

HOOK LANE PAGHAM

ECOLOGICAL PROTECTION & ENHANCEMENT PLAN

Bellway



Ecology
Archaeology
Arboriculture

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1 EXECUTIVE SUMMARY

- 1.1. In August 2021 ACD Environmental Ltd carried out an updated Ecological Walkover survey to assess the Application Site for reptiles and water vole, and inform mitigation measures, to support a outline application for a site with outline planning permission (P/30/19/OUT), known as Hook Lane, Pagham.
 - 1.2. The Application Site was surveyed both in 2015 and 2019, by FPCR, which included reptile surveys. The 2015 reptile survey recorded a peak count of 19 common lizards, which equates to a good population. The updated reptile survey in 2019 recorded a peak count of 25 common lizards and three slow worms, which equates a good population of common lizards and a low population of slow worms.
 - 1.3. Since outline planning permission was granted, archaeological investigations have been carried out on site, which has changed site conditions, although some areas of habitats suitable for reptiles are present on site. Given this, a full reptile translocation will not be carried out. We have recommended a combined approach of habitat manipulation and selected hot spot trapping, to ensure that risk of harm to reptiles is kept to a minimum.
 - 1.4. The detailed landscape proposals have been designed to provide reptile habitat in the new development, to ensure that the common lizard and slow worm population can be retained on-site.
 - 1.5. Retained reptile habitat will be enhanced by creating new hibernacula and basking areas for the common lizard and slow worm population.
 - 1.6. Precautionary methods of working and pre-construction checks have been specified for badgers, nesting birds, reptiles, water voles and hedgehogs.
 - 1.7. A sensitive lighting scheme will be produced to protect foraging and commuting bats.
 - 1.8. The loss of small patches of hedgerow and scrub from the boundaries will be compensated by enhancing the boundary vegetation with native species. As well as tussocky meadow grassland for reptiles within the open space.
 - 1.9. The Site includes an existing ditch, which supports water voles on an occasional basis. The proposals include realignment of the ditch. Mitigation for water voles will be put in place within the Approved Development Site, to ensure that no harm to water voles is caused during construction, and the works comply with the relevant legislation. The scheme will include a new ditch channel and attenuation basins, which will include a more naturalised channel and beneficial planting/habitat for water voles.
 - 1.10. A scheme of bird nesting and bat roosting boxes will be provided in the new scheme, as well
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as areas for reptiles include hibernacula and log piles.

- 1.11. Implementing all of the above recommendations will ensure that there are no significant impacts upon protected species and that the proposals will be in conformity with relevant legislation and policy.

2 INTRODUCTION, CONTEXT AND PURPOSE

Introduction

- 2.1. In August 2021, ACD Environmental Ltd was commissioned by Bellway Homes to carry out an updated site walkover of a parcel of land at Hook Lane, Pagham (OS Grid Reference SZ 89558 99212). The Site is shown in Image 1.



Image 1: Application Site location and approximate boundary shown in red

Context

- 2.2. The site has outline planning permission (P/30/19/OUT) for development of up to 300 residential dwellings with associated site access, highways, open space, landscaping and land reserved for provision of care home.
- 2.3. This report is intended to support an Outline planning application, and to address Condition 32 of the outline consent, which states:

Prior to the commencement of development of any preparatory works an Ecological Protection and Enhancement Plan shall be submitted to and agreed in writing by the Council. The Plan

shall be based on the mitigation measures proposed in Ecological Appraisal dated January 2017 prepared by FPCR Environment & Design Ltd and the correspondence dated 20 April 2017 and will include a programme of ecological monitoring to inform the long term management of the site. The Ecological Protection & Enhancement Plan shall include a full mitigation strategy for Water Voles and Reptiles and a work programme with clear timelines for each mitigation measure to be carried out. The mitigation measures shall be implemented in accordance with the timescales set out in the agreed plan.

Purpose

2.4. The purpose of this assessment is to:

- Ascertain the general ecological value of the Application Site by:
 - Identifying and assessing the main habitats and plant communities;
 - Assessing the potential for protected species to use the Application Site;
 - Feeding into refinements of the masterplan; and
- To assess any ecological impacts of the proposed scheme and recommend appropriate mitigation and enhancements.

