongly recommended that current advice from DEFRA, The Forestry Commission and Woodland Trust is followed regarding the planting of ash species<sup>13</sup>.

Should any fencing be installed as part of the proposed works, wildlife holes should be included at ground level, to ensure reptiles and small mammals like hedgehog can still pass any barriers. This ensures the site retains connectivity with the surrounding habitats.

#### 7.4 Enhancements for Bats, Birds, and Invertebrates

As part of the sitewide Ecological Management Strategy, enhancements will be provided for bats, birds and invertebrates. These will include, but are not limited to:

- 2 x general purpose bat boxes to be mounted on trees, such as the 2F Schwegler bat boxes\*;
- 1 x general purpose bat box to be mounted on the northern aspect of the building, such as the Beaumaris improved crevice bat box\*;
- 2 x general purpose bird boxes, such as Woodstone Seville nest boxes\*;
- 3 x solitary bee nesting piles, to be made from stacked bamboo canes, or alternatively the large NHBS solitary bee hotel boxes; and
- 2 x brash piles, created from any removed vegetation or log piles already on site.

The bat roosting features will be largely maintenance-free, apart from an annual check that they remain in position. Any damaged boxes are to be replaced like for like. However, an important component to these habitat features will be managing the expectations of residents and other users of the development site, including dealing with any fears, questions, or unauthorized interference. It is recommended that prospective buyers of these properties are made aware of the legal protection afforded to bats and birds, and their obligations as owners.

Bird nesting boxes should be emptied of nesting material in winter to prevent the build-up of parasites. Bat

---

<sup>13</sup> Defra, 2013. Chalara Management Plan. Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/221051/pb13936-chalaramanagement-plan-201303.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221051/pb13936-chalaramanagement-plan-201303.pdf)

\* Similar options are commercially available





## APPENDIX 1 – LEGISLATION AND POLICY

### Introduction

The following text is intended for general guidance only and does not constitute comprehensive professional legal advice. It provides a summary of the current legal protection afforded to wildlife in general and certain species. It includes current national planning policy relevant to nature conservation.

### The ‘Birds Directive’, ‘Habitats Directive’ and ‘Natura 2000 Sites’

The Council Directive 79/409/EEC on the Conservation of Wild Birds (“the Birds Directive”) sets a framework for the protection of wild birds. Under the Directive, several provisions are made including the designation and protection of ‘Special Protection Areas’ (SPAs) – areas which support important bird populations, and the legal protection of rare or vulnerable species.

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”) directs member states of the EU to take measures to maintain the favourable conservation status of important habitats and species. This requires the designation of a series of sites which contain important populations of species listed on Annex II of the Directive. Together with ‘Special Areas of Conservation’ (SACs), SPAs form a network across Europe of protected areas known as the ‘Natura 2000’.

Annex IV lists species in need of more strict protection, these are known as “European Protected Species (EPS)”. All bat species, common dormice *Muscardinus avellana*, otter *Lutra lutra* and great crested newts *Triturus cristatus* are examples of EPS that are regularly encountered during development projects.

### The ‘Habitats Regulations’

The Conservation of Habitats and Species Regulations 2017, as amended (the Habitats Regulations”) is the principle means of transposing the Habitats Directive and the Birds Directive, and updates the Conservation (Natural Habitats, &c.) Regulations 1994 (“the 1994 regulations”) in England and Wales.

‘Natura 2000’ sites, now known as National Site Network sites under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, receive the highest level of protection under the Regulations which requires that any activity within the zone of influence of these sites would be subject to a Habitats Regulations Assessment (HRA) by the competent authority (e.g. planning authority), leading to an Appropriate Assessment (AA) in cases where ‘likely significant effects’ to the conservation objectives are identified.

For European Protected Species, Regulation 41 makes it a criminal offence to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb wild animals of such species;
- deliberately take or destroy their eggs (where relevant);
- damage or destroy a *breeding or resting place* of such an animal;
- possess, control, sell or exchange any live or dead animal or plant, of such species;
- deliberately pick, collect, cut, uproot or destroy a wild plant of such species.

