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Mitigation Method Statement

Site Name

Land adjacent to Woodgate Nurseries

Client

BDW Southampton

Issue Date

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About the Author

This report has been prepared by Lynn Spencer, a Senior Ecologist at The Ecology Co-op, with 11 years' experience. She has a Level 1 bat survey license and has prepared numerous European Protected Species licenses for bats. As an Associate member of the Chartered Institute for Ecology and Environmental Management (CIEEM), she is bound by their code of professional conduct.

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 BDW Southampton to provide a Mitigation Method Statement with regards to a proposed development at land adjacent to Woodgate Nurseries. This document details protection and enhancement measures for the 5m wide corridors along the southern and western boundaries of the site, referred to in the Lighting and Reptile Strategy Addendum. It will be submitted to Arun District Council in order to discharge condition no.8.3 of the approved planning application (application ref: AL/129/21/OUT).
Context	Protected species surveys were undertaken during 2020 and 2021 to inform an Ecological Impact Assessment. The surveys determined that bat activity was concentrated along linear features such as hedgerows and a low population of slow-worm *Anguis fragilis* was present along the field boundaries.
Mitigation Measures	Section 3 of this report outlines mitigation measures including buffers around retained habitats protected with fencing, an ecologically sensitive lighting scheme and a temporary reptile receptor area.
Biodiversity Enhancement Measures	Section 4 sets out the proposed biodiversity enhancement measures for the site, including hedgerow and tree planting, creation of a hibernaculum and installation of bat boxes.
Monitoring and Management	Monitoring and management methods are detailed in section 6 and a work schedule is provided in section 7 outlining suitable timings, responsibilities and remedial actions should they be necessary.

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1 INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-operation was commissioned by BDW Southampton to produce a Mitigation Method Statement for a proposed residential development on land adjacent to Woodgate Nurseries. This document details protection and enhancement measures for the 5m wide corridors along the southern and western boundaries of the site referred to in the Lighting and Reptile Strategy Addendum[1]. It will be submitted to Arun District Council with regards to condition no.8.3 of the approved planning application AL/129/21/OUT which is as follows:

"*A mitigation method statement which provides full details of how the dark 5m wide corridors along the southern and western boundaries per figure 1 of the submitted "Lighting and Reptile Strategy Addendum" (28/01/22, P3816) are to be protected and enhanced for bats and other wildlife. The proposed protection details must include a 5m buffer zone to be secured by fencing around the retained natural areas during construction. The development shall thereafter proceed in accordance with the approved hedgerow protection and enhancement measures.*"

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 to the west of Lidsey Road, Woodgate, West Sussex PO20 3ST. The central grid reference for the site is SU 93696 03865. The location of the site is shown in Figure 1.

The site comprises arable fields and poor semi-improved grassland bounded by hedged field boundaries, some with trees. It is bordered by further farmland, residential developments and a former plant nursery business.

The proposed development comprises a residential development to include up to 95 dwellings with associated parking, as well as soft and hard landscaping across the site. Existing access off Lidsey Road to the east will be used. The landscape plan for the development is shown in Figure 2.

A Preliminary Ecological Appraisal of the site (PEA)[2] of the site was undertaken on the 12th of August 2020 and protected species surveys undertaken during 2020 and 2021 by The Ecology Co-op, and the findings presented within an Ecological Impact Assessment (EcIA) report[3], which has guided the mitigation and enhancement measures outlined within this report.

[1] The Ecology Co-op (2022). *Lighting and Reptile strategy addendum – Land adjacent to Woodgate Nurseries*
[2] The Ecology Co-op (2020) *Phase 1 Habitat Survey and Preliminary Ecological Appraisal – Land at former Woodgate Nurseries, Chichester.*
[3] The Ecology Co-op (2021) *Ecological Impact Assessment – Land adjacent to Woodgate Nurseries.*

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 ©2021 Google).