3 METHODOLOGY

Names and qualifications of surveyors

- 3.1. The report was written by Siobhan Pryke of ACD Environmental Ltd. Siobhan is an Ecologist and has been involved in a wide range of surveys including Extended Phase 1 and Phase 2 for protected species and reports, including Preliminary Ecological Appraisals (PEAs) and Ecological Impact Assessments (EclAs). Siobhan is a Qualifying member of CIEEM (Chartered Institute of Ecology and Environmental Management).
- 3.2. This report was checked by Daniel Wood (MCIEEM) of ACD Environmental Ltd. Daniel is the Ecology Director and oversees all work carried out by the ACD Environmental Ltd ecology team. Daniel has 14 years' experience working for commercial consultancies and specialises in European Protected Species (EPS) legislation and mitigation. Daniel holds Natural England Class Licences for barn owls, bats, great crested newts and hazel dormice and is registered consultant on the Badger Class Licence. Daniel has extensive development project experience, on sites of varying sizes from individual dwellings to strategic land allocations involving a wide range of issues. He has experience of projects from pre-acquisition, planning applications, PEA, EclA, Environmental Statements (ES) for Environmental Impact Assessment (EIA) and Appropriate Assessment (AA).

Habitat Survey

- 3.3. The updated ecological walkover was carried out on 11th August 2021.
- 3.4. The purpose of the survey was to confirm whether the habitats have changed significantly since the 2019 survey work by FPCR and to inform the mitigation strategy.
- 3.5. The site survey was undertaken by Siobhan Pryke and Ali Shaw of ACD Environmental Ltd. A site walkover was also carried out by Daniel Wood on 1st November 2021.
- 3.6. The survey was undertaken in accordance with Guidelines for Preliminary Ecology Appraisal (CIEEM, 2013), and the broad methodology and principles of the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Survey (JNCC 2010), which included mapping habitat types and identifying plant species observed on the site, including Wildlife and Countryside Act Schedule 9 invasive plant species.

Fauna

Badger

- 3.7. Where possible, the Application Site was systematically surveyed for evidence of badgers, in the form of:
 - Setts - comprising either single isolated holes or a series of holes, which may be link

to each other underground;

- Faeces - badgers deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries, field boundaries and around setts;
- Paths - worn paths used by badger, often linked to setts or foraging grounds;
- Scratching posts - typically at the base of tree trunks;
- Snuffle holes - scrapes where badgers have searched for food;
- Day nests - bundles of grass and other vegetation where badgers may sleep above ground); and
- Hairs - usually found outside setts or caught under fencing.

Bats

Preliminary Roost Assessment

3.8. Trees were assessed for their potential to support roosting bats, with reference to the three broad categories of Potential Roost Features (PRFs) and sub-categories of PRFs from the Bat Tree Habitat Key¹. These are as follows:

3.9. The following PRFs were searched for:

- Disease and decay PRFs:
 - Woodpecker and squirrel holes;
 - Knot holes;
 - Pruning-cuts;
 - Tear outs;
 - Compression forks;
 - Wounds;
 - Cankers; and
 - Butt rots.
- Association PRFs:
 - Fluting; and
 - Ivy.
- Damage PRFs:

¹ Andrews, H. *Bat Habitat Identification Key*. Available at: <http://battreehabitatkey.co.uk/>

- Hazard beams;
- Frost cracks;
- Subsidence/shearing and helical splits;
- Lightning strikes;
- Desiccation fissures;
- Transverse snaps;
- Welds; and
- Lifting bark.

Reptiles

3.10. The site has previously undergone two sets of reptile surveys and there was an increase in the number of reptiles present. The habitat on site comprised tall ruderal and grassland, which is still suitable for reptiles. Two adult common lizards were seen at the time of the walkover.

3.11. Results are provided in Section 4.

Water vole

3.12. The previous survey in 2015 discovered 27 burrows and 6 latrines, with fresh dropping as well as a water vole in an off-site pond. In 2019, no evidence of water vole was found within the central on-site ditch, which at the time of survey was dry.