The Habitats Directive and Habitats Regulations provide for the derogation from these prohibitions for specific



reasons provided certain conditions are met. An EPS licensing regime allows operations that would otherwise be unlawful acts to be carried out lawfully. Natural England is the licensing Authority and, in order to grant a license, ensures that three statutory conditions (sometimes referred to as the ‘three derogation tests’) are met:

- a licence can be granted for the purposes of “preserving public health or safety or for other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment” (Regulation 53 (2) (e);
- a licence can be granted if “there are no satisfactory alternatives” to the proposed action;
- a licence shall not be granted unless 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.

### **Wildlife and Countryside Act (1981) as amended**

The Wildlife and Countryside Act (1981)<sup>15</sup> remains one of the most important pieces of wildlife legislation in the UK. There are various schedules to the Act protecting birds (Schedule 1), other animals including insects (Schedule 5), plants (Schedule 8), and control of invasive non-native species (Schedule 9).

Under the Wildlife and Countryside Act (WCA) 1981, all wild birds (with the exception of those listed on Schedule 2), their eggs and nests are protected by law and it is an offence to:

- take, damage or destroy the nest of any wild bird while it is in use or being built
- take or destroy the egg of any wild bird
- disturb any bird listed on Schedule 1, while it is nest building, or at a nest with eggs or young, or disturb the dependant young of any such bird.

Schedule 5 lists all non-avian animals receiving protection to a varied degree. At its strongest, the Act makes it an offence to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturb animals while occupying such places. Examples of species with *full protection* include all EPS, common reptile species, water vole *Arvicola amphibius*, white-clawed crayfish *Austropotamobius pallipes* and Roman snail *Helix pomatia*. Other species are protected from sale, barter or exchange only, such as white letter hairstreak *Satyrrium w-album*.

The Act makes it an offence to intentionally pick, uproot or destroy any plant or seed, and sell or possess any plant listed on Schedule 8. It is also an offence to intentionally uproot any wild plant not listed on Schedule 8 unless authorised [by the land owner]. Species on Schedules 5 and 8 are reviewed every 5 years when species can be added or removed.

Measures for the prevention of spreading non-native species which may be detrimental to native wildlife is included in the Act, which prohibits the release of animals or planting of plants into the wild of species listed on Schedule 9 (for example Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandifera*, New Zealand Pygmyweed *Crassula helmsii*).

The Wildlife and Countryside Act 1981 (as amended) also prohibits certain inhumane methods of traps and devices for the capture or killing of wild animals and certain additional methods such as fixed trap, poisoning with gas or smoke, or spot-lighting with vehicles for killing species listed on Schedule 6 of the Act (this includes all bat species, badger, otter, polecat, dormice, hedgehog and red squirrel).

---

<sup>15</sup> Wildlife and Countryside Act (WCA) (1981). HMSO London.



## Natural Environment and Rural Communities (NERC) Act (2006)

The NERC Act (2006)<sup>16</sup> places a statutory duty under Section 40 on all public bodies, including planning authorities, to take, or promote the taking by others, steps to further the conservation of *habitats and species of principal importance for the conservation of biodiversity* in England (commonly referred to as the 'Biodiversity Duty'). This duty extends to all public bodies the biodiversity duty of Section 74 of the Countryside and Rights of Way (CROW) Act 2000, which placed a duty only on Government and Ministers. Section 41 lists the habitats and species of principle importance. This includes a wide range of species from mosses, vascular plants, invertebrates through to mammals and birds. It originates from the priority species listed under the UK Biodiversity Action Plan (UK BAP) with some omissions and additions.

## Environment Act (2021)

The Environment Act sets a target of halting the decline in species through the inclusion of a legally binding 2030 species abundance target. Aiming to restore natural habitats and enhance biodiversity, the Act requires new developments to improve or create habitats for nature (through mechanisms such as mandatory Biodiversity Net Gain), and tackle deforestation. Going forwards, UK businesses will need to look closely at their supply chains as amongst other measures they will be prohibited from using commodities associated with wide-scale deforestation. Woodland protection measures are also strengthened through the Act.

