



The Ecology Co-op

ENVIRONMENTAL CONSULTANTS

Unit 4, Langham Stables, Langham Lane, Lodsworth, Petworth, West Sussex, GU28 9BU.

Tel: 01798 861 800 – E-Mail: info@ecologyco-op.co.uk – Web: www.ecologyco-op.co.uk

Construction Environmental Management Plan

Site Name

105 Colemans Moor Road

Issue Date

29th November 2024

Client

Samarth Gupta

Author

Neil Carter-Whitehead

Project No: P10046

The Ecology Co-operation Ltd

Registered Office: Unit 4, Langham Stables, Langham Lane, Lodsworth, West Sussex, GU28 9BU

Company number: 8905527





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 Neil Carter-Whitehead, a Senior Consultant Ecologist at The Ecology Co-Op, with 8 years' industry experience. He holds a Level 1 bat survey licence. Neil has experience in a range of projects that require ecological input at various stages, from individual residential dwelling extensions to large-scale infrastructure projects with overriding public interest.

About the Reviewer

This report has been reviewed by Kate Priestman, who is a Principal Ecologist with over twenty years' experience. Kate has undertaken extensive survey work and reporting, encompassing a breadth of deliverables, 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

Purpose	The Ecology Co-operation was commissioned by Samarth Gupta to provide a Construction Environmental Management Plan (CEMP) with regards to a proposed development at 105 Colemans Moor Road, Woodley, Wokingham. This document outlines site-wide mitigation for common species of reptile and nesting birds. It also includes management objectives, responsibilities and maintenance schedules including remedial responsibilities, should they be necessary. It will be submitted to Wokingham Borough Council in order to discharge condition 4 of the approved planning application: 242364. The proposed development comprises the demolition of the bungalow and the construction of three new residential units.
Context	A Preliminary Ecological Appraisal of the site was undertaken in March 2024 by ROAVR Group. The subsequent Phase 2 surveys indicated that roosting bats would not form a constraint to the works.
Protected species impact avoidance	Section 4 of this report outlines measures to prevent harm to protected species during the construction works; this includes undertaking vegetation clearance under supervision of an Ecological Clerk of Works for reptiles and nesting birds.
Toolbox talk	Site staff must be briefed prior to the commencement of construction on the ecological issues related to the project and the importance of contacting an ecologist in the event that any wildlife is identified within the construction zone.



CONTENTS PAGE 1	INTRODUCTION
5	
1.1 Purpose of the Report.....	5
1.2 Background.....	5
1.3 Summary of Previous Survey Work.....	7
2 LEGAL PROTECTION.....	7
3 HABITAT IMPACT AVOIDANCE	7
3.1 Dust Deposition and Pollution.....	7
3.2 Hydrology.....	7
3.1 Physical Damage.....	8
4 PROTECTED SPECIES IMPACT AVOIDANCE	8
4.1 Bats.....	8
4.2 Breeding Birds	8
4.3 Reptiles.....	8
4.4 Other Notable Species.....	9
5 CONSTRUCTION MANAGEMENT	9
5.1 Materials Storage.....	9
5.1 Vehicle Management.....	10
6 CONCLUSION	10
APPENDIX 1 - Wildlife Legislation and National Planning Policy.....	11
APPENDIX 2 – Reducing Impacts of Artificial Light	16
APPENDIX 3 – Ecological Clerk of Works Toolbox Talk	1



1 INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-operation was commissioned by Samarth Gupta to produce a Construction Environmental Management Plan (CEMP) for a proposed residential development at 105 Colemans Moor Road, Woodley, Wokingham. This document outlines site-wide mitigation for nesting birds and common species of reptile. It will be submitted to Wokingham Borough Council, with regards to condition 4 of the approved planning application: 240833. The condition states that “No development shall take place (including demolition, ground works, vegetation clearance) until a construction environmental management plan (CEMP) has been submitted to and approved in writing by the local planning authority.”

The prescribed mitigation measures described within this document will be issued to relevant works contractors to ensure that they are carried out in full. Implementation of this will be overseen by a suitable ecological consultancy, and the works contractor will be given contact details for an ecologist so that any issues can be resolved promptly.

1.2 Background

The site is located at 105 Colemans Moor Road, Woodley, Wokingham RG5 4DA. The central grid reference for the site is SU 77038 72427. The location of the site is shown in Figure 1.

The site comprises a residential bungalow, associated hard standing and an area of bramble scrub.