3.13. During the updated walkover field signs for water vole were searched for, predominantly along the central ditch, but also the eastern ditches. Field signs include:

- Water voles
- 'Plop' sound of water voles entering the water
- Burrows
- Feeding signs
- Latrines
- Footprints
- Runways

3.14. Results are provided in Section 4.

Potential Limitations

- 3.15. The survey was undertaken in August, within the botanical survey season, when most plant species were identifiable to generic and/or species level, and broad species assemblages and habitat types could be identified.
- 3.16. The central ditch couldn't be accessed due to the level vegetation on the banks, the updated water vole survey was undertaken from the ditch banks.
- 3.17. During the walkover survey of 1st November, the ditch had been cut.

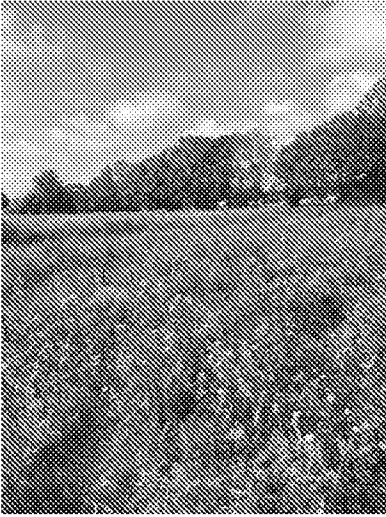
4 RESULTS AND EVALUATION

Context

Habitats

4.1. Habitat descriptions from the updated survey are provided in Table 1 below.

Table 1: Habitat descriptions

Habitat Description	Photo
The dominant habitat present within the Approved Development Site is former arable field which had developed into semi-improved grassland with ruderal species present. Species present include ragwort <i>Jacobaea vulgaris</i>, bristly oxtongue <i>Helminthotheca echioides</i>, daisy <i>Bellis perennis</i> thistle <i>Cirsium</i>, false oat grass <i>Arrhenatherum elatius</i>, hogweed <i>Heracleum sphondylium</i>, bindweed <i>Convolvulus</i> and dock <i>Rumex</i>. Large parts of the site have been subjected to archaeological excavations, which has resulted in areas of short grassland/ruderal vegetation, bare ground and spoil heaps.	 Aug 21
	 Nov 21
	 Nov 21

Hedges surround the Approved Development Site. Dominated by hawthorn <i>Crataegus monogyna</i>, with bramble <i>Rubus fruticosus</i>, ash <i>Fraxinus</i> and field maple <i>Acer campestre</i>.	
Ephemeral ditch in the centre of Approved Development Site. Ditch is seasonally wet. The ditch has vegetated banks. The banks had been cut when the site was visited on 1st November.	 Aug 21  Nov 21

Fauna

4.2. A summary of protected species constraints and considerations is provided in Table 2 below.

Table 2: Protected species constraints/considerations

Bats	No trees within the site boundary or within the site have roosting opportunities. Moderate foraging potential over the grassland. Hedge lines could be used by commuting bats and	No further survey – lighting precautions (see below) will be implemented to enable
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	surveys in 2015 identified an average of 11 bats per survey commuting along hedgerows (FPCR 2017).	bats to continue to move through the site and within the surrounding countryside.
Badger	No evidence of badgers was found on site. In places there were mammal paths identified in the 2021 survey, which were all located near the western boundary. No foraging marks noted, and no further signs of badger presence noted on the site. In 2015 and 2018 the site was not suitable to support setts. In 2021 there were 6 spoil heaps within the site which could offer suitability for setts. It is likely that the site is used by badgers commuting through the wider countryside.	Layout considerations and precautions during site works to enable badgers to continue to move through the site and reduce the risk of harming badgers during the construction phase.
Hedgehog	Good potential for hedgehogs to use the site for foraging – grassland and hedgerow bases. Minimal habitat/brush/log piles or hibernation opportunities.	Precautionary measures (see below)
Reptiles	See reptile section below for further details.	Habitat manipulation and trapping.
Amphibians	FPCR surveyed the onsite ditches and offsite ditches and ponds. The surveys came out as negative for great crested newts.	No further survey. Precautionary measures during site clearance (as specified for reptiles).
Dormouse	Negligible potential – inappropriate hedgerow structure; discontinuous hedge-lines; limited foraging resources; and no linkage to woodland/dormouse habitat in the wider landscape.	No further survey or precautions.
Inverts	Negligible potential for important invertebrates or for a significant assemblage of invertebrates. Grassland could be used by Lepidoptera and Grasshoppers/crickets. The water within the ditch could provide habitat for aquatic invertebrates but due to the risk of drying out would not provide habitat for a significant assemblage. No deadwood habitat.	No further survey or precautions
Birds	Potential for small birds nesting in hedges on north, east and western boundaries, and the scrub.	Precautionary nesting bird survey prior to any vegetation clearance.
Water Vole	See water vole section below for further details.	Water vole licence required.