The Act enables the reform of the Habitats Regulations and further improves protection for nature through the establishment of Local Nature Recovery Strategies that support national Nature Recovery Networks. In addition, the Act provides for the production of Protected Site Strategies and Species Conservation Strategies, aimed at supporting the design and delivery of strategic approaches to deliver better outcomes for nature.

## Protection of Badgers Act (1992)

The Badger *Meles meles* is afforded specific legal protection in Britain under the Protection of Badgers Act (1992)<sup>17</sup>, and Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) (see above).

Under this legislation, it is a criminal offence to:

- intentionally kill, injure, take, possess, or cruelly ill-treat, a Badger, or to attempt to do so;
- interfere with a sett, by damaging or destroying it;
- to obstruct access to, or any entrance of, a badger sett; or
- to disturb a badger when it is occupying a sett.

A licence may be obtained from Natural England to permit certain prohibited actions for a number of defined reasons including interference of a sett for the purpose of development, provided that a certain number of conditions are met. Note that licenses are not normally granted for works affecting badgers between the end of November and the start of July.

## National Planning Policy Framework

The National Planning Policy Framework (NPPF 2023)<sup>18</sup> sets out the Government's view on how planners

---

<sup>16</sup> Natural Environment and Rural Communities Act (2006). HMSO London.

<sup>17</sup> Protection of Badgers Act (1992). HMSO London.

<sup>18</sup> HM Government (2023). National Planning Policy Framework. Department for Communities and Local Government.





should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regard to the operation of the planning system.

Paragraph 179b, which states that council policies 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.*” The Office of the Deputy Prime Minister (ODPM) Circular 06/2005, 2005)<sup>19</sup>. In accordance with the NPPF, it is important that developments should contribute to and enhance the natural and local environment by:

- minimising impacts on existing biodiversity and habitats;
- providing net gains in biodiversity and habitats, wherever possible;
- establishing coherent ecological networks that are more resilient to current and future pressures.

### **UK Post-2010 Biodiversity Framework**

The UK Biodiversity Action Plan (UK BAP), published in 1994, was the UK’s response to the commitments of the Rio Convention on Biological Diversity (1992). The UK BAP was replaced by the UK Post-2010 Biodiversity Framework. This framework covers the period 2011 to 2020 and forms the UK government’s response to the new strategic plan of the United Nations Convention on Biodiversity (CBD) published in 2010. This promotes a focus on individual countries delivering target for protection for biodiversity through their own strategies.

The most recent biodiversity strategy for England, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' was published by Defra (2011)<sup>20</sup>, and a progress update was provided in July 2013 (Defra 2013)<sup>21</sup>.

'Biodiversity 2020' builds on the Natural Environment White Paper for England – 'The Natural Choice', published on 7 June 2011, and sets out the strategic direction for biodiversity policy for the next decade.

Biodiversity 2020 deliberately avoids setting specific targets and actions for local areas because Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their area or situation.

### **Birds of Conservation Concern (BoCC)**

In 1996, the UK’s leading non-governmental bird conservation organisations reviewed the conservation status of all bird species in the UK against a series of criteria relating to their population size, trends and relative importance to global conservation. The lists, known as the ‘Red’, ‘Amber’ and ‘Green’ lists (in order of decreasing concern) are used to inform key conservation policy and decisions. The lists are reviewed every

---

Available online at:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1005759/NPPF\\_July\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf)

<sup>19</sup> HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/7692/147570.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf).

<sup>20</sup> Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Available at: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services>.

<sup>21</sup> Defra (2013) Progress Update. Available at: <https://www.gov.uk/government/publications/biodiversity-2020-simple-guide-and-progress-update-july-2013>.





five years and are a useful reference for determining the current importance of a particular site for birds. The most recent review was undertaken in 2021<sup>22</sup> (Stanbury et al, 2015), which provides an up to date assessment of the conservation status of birds in the UK.

---

<sup>22</sup> Stanbury, A., Eaton, M., Aebischer, N., Balmer, N., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). Birds of Conservation Concern 5: the status of bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 114, pp 723-747.