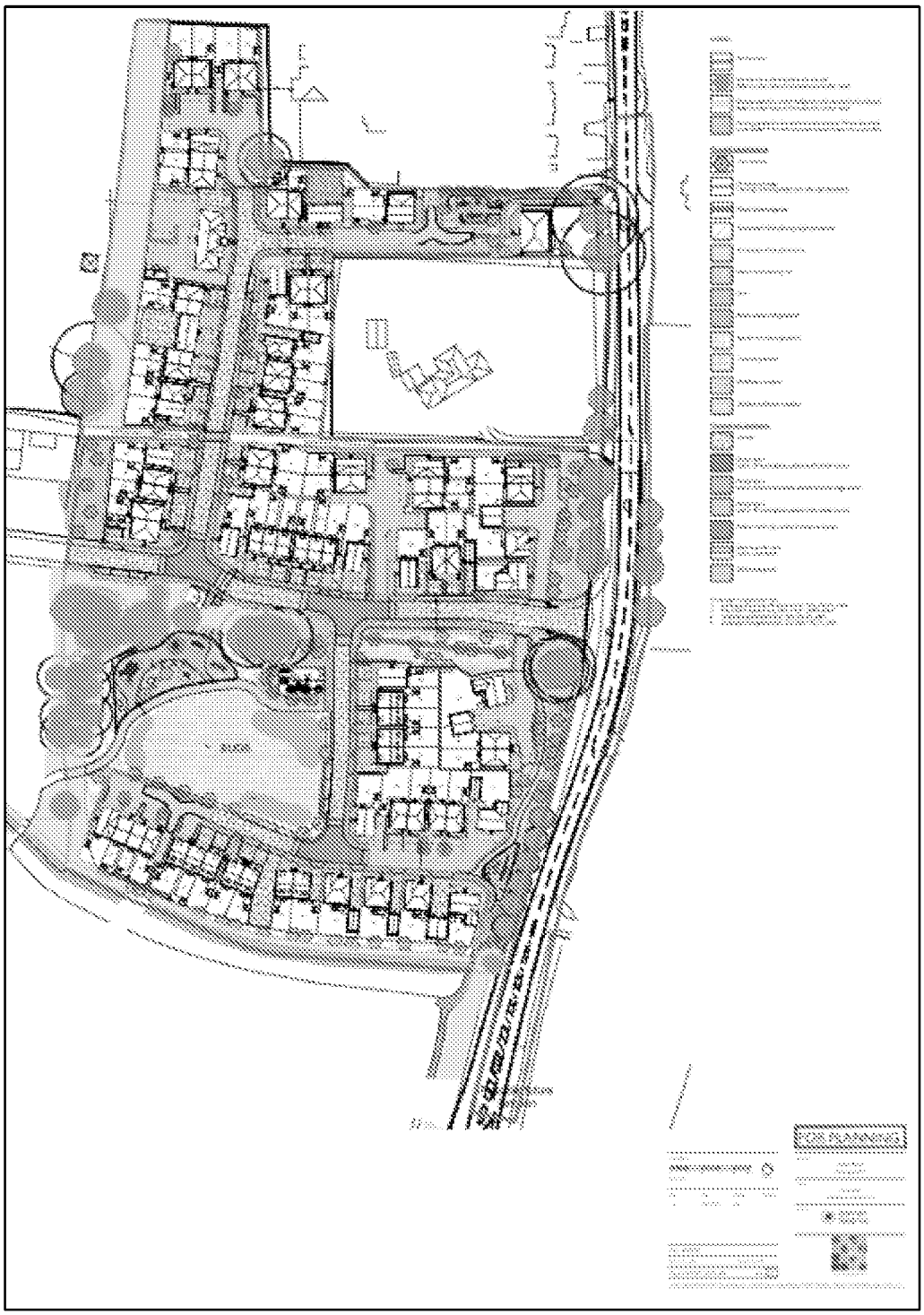

Figure 2. Proposed plans for the development at provided courtesy of Green Landscape Studio (Drg No: GLS-020-170-PI-1300).

