



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

Mitigation Statement

Ragstone, Knatts Valley, Sevenoaks

Author: Nik Neale, BSc

Reviewed by: Rebecca Carter-Whitehead, BSc (Hons)

22nd February 2024

Project No: P5339

The Ecology Co-operation Ltd

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

Company number: 8905527

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.



Report Summary

1. Dan McEwan commissioned The Ecology Co-op to outline necessary mitigation for a proposed development at Ragstone. The proposal includes the partial demolition of the main residential dwelling and the construction of a new replacement detached residential dwelling. The purpose of this document is to outline mitigation for birds, bats, and common reptiles.
2. The site comprises of mowed modified grassland with scattered trees, and a large double storey residential house and a detached garage, there is a field of neutral grassland to the east and an ancient woodland on the northern border. The site is located within the Kent Downs Area of Outstanding Natural Beauty (AONB) surrounded by hills of hedge lined mixed farmland and woodland blocks.
3. Previous survey work at the site by The Ecology Co-op includes a Preliminary Ecological Assessment (PEA) and Bat Emergence surveys of the residential house. Surveys revealed the presence of a common pipistrelle bat *Pipistrellus pipistrellus* maternity roost, as well as two common pipistrelle day roosts. A brown long-eared *Plecotus auritus* roost was identified during the PEA, but no emergences of brown long-eared bats were noted during the surveys. This could be assumed to be a transitory roost or an occasional day roost.
4. A European Protected Species (EPS) licence will be required for the development to legally proceed. Enhancement measures are proposed for wider wildlife benefits including the provision of bat boxes on the proposed and existing detached properties. The inclusion of bat access tiles into the retained residential dwelling.
5. Site staff must be briefed through a toolbox talk, prior to the commencement of construction, on the importance of ensuring that works do not have an adverse impact on breeding birds or reptiles, a suitably qualified ecologist will undertake a walkover survey to identify if any nesting birds are present, or suitable habitat for reptiles has grown up, and therefore precautionary working methods would be followed. Storage of construction materials will be explained to ensure that habitats retained are not impacted.



CONTENTS PAGE

1	INTRODUCTION.....	4
1.1	Purpose of the Report.....	5
1.2	Background.....	5
	Figure 3. The roof void that was accessed is outlined in blue, confirmed brown long-eared bat roosts are signified with a star.....	7
2	LEGAL PROTECTION	7
3	CONSTRUCTION PHASE MITIGATION MEASURES.....	8
3.1	Bats.....	8
3.2	Breeding Birds.....	8
3.3	Common reptiles.....	9
3.4	Storage of materials.....	9
4	BIODIVERSITY ENHANCEMENT MEASURES	9
4.1	Enhancements for Bats.....	9
4.2	Enhancements for Nesting Birds.....	10
5	POST CONSTRUCTION MANAGEMENT PLAN	10
5.1	The integral bat roosting features in buildings will be largely maintenance-free, apart from an annual check that they remain in position, so are bat boxes in trees. 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 unauthorised 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.	10
6	CONCLUSION	10
	APPENDIX 1 – Wildlife Legislation and National Planning Policy	11
	APPENDIX 2 – Reducing Impacts of Artificial Light	16



1 INTRODUCTION

1.1 Purpose of the Report

This document has been produced to demonstrate how the proposed development upon the land at Ragstone will minimise its impact upon protected species, wider biodiversity and provide targeted enhancement measures for birds, bats, and common reptiles. It outlines all mitigation, compensation and enhancement measures that will be necessary to ensure that all valuable habitats are either protected, replaced, or enhanced on the site and that protected species are not harmed during the construction or operational phases of the development.

All of 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.

This report was commissioned and produced at the request of Dan McEwan.

1.2 Background

The Ecology Co-op has been commissioned to outline mitigation, compensation, and enhancement measures for a proposed development at Ragstone, Knatts Valley, Sevenoaks, TN15 6YE.