The proposed development comprises demolition of the existing dwelling followed by the construction of three replacement residential units, as well as associated hard and soft landscaping works (see Figure 2).



Figure 1. An aerial image showing the location of the application site. The approximate boundary of the proposed construction zone is outlined in red. Images produced courtesy of Google maps (map data ©2024 Google).

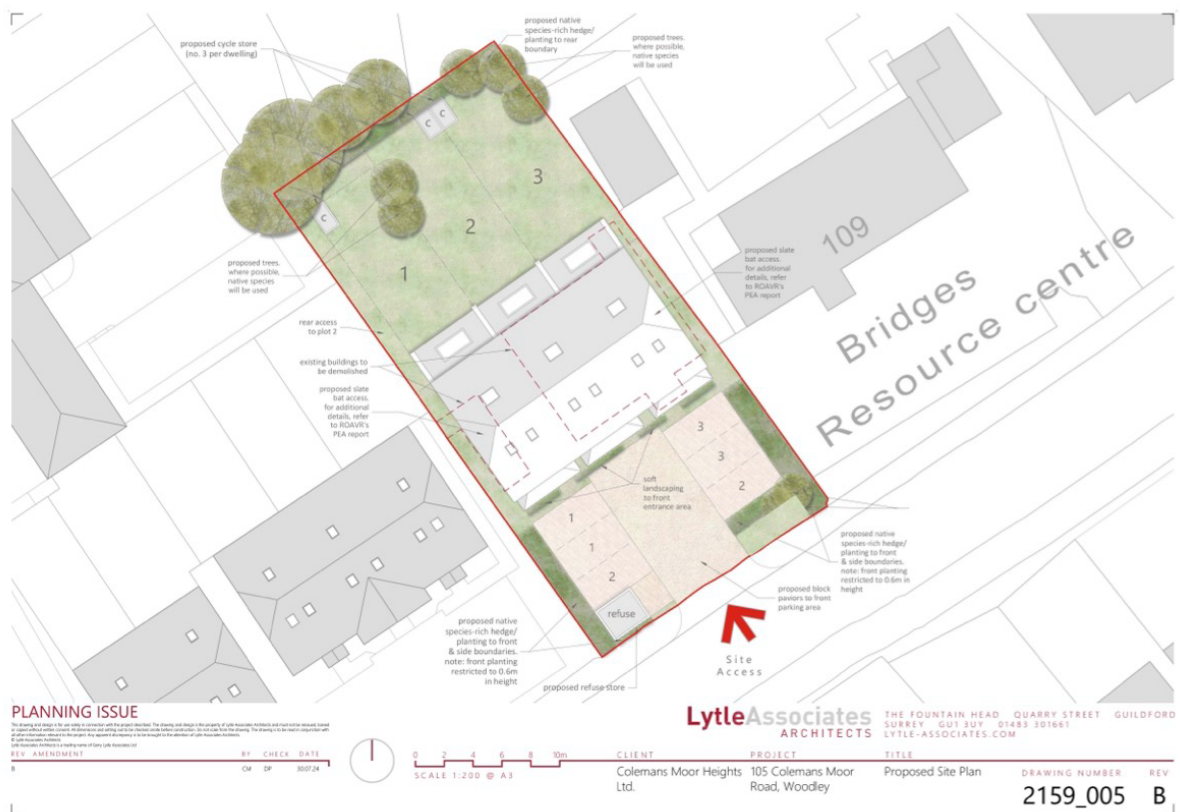


Figure 2. Proposed plans for the development at 105 Colemans Moor Road. Provided courtesy of Lytle Associates



Architects, drawing number 2159_005B.

1.3 Summary of Previous Survey Work

A Preliminary Ecological Appraisal with UKHab¹, completed by ROAVR Group March 2024, identified the potential for bats, nesting birds and common species of reptile to be present on the site.

Phase 2 surveys found no evidence of roosting bats, eliminating this as a constraint.

2 LEGAL PROTECTION

Legal protection applying to relevant bird, mammal and herpetofauna species is detailed in Appendix 1 of this report. This includes both national and European legislation that protects badgers, bats, dormice, reptiles and breeding birds.