## APPENDIX 2 – LOCAL PLANNING POLICY FOR SURREY HEATH BOROUGH COUNCIL

Policy number/title	Policy summary
<p><b>CP14A - Biodiversity and Nature Conservation</b></p>	<p>For development proposals, particular regard will be given to SPAs, SACs, SSSIs, NNR, SNCI, LNRs and ancient woodland.</p> <p>Outside of these areas, new development will where appropriate need to contribute to this protection and management of biodiversity.</p> <p>Within locally designated sites development will not be permitted unless it is necessary for appropriate on site management measures and can demonstrate no adverse impact to the integrity of the nature conservation interest. Development adjacent to locally designated sites will not be permitted where it has an adverse impact on the integrity of the nature conservation interest.</p>
<p><b>CP14B - European Sites</b></p>	<p>The Council will only permit development where it is satisfied that this will not give rise to likely significant adverse effect upon the integrity of the Thames Basin Heaths Special Protection Area and/or the Thursley, Ash, Pirbright &amp; Chobham Common Special Area of Conservation.</p> <p>All new residential (net) development within 5km of the Thames Basin Heaths Special Protection Area is considered to give rise to the possibility of likely significant effect. Accordingly only new development that complies with the following requirements will be permitted. No (net) new residential development will be permitted within 400m of the SPA and non-residential development within 400m of the SPA will be required to demonstrate that it is not likely to have a significant effect either alone or in combination with other plans or projects.</p> <p>Proposals for residential development elsewhere in the Borough will be required to provide appropriate measures to avoid adverse effects upon the Thames Basin Heath Special Protection Area in accordance with the Borough Councils adopted Avoidance Strategy (or as subsequently amended).</p> <p>These measures could include: contribution towards SANGs.</p>



## APPENDIX 3 – IMPORTANCE OF ECOLOGICAL FEATURES

**Table 1.** Determining importance of an ecological feature.

Level of importance	Criteria
International	<p>Internationally designated site; Special Protected Area (SPA), Special Areas of Conservation (SAC), Ramsar, Biosphere Reserves;</p> <p>Regularly occurring population of internationally important species listed in Annex 1, 2 or 4 of the Habitats Directive and Annex 1 of the Birds Directive;</p> <p>A viable area of a habitat listed in Annex 1 of the Habitats Directive or area important for maintaining viability listed as in Annex 1 of the Habitats Directive;</p> <p>Areas outside designated sites that are important for supporting and maintaining the viability of the above designated habitats and/or species.</p>
National	<p>Nationally designated sites; Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), Local Nature Reserves (LNR).</p> <p>A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the national conservation status (e.g. greater than 1% of the national total).</p> <p>A viable or regularly occurring population of a species that is nationally scarce, threatened or declining on a national scale.</p> <p>A habitat type that is nationally scarce, threatened or declining on a national scale.</p>
Regional	<p>A habitat type that is scarce, threatened or declining on a regional scale.</p> <p>A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the regional conservation status (e.g. greater than 1% of the national total).</p>
County	<p>Locally designated sites; Local Wildlife Sites (LWSs), Sites of Nature Conservation (SNCs) and Site of Importance for Nature conservation (SINCs).</p> <p>A sufficiently large population of a species or area of habitat listed as a priority for nature conservation (S41 NERC Act) to make a significant contribution to the conservation status of the species at county level (e.g. greater than 10% of the county total).</p> <p>A viable or regularly occurring population of a species that is rare in the county, but may be common and widespread elsewhere, For example, a population at the edge of a species' range.</p> <p>A habitat type that is scarce in a county but may be more frequent elsewhere.</p>
Local/parish	<p>Habitats and species which are scarce in the local area but are sufficiently common and widespread elsewhere that they do not meet the above criteria.</p>
Site/negligible	<p>Habitats with little to no ecological value (e.g. amenity grassland and hardstanding)</p>