Following surveys at this site by The Ecology Co-op between September 2022 and July 2023, the site was found to support a common pipistrelle bat *Pipistrellus pipistrellus* maternity roost, as well as two common pipistrelle bat day roosts, and a brown long-eared bat *Plecotus auritus* transitory/occasional day roost.

The site comprises a mowed modified grassland with scattered trees, and a large double storey residential house and a detached garage. There is a field of neutral grassland to the east and an ancient woodland on the northern border. The central grid reference for the site is TQ55615 62908 and the site location is shown in Figure 1 below.

The proposed development includes a proposed partial demolition of the main residential dwelling and the construction of a new replacement detached residential dwelling, with associated hard and soft landscaping. Figure 2 below outlines the plans.



Figure 1. Site plan. The site boundary is highlighted in red. Image produced courtesy of Google maps (map data ©2020 Google).

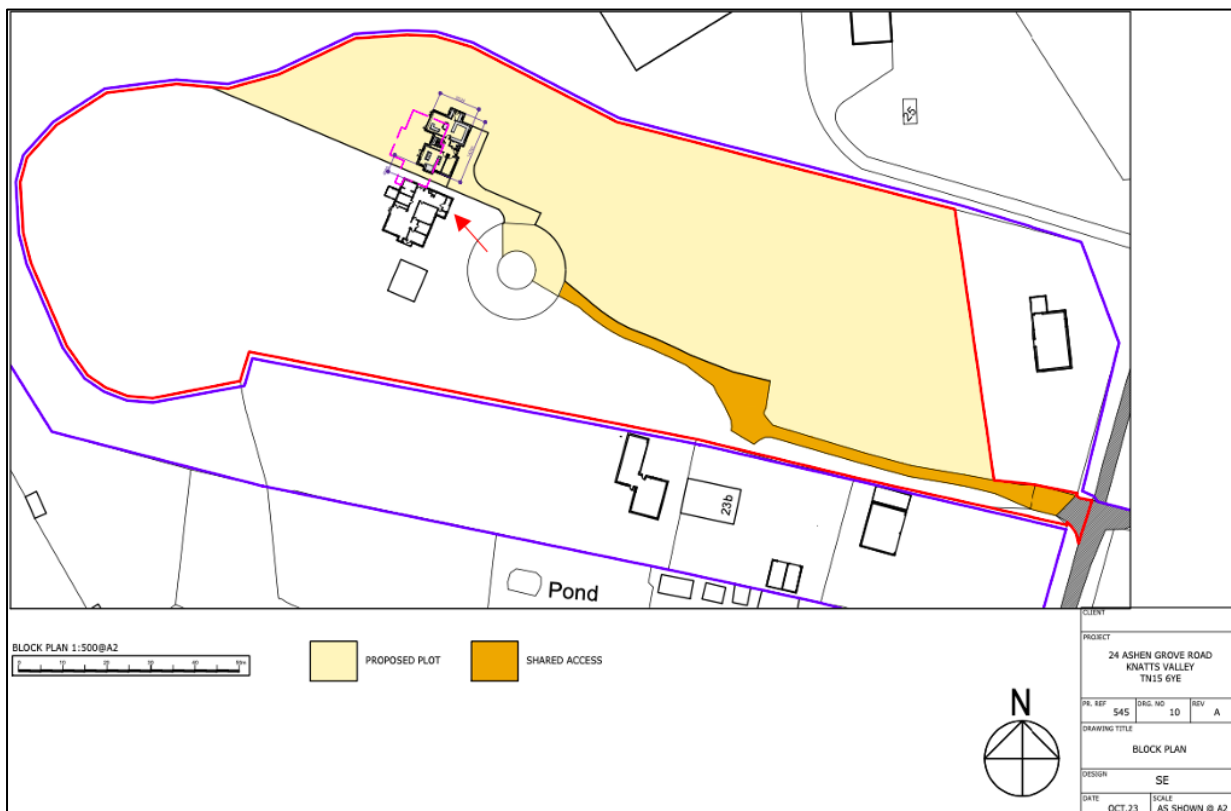


Figure 2. Proposed Block Plan. Drawing no. 10, October 2023. Location of the bay window is highlighted with a red arrow.