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 DESIGN STAGE IMPACT AVOIDANCE MEASURES

Based on the 'Landscape General Arrangement'' provided by Green Landscape Studio (Drg. No. GLS_020_170_PI_1300, Dated 25.10.24), Figure 2 shows the extent of the retained habitat and un-developed land and opportunities for habitat enhancement. The layout of the proposed scheme has been designed to minimise impacts on the most ecologically valuable habitats at the site including those important for protected species. The hedgerow, tree belt and field boundaries have been mostly retained as part of the design, although small scale habitat losses are unavoidable where access roads pass through the development. These losses have been minimised wherever possible by aligning the roads through existing gaps in the hedgerow, thereby reducing the amount of hedgerow removal necessary to accommodate the width of the road.

4 MITIGATION MEASURES

4.1 Retained Habitat Protection

All hedgerows and trees will be protected during the construction phase by the establishment of root protection zones in accordance with British Standard 5837, and 5m buffer zones demarcated by Heras fencing or other temporary barrier fencing. No storage of building materials will occur within fenced off areas. Construction staff shall be briefed on maintaining these exclusion zones and the importance of protecting the boundary trees and hedgerows.

4.2 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 when 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;
- all street lighting lamp-posts will be limited to 3.5m in height and will have shields installed to focus light towards footpaths and roads only (see Figure 3 for example). No lamps will be allowed to emit light past horizontal (90 degrees from the ground). No external lights will be installed on new buildings above a height of 2m and all external lights will have shields to direct light to prevent light spill;
- 'dark corridors' must be established around the site boundary and retained hedgerow and trees through the development site as shown in Figure 4 below. This means that no street light

columns shall be positioned within or adjacent to the dark corridors and all artificial lighting should be screened to direct light away from these areas;

- lighting on pedestrian routes will be kept to a minimum required to maintain safety and security. Where possible, reflective white line-painting will be used as an alternative to lights, and where lighting cannot be avoided, these should be mounted on 1m high pillars and directed down towards the path to minimize light spill;
- the frequency spectrum of light sources should be selected that has reduced attraction to insects.

Figure 3. An example of suitable downward shielded street lighting column.