3 HABITAT IMPACT AVOIDANCE

3.1 Dust Deposition and Pollution

To mitigate against the risk of high levels of suspended dust being produced, following periods of very dry weather or very windy days construction must be avoided where possible. If not, dust levels on the development footprint must be monitored closely and dust suppression must be carefully managed with dampening implemented through the use of hoses and sprinklers when there is a risk of elevated dust levels and a risk of deposition onto the adjacent habitats. It will be ensured that suitable extraction is fitted to tools, segregation of the task will be put in place and restriction of access instigated. Dust will be prevented by using wet cutting and vacuum extraction on tools, instead of sweeping.

Additionally, there must be no burning of vegetation or waste materials on site to ensure ash and other particulate matter does not settle on surrounding habitats.

3.2 Hydrology

To prevent pollution of the local hydrological system all construction materials and especially concrete or fuel must be kept on an impermeable surface, with drip drays used and spill kits available to avoid the risk of contaminants leaching into the soil.

The site is not large enough to require a fixed wheel wash station, so any large delivery vehicles or plant will be subject to manual wheel washing. Any wastewater from wheel washing will be collected in a recycling tank and will be disposed in public foul sewer only after getting approval from the construction company's sewage provider.

¹ ROAVR Group (2024). 105 Colemans Moor Road, Caversham, Reading, RG5 4DA - 24_PEA_03_49



3.1 Physical Damage

To prevent physical damage to the trees along the northern site boundary, Heras fencing should be put in place 5m from the hedge-line after the scrub has been cleared. This will ensure that there is no accidental physical damage to trees or their roots.

To prevent physical damage to the hedgerow on the southern boundary Heras fencing should be put

4 PROTECTED SPECIES IMPACT AVOIDANCE

4.1 Bats

The residential structure on the site was found to have low potential to support roosting bats. Ecological supervision will be necessary during the removal of broken roof slates and roofing felt on the northern elevation of the roof. Should any bats be encountered during demolition, works must be stopped and further ecological advice sought.

Artificial lighting can have a negative impact upon bats, disturbing their flight paths and causing them to stay in their roosts longer. Though works are likely to only take place during the day, night work must be avoided to negate the need for lighting. If lighting is needed, lighting must be limited to active working areas only and follow guidance from the Bat Conservation Trust for a sensitive lighting scheme (see Appendix 2).

4.2 Breeding Birds

Prior to any vegetation clearance a suitably qualified ecologist should undertake a toolbox talk to inform site operatives of the processes to be undertaken. A guide for this talk and a register of attendance is included in appendix 3. When a project ecologist has been appointed their contact details will be provided and will be included in the toolbox talk register.

The scrub to the north of the site may support common nesting birds and precautionary measures will be necessary to prevent a breach of the Wildlife and Countryside Act 1981 (as amended). As such, removal of this vegetation must only be undertaken after features are searched by a suitably qualified ecologist and no active nests are found. If a nest is found, a minimum buffer of 5m must be maintained around the nest until all of the young have fledged safely.

Additionally, any building materials must be stored at least 5m from the northern boundary vegetation to avoid traffic causing disturbance to any potential active nests.

4.3 Reptiles

Prior to any vegetation clearance a suitably qualified ecologist should undertake a toolbox talk to inform site operatives of the processes to be undertaken. A guide for this talk and a register of attendance is included in appendix 3.



The scrub to the north of the site must be cleared under the supervision of a suitably qualified ecologist in order to ensure that no direct harm is caused to any reptiles present. Hand tools, such as brush cutters and strimmers, must be used. In the unlikely event any reptiles are found during the site clearance, the individuals will be moved to the preserved hedgerow to the north of the application site.

Reptiles will also seek refuge within hibernacula such as log piles, compost heaps and rubble piles. The log piles and rubble on site should be dismantled by hand under the supervision of a suitably qualified ecologist.

Any log or brash piles formed from trimmings must be created on surrounding hard-standing areas to ensure these do not form features that could be used for temporary shelter. Similarly, once any substrate has been excavated, it is best practice to move materials off site, to a skip or to nearby hardstanding areas to minimise the risk of the spoil being used for shelter. If this is not possible the material must be placed on a tarpaulin and be compacted to avoid gaps and spaces.

4.4 Other Notable Species

The site supports habitats suitable for hedgehog *Erinaceus europaeus*. Any excavations must be covered-up overnight to prevent hedgehogs and any other small mammals from falling in. If this is not possible then a board must be placed in the hole/pit so that any wildlife can use this to escape.

5 CONSTRUCTION MANAGEMENT

5.1 Materials Storage

No materials, equipment or other items connected with the works will be left outside the site. All such items can and will be comfortably contained within the working environment and site footprint.