Identified roosts at Ragstone include:

- A brown long-eared bat transitory or occasional day roost. Figure 3 shows the location of this roost;
- One common pipistrelle bat day roost associated with the hanging tiles at the front of the house, see Figure 4;



- One common pipistrelle bat roost associated with the weather boarding on the southern elevation of the garage; and
- One common pipistrelle bat satellite maternity roost associated with the bay window at the front of the house, see Figure 4.



Figure 3. The roof void that was accessed is outlined in blue, confirmed brown long-eared bat roosts are signified with a star.



Figure 4. Blue arrow indicates the common pipistrelle bat roost associated with hanging tiles. Front bay window also shown where satellite maternity common pipistrelle bat roost is located.



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 species such as badger *Meles meles*, bats, dormice *Muscardinus avellanarius*, reptiles and breeding birds.

3 CONSTRUCTION PHASE MITIGATION MEASURES

3.1 Bats

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. Guidelines issued by the Bat Conservation Trust must be considered while designing the lighting scheme (see Appendix 2). This includes the following measures:

- No 'upward pointing' or bare bulb lights will be installed anywhere on the development. The lighting scheme will be designed to minimize light spill onto any established or created semi-natural habitats.
- The frequency spectrum of light sources should be selected that has reduced attraction to insects.

The location of the demolition of part of the existing house at Ragstone will not impact upon the hanging tiles associated with common pipistrelle bat roost. It is unclear whether the roof void will be impacted as the only roof void that was assessed is highlighted in blue on Figure 3, the roof void that is proposed to be demolished was inaccessible at the time of survey. A European Protected Species (EPS) licence will be required, based on the results of the survey, this development will be eligible for adding to the 'bat mitigation class licence' issued by Natural England and held by certain qualified bat ecologists.

- **Preparatory works – 'soft strip'**

All hanging/roof tiles should be carefully hand stripped one by one from the walls under the direct supervision of a licenced bat ecologist. Any bats found shall be gently captured and placed into bat boxes that have been secured to trees surrounding the site in advance.

- **Timing**

The hand stripping of tiles should be undertaken in the period between mid-March and the end of October to avoid disturbing bats that could be in hibernation, avoiding the breeding period (May–August inclusive) which could impact upon the common pipistrelle bat maternity roost identified.

- **Replacement roost site**

The detailed design of the new building should incorporate integral bespoke bat roosting features. Purpose-built structures are commercially available, some recommended examples of which are shown in Appendix 3.

- **Artificial lighting**

The use of artificial lighting inappropriately can result in significant disturbance to bats. The detailed design should include a lighting scheme that minimises these impacts by following the Bat Conservation Trust's guidance on lighting, reproduced in Appendix 4 of this report.



3.2 Breeding Birds

Construction will be completed outside of the bird nesting season (March to August). During construction, a suitably qualified ecologist will complete a check of the site to ensure that nesting birds are not present. If nesting birds are found during the removal of shrubs/hedgerows a five metre buffer will be maintained around the nest to ensure that disturbance is kept to a minimum. This area will then be reassessed after a few weeks and determined whether the birds have finished nesting.

3.3 Common reptiles

A suitably qualified ecologist will undertake a walkover survey prior to construction to ensure that areas of habitat that are being impacted are unsuitable for reptiles. If habitat has grown up to become suitable, precautionary measures will be put in place for reptiles including a destructive search by means of a two-phase strip of vegetation using hand powered tools. The area of suitable habitat will first be checked by a suitably qualified ecologist in dry, warm weather conditions (above 9 °C) between March and October inclusive. Following this, an initial cut of vegetation to 150mm allowing animals to move away in the first instance, with the second cut producing a shorter sward. All arisings will be collected and moved off site, thereafter the site needs to be maintained with regular fortnightly cuts to ensure suitable habitat does not arise.