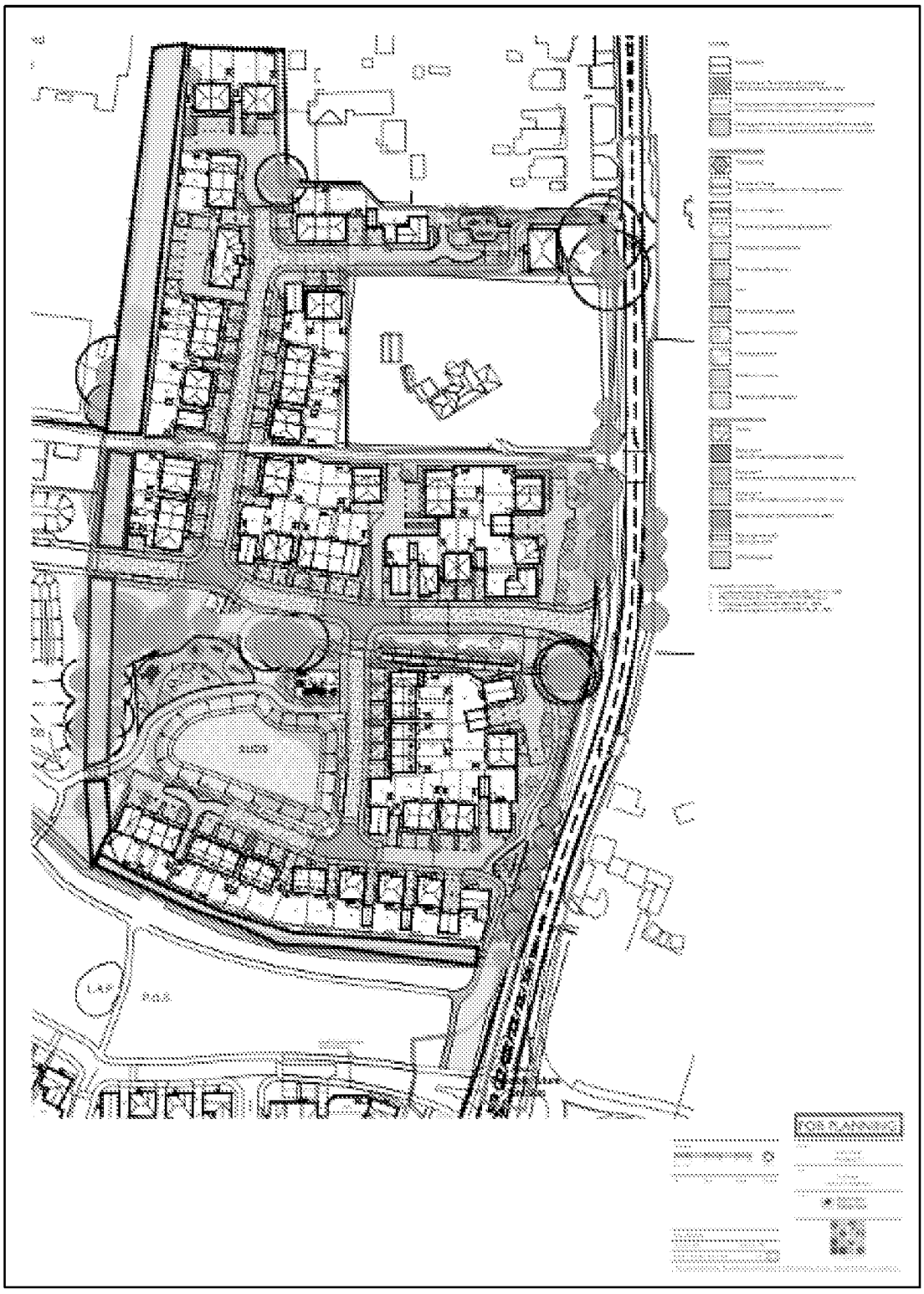

Figure 4. Locations of 'dark corridors' through the proposed development where no artificial light will be used. Shaded areas outlined in black represent the proposed corridor.

4.3 Reptiles

The site was found to support a 'low' population of slow worms. Suitable reptile habitat on site is

restricted to the narrow grassland margins bordering the hedgerows along the field boundaries. The proposed development includes the retention of most of these boundaries, however, there will be destruction of some hedgerow and grassland habitat.

It is important that the areas of grassland to be removed are maintained as a short sward below 5cm in height, and, therefore, remain unsuitable for reptiles prior to works commencing and for the duration of the works.

Areas of reptile habitat that are being retained within the construction zone must be fenced with Heras fencing or other temporary barrier fencing, to ensure that machinery does not track over these areas and put reptiles at risk.

4.3.1 Temporary Reptile Receptor Area

Prior to works commencing, an area of improved grassland on the southern or eastern boundary of the site will be designated as a temporary reptile receptor area. Before the clearing of any suitable reptile habitat on site occurs, the receptor area will be excluded from cutting or grazing until the sward height is at least 20cm in height and is, therefore, suitable reptile habitat.

The receptor area will be partially fenced with semi-permanent amphibian and reptile proof fencing. The receptor area will also be fenced with Heras fencing or other temporary barrier fencing, to ensure that machines do not track over the area.

A semi-permanent polypropylene material that is tough and stabilised against ultraviolet light should be installed to a depth of not less than 20cm below ground and supported by stakes every 2 metres fixed with clout nails and washers (see Figure 5). The fencing should be backfilled with earth and tightly compacted to make sure that it acts as an impassable barrier. The advantage of the semi-permanent fence is that it is less susceptible to damage by dogs, deer, foxes, and other animals, as well as any accidental damage by construction staff and is suitable for developments where fencing may need to remain in-situ over a long period of time.