Reptiles

4.3. A map of reptile survey results is provided in Appendix 1.

4.4. A peak count of 25 common lizards (6 adult male, 2 adult female, 11 unidentified adults and 6 juveniles) was recorded in 2015.

Table 3: Reptile survey results 2015

Visit	Ecologist	Date	Temp	Beaufort	Cloud cover	Common Lizards recorded
1	FPRC	01/09/15	15°C	1	50%	No reptiles recorded
2	FPRC	04/09/15	15°C	1	90%	1 Female, 1 Male and 1 Unidentified Adult / 4 Juvenile
3	FPRC	08/09/15	15°C	1	0%	1 Female, 1 Male and 1 Unidentified Adult
4	FPRC	11/09/15	15°C	1	-	3 Male and 3 Unidentified Adults / 13 Juvenile
5	FPRC	17/09/15	15°C	1	-	6 Female, 2 Male and 11 Unidentified Adults/ 6 Juvenile
6	FPRC	21/09/15	15°C	1	100%	2 Female and 1 Unidentified Adult / 1 Juvenile
7	FPRC	23/09/15	14°C	3	-	1 Female and 7 Unidentified Adult / 4 Juvenile

4.5. A peak count of 24 common lizards (2 unidentified adults and 22 juveniles) and 3 female adult slow worms was recorded in 2019.

Table 4: Reptile survey results 2019

Visit	Ecologist	Date	Temp	Beaufort	Cloud cover	Common Lizards recorded	Slow Worms recorded
1	FPCR	03/07/19	16°C	1	0-10%	1 Female Adult	0
2	FPCR	25/07/19	18°C	1	20-30%	2 Juveniles	0
3	FPCR	19/08/19	17°C	2	50-60%	2 Unidentified Adults / 22 Juveniles	1 Female Adult
4	FPCR	28/08/19	18°C	1	20-30%	2 Male, 1 Female, 3 Unidentified Adult	0
5	FPCR	12/09/19	12°C	1	10-20%	2 Female Adults / 2 Juvenile	3 Female Adults
6	FPCR	16/09/19	17°C	1	0-10%	1 Female, 6 Unidentified Adults / 1 Female, 2 Male and 2 Unidentified Juveniles	0
7	FPCR	23/09/19	-	-	-	7 Adults / 4 Juvenile	0

4.6. During the updated walkover in 2021, two unidentified adult common lizards were seen basking, one near the northern boundary and the other near the southern boundary of the Application Site.

4.7. Based on a peak count of 25 common lizards in 2015 and 24 common lizards in 2019, this puts the estimated size of the lizard population as a 'good' population.

4.8. The reptile surveys mainly took place within the Application Site boundary and along the ditch. However, the Application Site supports some suitable habitats in other areas, including the ditch and spoil heaps. It is likely that the actual numbers of reptiles are higher than the peak count, although the archaeological investigations have changed the habitats in the Site.

- 4.9. The population is considered to be of **Local value**.
- 4.10. The Application Site provides suitable habitat throughout the site, including hibernating habitat. The habitat present is in the form of semi-improved grassland with area of ruderal and spoil heaps.
- 4.11. Within the Application Site habitat have been cleared for archaeological trenches, in these areas the vegetation is starting to grow back.
- 4.12. The common lizard population remained stable between the two sets of reptile surveys in 2015 and 2019, however the archaeological trenching was carried out after these surveys took place. A slow worm population was recorded in the 2019 survey but not the 2015 survey. The majority of the reptiles were found within the northern area of the site.
- 4.13. Section 6 of this report outlines a programme of trapping and precautionary methods of working, to ensure that reptiles are not harmed during construction work. In addition, habitat creation and restoration work will be carried out, to ensure that the population of lizards can be retained on site post-development.