Storage and loading areas must be outside areas that are to be used for tree planting.

All debris arising from the site to be immediately loaded into skips. Full skips to be netted and transported from the site to licensed waste disposal tips.

Construction materials must be stored on a non-permeable+ membrane within the designated waste storage area, as shown in Figure 3.

Waste resulting from demolition and construction activities will be segregated at source into categories such as metals, wood and plastics and will be disposed of via designated bins/containers that will be clearly labelled.

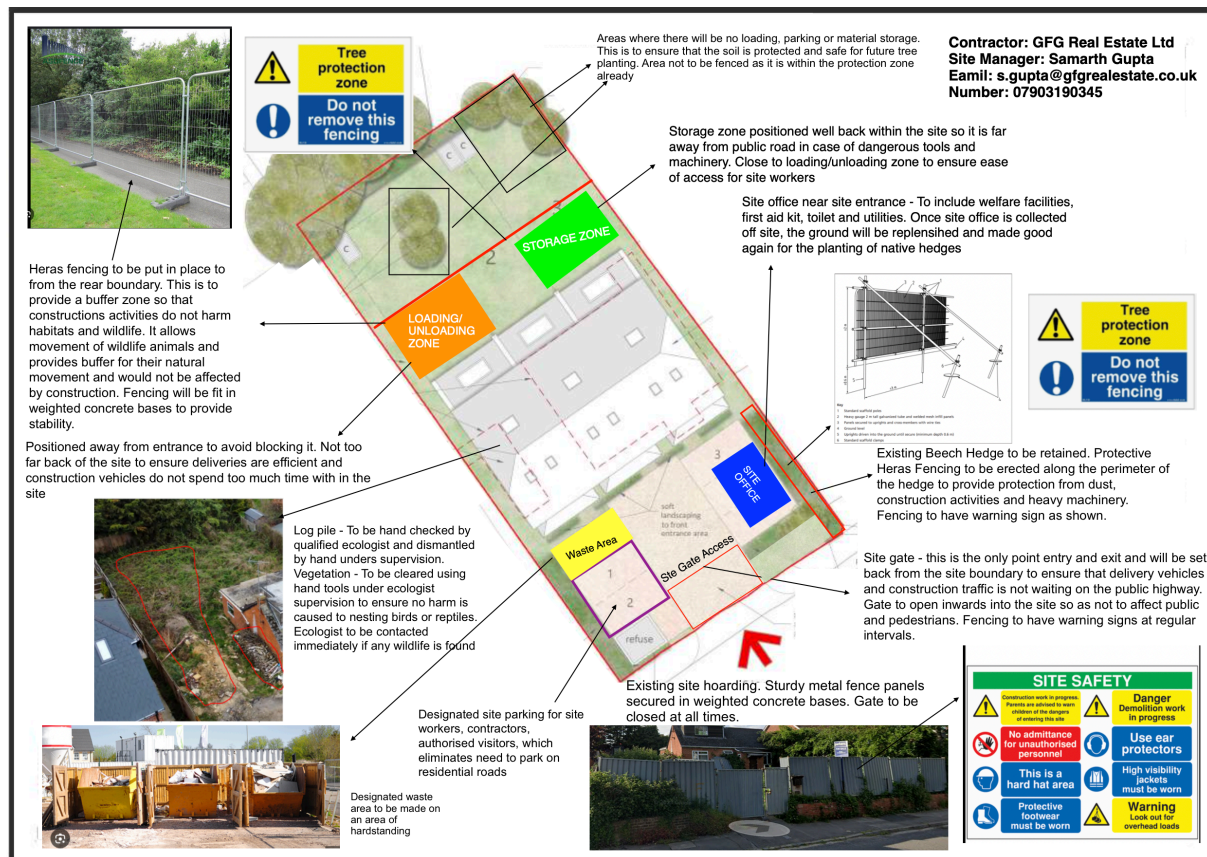


Figure 3. Proposed plans for the storage and parking at 105 Colemans Moor Road.

5.1 Vehicle Management

Non-plant vehicles will be parked within the designated parking area, as shown in Figure 3. Loading and unloading will only occur within the area designated for this purpose.

6 CONCLUSION

The avoidance and mitigation measures outlined within this report will ensure that potential impacts on nesting birds and common species of reptile are minimised.