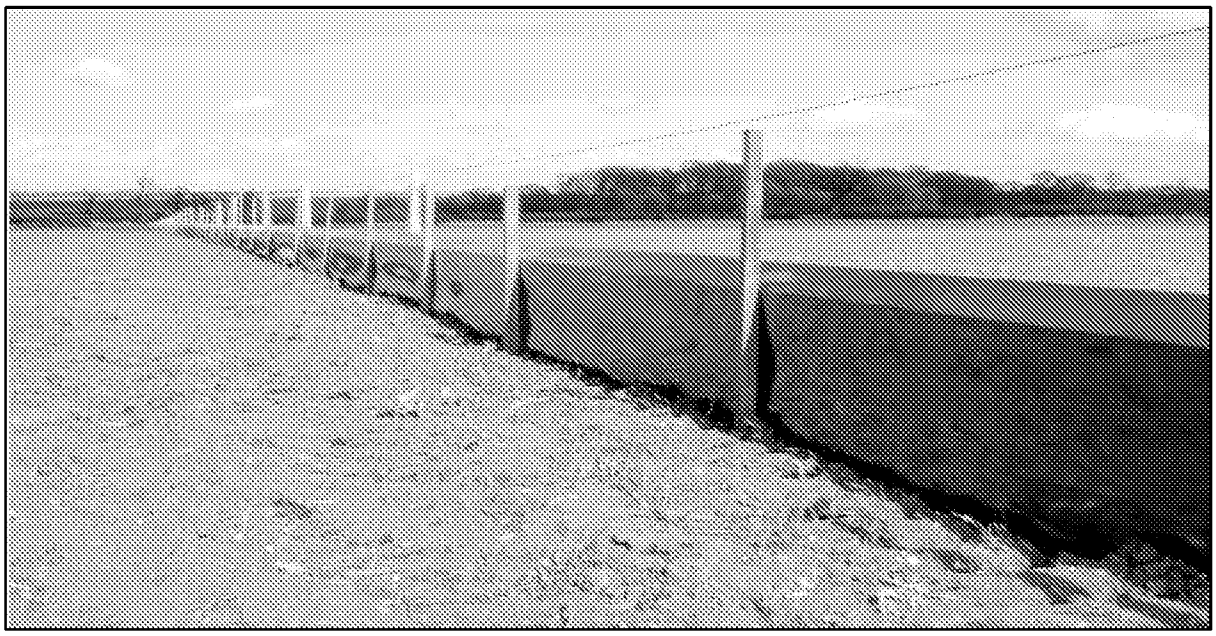

Figure 5. An example of the semi-permanent fencing material that will be used.

The fencing will comprise a line to separate the receptor area from the rest of the site. The receptor area will be open to the south to allow any reptiles to disperse into the surrounding landscape. The fencing will remain in-situ until all construction and landscaping work deemed a risk to reptiles has been completed. To minimise the risk of killing or injury during installation, the fence should be installed outside of the reptile hibernation period (generally October to late February dependent of weather conditions). The installation of the fencing should be overseen by a suitably qualified ecologist.

5 BIODIVERSITY ENHANCEMENT MEASURES

5.1 Hedgerow and Native Tree Planting

The existing hedgerows along the site boundaries will be bolstered by planting up with native trees, scrub and hedgerow.

These features will provide valuable shelter and foraging habitat for birds and bats as well as act as a wildlife corridor through the site. Species could include:

- blackthorn *Prunus spinosa*
- dogwood *Cornus sanguinea*;
- hornbeam *Carpinus betulus*;
- spindle *Euonymus europaeus;*
- goat willow *Salix caprea* and
- field maple *Acer campestre*.

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 *Hymenoscyphus pseudoalbidus*), it is strongly recommended that current advice from DEFRA, The Forestry Commission and Woodland Trust is followed regarding the planting of ash species[4].

5.2 Enhancements for Reptiles

The southern end of the site will comprise retained existing habitat used as a receptor site for reptiles. The long-term management of this area will be minimal, with the grassland cut every other year in late summer after flowering plants have set seed. Over time, this will develop into tall tussocky sward with a dense thatch of dead grass material at the base to provide all year-round cover, providing suitable foraging and resting places for reptiles and ecological continuity with the local landscape.

At least one new hibernaculum will be created within an area of tussocky grassland to provide hibernation features and refuge for reptiles. This will be built using logs and branches, piled on top of each other, with grass cuttings, earth and turf laid over the top to provide insulation (see Figure 6 as a guide). Buffer zones of long vegetation should be kept around the hibernaculum. The hibernaculum will also provide benefits for other species including solitary bees, wasps, and other invertebrates.