## APPENDIX 4 – BOTANICAL ASSESSMENT

**Table A4.** Species list and abundance (percentage) in each quadrat compartment.

English name	Scientific name	%
<b>Quadrat 1</b>		
Hare's-foot clover	<i>Trifolium arvense</i>	5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	3
Ribwort plantain	<i>Plantago lanceolata</i>	10
Oxeye daisy	<i>Leucanthemum vulgare</i>	5
Cats-ear	<i>Hypochaeris radicata</i>	4
Thistle	<i>Cirsium sp.</i>	1
Self heal	<i>Prunella vulgaris</i>	2
Wild carrot	<i>Daucus carota</i>	1
Yorkshire fog	<i>Holcus lanatus</i>	10
Red fescue	<i>Festuca rubra</i>	7
Sheep's fescue	<i>Festuca ovina</i>	7
Common bent	<i>Agrostis capillaris</i>	2
Canadian fleabane	<i>Erigeron canadensis</i>	1
Bare ground		58
<b>Quadrat 2</b>		
Ribwort plantain	<i>Plantago lanceolata</i>	3
Common bent	<i>Agrostis capillaris</i>	30
Canadian fleabane	<i>Erigeron canadensis</i>	2
Hawkweed	<i>Hieracium sp.</i>	3
Yarrow	<i>Achillea millefolium</i>	1
Red clover	<i>Trifolium pratense</i>	1
Bare ground		60
<b>Quadrat 3</b>		
Heath grass	<i>Danthonia decumbens</i>	70
Hawkweed	<i>Hieracium sp.</i>	3
Self heal	<i>Prunella vulgaris</i>	1
Ribwort plantain	<i>Plantago lanceolata</i>	1
Bare ground		25
<b>Quadrat 4</b>		
Heath grass	<i>Danthonia decumbens</i>	80
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	5
Common bent	<i>Agrostis capillaris</i>	5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	5
Ribwort plantain	<i>Plantago lanceolata</i>	5
Clover	<i>Trifolium sp.</i>	1
<b>Quadrat 5</b>		
Dwarf gorse	<i>Ulex gallii</i>	20
Heath grass	<i>Danthonia decumbens</i>	60
Common bent	<i>Agrostis capillaris</i>	5
Mouse-ear hawkweed	<i>Pilosella officinarum</i>	10
Hawkweed	<i>Hieracium sp.</i>	1



English name	Scientific name	%
<b>Quadrat 6</b>		
Ribwort plantain	<i>Plantago lanceolata</i>	15
Yarrow	<i>Achillea millefolium</i>	4
Mouse-eared hawkweed	<i>Pilosella officinarum</i>	10
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	70
Woodrush	<i>Luzula sp.</i>	2





## APPENDIX 5 – GREAT CRESTED NEWT SURVEY RESULTS

**Table 4.** HSI calculation for ponds assessed during the survey.

	Ditch 1 and 2		Pond 1		Pond 2	
NGR	TQ 32875 26739		TQ 33168 26230		TQ 33445 25903	
SI attribute	SI value	Notes	SI value	Notes	SI value	Notes
Location	1.00	A	1.00	A	1.00	A
Pond area	1.00	550m <sup>2</sup>	0.4	174m <sup>2</sup>	0.1	42m <sup>2</sup>
Pond drying	0.10	Dries annually	0.10	Dries annually	0.10	Dries annually
Water quality	0.01	Not present	0.01	Not present	0.01	Not present
Shade cover	1.00	5%	0.3	95%	0.3	95%
Water-fowl	1.00	Absent	1.00	Absent	1.00	Absent
Fish presence	1.00	Absent	1.00	Absent	1.00	Absent
No. ponds	1.00	8	1.00	8	1.00	8
Terrestrial habitat	0.67	'moderate'	0.67	'moderate'	0.67	'moderate'
Macrophytes	0.31	0%	0.31	0%	0.31	0%
<b>HSI value</b>	<b>0.43</b>	<b>'poor'</b>	<b>0.35</b>	<b>'poor'</b>	<b>0.30</b>	<b>'poor'</b>



## APPENDIX 6 – ARTIFICIAL LIGHTING AND WILDLIFE

Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts to other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness.