APPENDIX 1 - Wildlife Legislation and National Planning 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 (for example Bechstein’s bat *Myotis bechsteinii*, Barbastelle bat *Barbastella barbastellus* and white-clawed crayfish *Austropotamobius pallipes*. Together with ‘Special Areas of Conservation’ (SACs), SPAs form a network across Europe of protected areas known as the ‘Natura 2000 sites’.

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

This 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 *Satyrion 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).



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

The NERC Act (2006) created the statutory nature conservation body Natural England, and places a statutory duty on all public bodies, including planning authorities, under Section 40, 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 of the NERC Act 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), 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)² sets out the Government's view on how planners Must balance nature conservation with development and helps ensure that Government meets its

² HM Government (2023). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/media/64f991c99ee0f2000fb7c001/NPPF_Sept_23.pdf.



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)³. 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), first published in 1994, was the UK’s response to the commitments of the Rio Convention on Biological Diversity (1992) until 2010, when 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), and a progress update was provided in July 2013 (Defra 2013).

'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 and species because the Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their local area or situation.

Birds of Conservation Concern (BoCC)

In 1996, the UK’s leading non-governmental bird conservation organisations listed 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 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 (Stanbury et al, 2021), which provides an up to date assessment of the conservation status of birds in the UK.

References

Protection of Badgers Act (1992). HMSO London. Available at:
<http://www.legislation.gov.uk/ukpga/1992/51/contents>

³ 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.



Circular 06/2005 (2005). Government Circular: Biodiversity and geological conservation – statutory obligations and their impact within the planning system. Office of the Deputy Prime Minister, London. Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf

Council Directive 79/409/EEC on the Conservation of Wild Birds (“the Birds Directive”). Available at: <http://jncc.defra.gov.uk/page-1373>

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”). Available at: <http://jncc.defra.gov.uk/page-1374>

The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations”). Available at: <http://jncc.defra.gov.uk/page-1379>

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Available at: <https://www.legislation.gov.uk/ukdsi/2019/9780111176573>

Countryside and Rights of Way (CROW) Act (2000). HMSO London. Available at: <http://www.legislation.gov.uk/ukpga/2000/37/contents>

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

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

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.

Natural Environment and Rural Communities (NERC) Act (2006). HMSO London. Available at: http://www.legislation.gov.uk/ukpga/2006/16/pdfs/ukpga_20060016_en.pdf

National Planning Policy Framework (NPPF) (2023) Ministry of Housing Communities & Local Government. Available at: https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf

Wildlife and Countryside Act (WCA) (1981). HMSO London. Available at: <http://www.legislation.gov.uk/ukpga/1981/69/contents>



APPENDIX 2 – Reducing Impacts of Artificial Light

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 Trust⁴ 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 cat's 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

⁴ Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



and 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



APPENDIX 3 – Ecological Clerk of Works Toolbox Talk

- The project ecologist is Neil Carter-Whitehead, who can be contacted at 07508719978.
- Reptiles, nesting birds, and bats are protected under the law. It is an offence to disturb, injure, or kill them. This responsibility is not passed on to the employer.
- During the works, a search ahead of any clearance will occur undertaken by a suitably qualified ecologist. This includes fingertip searching any thick vegetation, and the ground around the base of any trees. This will be to check for the presence of birds or their nests, and reptiles.
- Damaged roof tiles and roofing felt will be removed under the supervision of a suitably qualified ecologist.
- Please always work behind the ecologist, and stop and call if anything is seen that might need moving.
- For clearing any vegetation, an agreed area will be searched, and then cut to 300mm (knee height).
- At the ecologists' discretion any areas that are ready to be taken to ground will then be searched again, and once confirmation is given it can be cleared to ground.
- Any arisings should ideally be removed from site at the end of each working day, or may be stacked outside of the works area in a place that will not cause further constraints.
- If a reptile, bat, or active bird nest is found, works will stop.
- A buffer area, 5m in radius, should be put in place around any active birds nests, and no works should take place in this area until an ecologist confirms that the nest is no-longer active.
- Should any reptiles be found they should be moved to a safe location along the hedgerow that bounds the north of the site.
- Should a bat be encountered during the works demolition works will cease and a bat license will be sought.
- Should any reptiles, nesting birds, or other protected species be identified when working without ecological supervision works should cease and the project ecologist should be contacted immediately.



Toolbox talk provided by	Date	Signature

Name	Date	Signature



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/EUROBATGuidelines8_lightpollution.pdf?v=1542109376