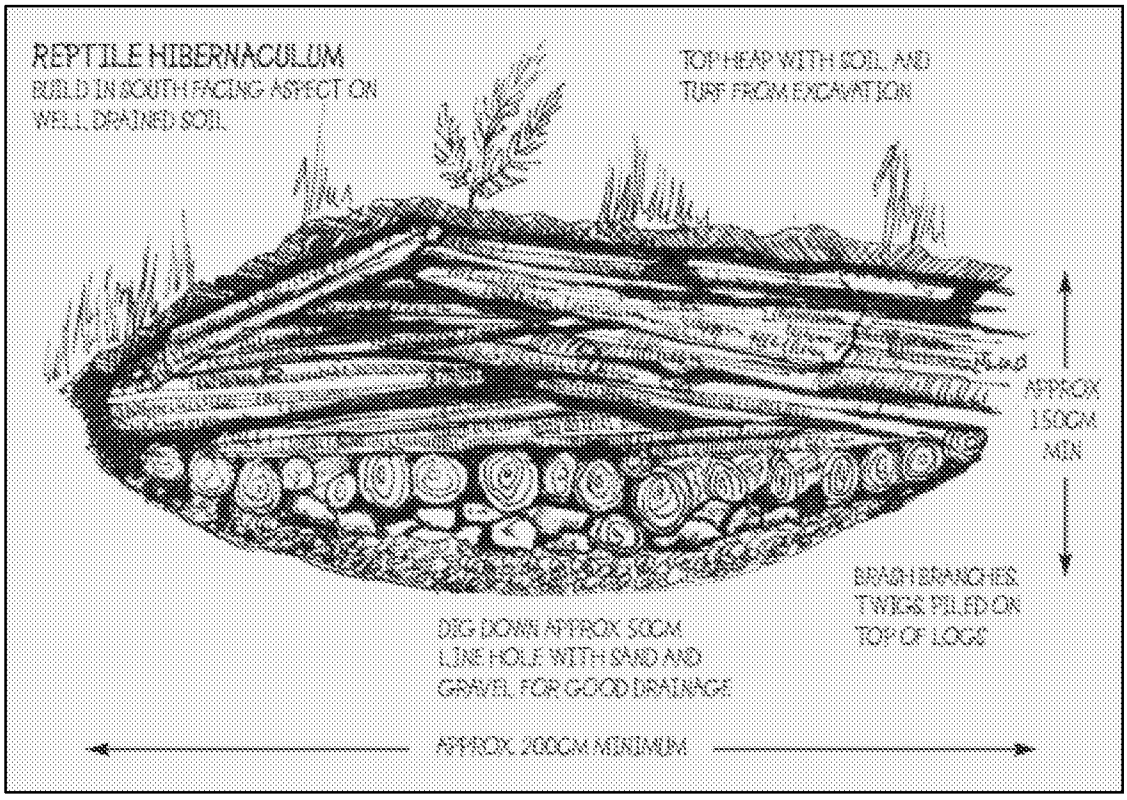

Figure 6. Illustration on how to build a hibernaculum. Image taken from the 'Reptile Habitat Management

[4] Defra, 2013. *Chalara Management Plan*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221051/pb13936-chalara-management-plan-201303.pdf

Guidelines' by Herefordshire Amphibian and Reptile Team and the Herefordshire Nature Trust.

5.3 Enhancements for Bats

Ten bat boxes will be installed across the site. The following bat roosting features can be affixed to mature trees. Examples include the Eco Kent Bat Box, an Improved Cavity Bat Box and Improved Crevice Bat Box (double or treble crevice), which are shown in Figure 7 below. These shall be installed at least 3m above ground level, facing south or east and with a clear flight path to the tree.

Figure 7. Left to right; NHBS Kent Bat Box, Improved Cavity Bat Box and Improved Crevice Bat Box.