Guidelines issued by the Bat Conservation Trust<sup>23</sup> should be referred to when designing the lighting scheme. Note that lighting designs in very sensitive areas should be created with consultation from an ecologist and using up-to-date bat activity data where possible. The guidance contains techniques that can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development. This includes the following measures:

### **Avoid lighting key habitats and features altogether**

There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation; however, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species.

### **Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations**

Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved. The following are techniques which have been successfully used on projects and are often used in combination for best results:

- dark buffers, illuminance limits and zonation;
- sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill;
- consideration of the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consideration should be given to the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cats eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times;
- screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding;
- glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and

<sup>23</sup> Bat Conservation Trust and Institute for Lighting Professionals (2023) Guidance note 8/23. Bats and Artificial Lighting. <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>



lighting professional determine there is a likely significant effect upon key bat habitat and features; creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development;

dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

### **Demonstrate compliance with illuminance limits and buffers**

*Design and pre-planning phase;* it may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.

*Baseline and post-completion light monitoring surveys;* baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.

*Post-construction/operational phase compliance-checking;* as a condition of planning, post-completion lighting surveys by a suitably qualified person should be undertaken and a report produced for the local planning authority to confirm compliance. Any form of non-compliance must be clearly reported, and remedial measures outlined. Ongoing monitoring may be necessary, especially for systems with automated lighting/dimming or physical screening solutions.

### **Lighting Fixture Specifications**

The Bat Conservation Trust recommends the following specifications for lighting on developments to prevent disturbance:

lighting spectra : peak wavelength >550nm  
colour temperature : <2700K (warm)  
reduction in light intensity  
minimal UV emitted  
upward light ratio of 0% and good optical control.

### **Further reading:**

Buglife (2011) A review of the impact of artificial light on invertebrates.

Royal Commission on Environmental Pollution (2009) Artificial light in the environment. HMSO, London. Available at: <https://www.gov.uk/government/publications/artificial-light-in-the-environment>

Rich, C., Longcore, T., Eds. (2005) Ecological Consequences of Artificial Night Lighting. Island Press. ISBN 9781559631297.

CPRE (2014) Shedding Light: A survey of local authority approaches to lighting in England. Available at:



<http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light>

Planning Practice Guidance guidance (2014) When is light pollution relevant to planning? Available at:  
<https://www.gov.uk/guidance/light-pollution>

Institution of Lighting Professionals (2021) Guidance Notes for the Reduction of Obtrusive Light GN01:2011.  
Available at: <https://www.theilp.org.uk/resources/free-resources/>

Voigt, C.C., Azam, C., Dekker, J., Ferguson, J., Fritze, M., Gazaryan, S., Hölker, F., Jones, G., Leader, N., Lewanzik, D. and Limpens, H., 2018. *Guidelines for consideration of bats in lighting projects*. Unep/Eurobats.  
Available at:  
[https://cdn.bats.org.uk/uploads/pdf/Resources/EUROBATSGuidelines8\\_lightpollution.pdf?v=1542109376](https://cdn.bats.org.uk/uploads/pdf/Resources/EUROBATSGuidelines8_lightpollution.pdf?v=1542109376)



## APPENDIX 7 – FIELD OF VIEW FROM THE NIGHT VISION CAMERAS



Photograph 1. Field of view from NVA 1 on 31/07/2023



Photograph 2. Field of view from NVA 2 on 31/07/2023





**Photograph 3.** Field of view from NVA 3 on 31/07/2023



**Photograph 4.** Field of view from NVA 4 on 31/07/2023



**Photograph 5.** Field of view from NVA 1 on 16/08/2023



**Photograph 6.** Field of view from NVA 2 on 16/08/2023



Photograph 7. Field of view from NVA 3 on 16/08/2023



Photograph 8. Field of view from NVA 4 on 16/08/2023



**Photograph 9.** Field of view from NVA 1 on 31/08/2023



**Photograph 10.** Field of view from NVA 2 on 31/08/2023



Photograph 11. Field of view from NVA 3 on 31/08/2023



Photograph 12. Field of view from NVA 4 on 31/08/2023