The destructive search must be preceded by a 'Toolbox Talk' from the appointed Ecological Clerk of Works (ECoW), making it clear to contractors that no habitat should be removed until it has been checked, as well as highlighting the duty of the contractors to identify wildlife during works and alert the ECoW for animals to be safely translocated off-site.

3.4 Storage of materials

Construction phase materials will be carefully stored on hardstanding to avoid the destruction of habitats surrounding the site. Storage will be explained to all site workers prior to construction, and designated zones for storing materials will be highlighted. During construction, a spill kit will be required to be able to clean up spills if they happen. To avoid spills in the first instance, drip trays/plant nappies will be required.

4 BIODIVERSITY ENHANCEMENT MEASURES

4.1 Enhancements for Bats

As a measure to enhance roosting opportunities for bats, features will be incorporated into both detached residential buildings with four Schwegler 1FR bat tubes installed across both buildings, these bat boxes are designed to be bricked into the external walls and provide a suitable summer roost for bats. Four bat access tiles, which can be designed to match the roof tiles proposed for use within the construction design, to provide roosting areas for crevice-dwelling bat species and ensure that the common pipistrelle bat maternity roost, and occasional brown long-eared bats have access to the void space. These features should be positioned upon buildings in close proximity to boundary hedgerows



or standing water. Roofs where access tiles are installed will not use a Tyvek type underlay, which has a tendency to fray and pose an entanglement risk to bats, but instead must consist only of bitumen roofing felt or a similar material, this membrane will require access sections cut into it to connect bat access tiles to the roof void. The precise locations of these features can be detailed within a subsequent detailed planning application. The boxes will be hung by a suitably qualified ecologist to ensure that their positioning is suitable.



Figure 3. Schwegler 1FR bat tube for installation in walls, and bat access tile.

4.2 Enhancements for Nesting Birds

In order to enhance the site for common nesting birds, bird boxes will be put up across the site. Two 1SP Schwegler 'sparrow terrace' should be placed upon new buildings in any location close to the soffit boards and three Schwegler 1B nest boxes for installing at least 3 metres high on trees along the western and northern boundaries.



Figure 4. 1SP Schwegler Sparrow Terrace & Schwegler 1B nest box.

5 POST CONSTRUCTION MANAGEMENT PLAN

5.1 *The integral bat roosting features in buildings will be largely maintenance-free, apart from an annual check that they remain in position, so are bat boxes in trees. 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 unauthorised 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, particularly sparrow terraces should be emptied of nesting material in winter to



prevent the build-up of parasites. Bat boxes should only be maintained by a suitably qualified ecologist, as they may support roosting bats.

6 CONCLUSION

The proposal for the partial demolition of the main residential dwelling and the construction of a new replacement detached residential dwelling will require a European Protected Species (EPS) licence, based on the results of the survey, this development will be eligible for adding to the 'bat mitigation class licence' (BMCL). Mitigation measures will also be required for birds, and common reptiles. Construction that will impact the hedgerow will be completed outside of the bird nesting season (March to August inclusive) and supervised by a suitably qualified ecologist. Precautionary measures including a destructive search in dry, warm weather conditions (above 9 °C) (March to October inclusive) may need to be undertaken for reptiles dependent on the site at the time of construction.

A precautionary soft-strip approach to remove any hanging tiles under the supervision of a suitably qualified ecologist. Both bat boxes, and bat access tiles will be included in the proposal to ensure that impact on bats is limited.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op.



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 *Musccardinus 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 *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).



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.

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.

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.

National Planning Policy Framework

The National Planning Policy Framework (NPPF 2021)¹ sets out the Government's view on how planners should balance nature conservation with development and helps ensure that Government meets its

¹ HM Government (2021). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.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)². 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, 2015), which provides an up to date assessment of the conservation status of birds in the UK.

References

² 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.



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

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) (2021) Ministry of Housing Communities & Local Government. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.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 Trust³ 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 lighting professional determine there is a likely significant effect upon key bat habitat and

³ 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/>



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/EUROBATGuidelines8_lightpollution.pdf?v=1542109376