6 POST CONSTRUCTION MANAGEMENT PLAN

6.1 Retained and Created Hedgerows

Optimal Habitat
A variety of healthy, semi-mature and mature hedgerows, some with trees across the development site.

Yearly Management
Hedgerows should annually be checked for signs of disease and more frequently while new ones are establishing. If disease is identified advice should be sought from an arboriculturist regarding the appropriate method of treatment.

Trees and shrubs should be allowed to grow unhindered where possible. However, it may be necessary to trim back trees and shrubs in some circumstances, such as where there is a risk to health and safety, or for maintenance of the ecological feature. Cutting of shrubs and trees must only be timed outside the bird nesting season (avoiding 1st March to 31st August). Where possible they shouldn't be cut until February, so that valuable winter food associated with fruiting shrubs/trees is retained for over-wintering birds.

6.2 Tree Planting

Optimal Habitat
A variety of healthy, semi-mature and mature native tree species across the development site.

Management
Tree saplings must be kept well-watered during establishment. Weeds must be controlled at the base of the trees.

Tree guards, to protect the new saplings from rabbits and deer, to be inspected twice annually to remove weeds and any soil build up inside the tubes for first 3 years and then remove when planting well established. Tree stakes and ties will be checked annually and after string winds.

Check for signs of disease. If disease is identified advice should be sought from an arboriculturalist regarding the appropriate method of treatment.

Cutting of tree as required must only be timed outside the bird nesting season (avoiding 1st March to 31st August). Where possible shrubs shouldn't be cut until February, so that valuable winter food associated with fruiting shrubs/trees is retained for over-wintering birds.

Replacement planting will be required where trees fail to establish.

6.3 On-Site Reptile Receptor Site

Optimal Habitat
Long tussocky grassland with developing thatch layer to provide shelter. Inclusion of hibernacula. Scrub surrounding the grassland area which has been retained.

Management
It is important that this habitat is managed for reptiles in perpetuity.

Mowing of the grassland areas within the reptile receptor areas should be undertaken during the winter months, November to February, which is outside of the active season for reptiles. It is also important that the grassland habitat is mown to a height of 10cm and that machinery does not track over any of the receptor areas to avoid soil compaction.

The hibernacula should also be maintained in perpetuity, and regularly checked for damage within the first 5-years the development is in operation. If they are found to be damaged or removed, they will need to be replaced immediately.

To prevent the dense scrub encroaching into the rough grassland area it can be cut back to give scalloped edges, which will lengthen the scrub and increase shelter points. Cutting in general will encourage re-growth, but it should be cut in rotation to maintain the age structure, as outlined above. As with hedgerows, this cutting must only be timed outside the bird nesting season (avoiding 1st March to 31st August). Where possible shrubs shouldn't be cut until February, so that valuable winter food associated with fruiting shrubs/trees is retained for over-wintering birds. Further detail on scrub management can be found in a guidance document from the Natural England[5].

[5] Natural England, 2011. *The Scrub Management Handbook.* Available at: http://publications.naturalengland.org.uk/publication/72031.

7 WORK SCHEDULE

Table ***1*** below provides the timetable to aid correct timing of the annual 'green asset' management at the site.

Table 1. Annual Work schedule for the 5-year management period.

Action for green assets	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Check trees for signs of any disease							X	X	X			
Cutting of hedgerows and trees		X										
Cutting of Tussocky grassland (every other year)								X				
Keeping tree saplings well-watered	X	X	X	X	X	X	X	X	X	X	X	X
Inspection of tree guards and fences	X	X	X	X	X	X	X	X	X	X	X	X
Replacement planting of failed trees or shrubs	X	X	X								X	X
Reptile receptor site hibernacula checks (after one and three years)				X	X	X	X	X				
Inspection of bat boxes									X	X	X	

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 *Satyrium 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)[6] sets out the Government's view on how planners

[6] 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.

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 185b, states that council plans should "*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*."

The Office of the Deputy Prime Minister (ODPM) Circular 06/2005, 2005)[7]. 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.

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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 Trust[8] 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

[8] 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/

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 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

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