Water vole

Table 5: Water vole survey results

Visit	Ecologist	Date	Ditch condition	Water vole evidence found
1	FPRC	19/05/16	Ditch was wet in May with accessible banks. Ditch was dry in September.	27 burrows, 6 latrines all with fresh droppings and mammal paths. A single water vole seen in an offsite pond.
2	FPRC	Feb 2019 and September 2019	February banks had been cleared; September ditch was dry with overgrown banks	No evidence found
3	Siobhan Pryke and Ali Shaw of ACD Environmental	11/08/21	Wet ditch with overgrown banks	1 burrow, feeding remains, multiple mammal paths and a latrine.
4	Mike Dean	30/09/21	Dry ditch with banks having been cleared.	No evidence found

- 4.14. Evidence of water voles was found in both 2015 and 2021 in the on-site ditch, but not present during the 2019 survey. The ditch within the Site is at the upstream extent of suitable water vole habitat in the locality. The ditch is of limited value to water voles, because it does not support aquatic vegetation and it is dry for long period of the year. The upstream (eastern) end of the ditch has no connectivity to adjacent habitat. The western extent of the ditch is connected to a tributary of Pagham Rife. Pagham Rife is part of the Chichester Coastal Plain. Background research has revealed that water voles have been subject to a catchment-wide habitat restoration project on the Chichester Coastal Plain.
- 4.15. The requirement for a licence to realign the ditch a licence will be informed by carrying out an additional survey in Spring 2022. This survey will include both searching for field signs, as well as placing rafts close to the ditch bank to enable both usage of the ditch and density present to be assessed, provided water is present.
- 4.16. Section 6 of this report outlines a survey and licencing requirement triggers, and precautionary methods of working, to ensure that water voles are not harmed during construction work. In addition, habitat creation and restoration work will be carried out, to ensure that the population of water voles can be retained on site post-development.

5 LEGISLATION AND PLANNING POLICY

5.1. This section summarises the legislation and national, regional and local planning policies, as well as other reference documents, relevant to the baseline ecology results.

Legislation

5.2. Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The Conservation of Habitats and Species Regulations 2017;
- The Natural Environment and Rural Communities Act 2006;
- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CROW) Act 2000;
- The Hedgerows Regulations 1997; and
- The Protection of Badgers Act 1992.

5.3. Where relevant, the assessment takes account of the legislative protection afforded to specific habitats and species.

5.4. The Conservation of Habitats and Species Regulations 2017 affords protection to European sites, such as SACs, and EPS, which are detailed further within this report with regard to designated sites and specific species respectively.

5.5. The WCA 1981 (as amended) lists invasive plant and animal species under Schedule 9². This means that it is an offence to plant or allow species on this list to be released into the wild. It is also an offence for animals not ordinarily resident or a regular visitor to Great Britain or listed on Schedule 9 to be released into the wild.

Flora

5.6. The WCA 1981 (as amended) affords protection to plant species listed on Schedule 8³, which protects plants against picking, uprooting or destruction. Example of species included on this list are Deptford pink *Dianthus armeria*, pennyroyal *Mentha pulegium* and small fleabane *Pulicaria vulgaris*. For some species, only one section of Schedule 8 applies, which is section 13(2), and protects these species against selling. Examples of species to which this applies are bluebell *Hyacinthoides non-scripta* and early gentian *Gentianella anglica*.

5.7. The Hedgerow Regulations 1997 includes criteria for determining 'Important' hedgerows,

² Available at: <https://www.legislation.gov.uk/ukpga/1981/69/schedule/9>

³ Available at: http://jncc.defra.gov.uk/PDF/waca1981_schedule8.pdf

which are contained within Schedule 8⁴. There are a number of characteristics that can classify a hedgerow as important under the broad headings of archaeology and history and wildlife and landscape. The latter incorporates the following considerations: whether the hedgerow is intact/defunct, number of woodland species contained in Schedule 2⁵ and woody species in Schedule 3⁶; associated features (e.g. hedgerow connection points and associated area of woodland, parallel hedgerow, pond, ditch and/or wall); and presence of protected species (instantly Important).

Fauna

5.8. All animals, irrespective of their conservation status, are subject to protection from cruelty under the Animal Welfare Act 2006 and wild mammals are also protected from cruelty under the Wild Mammals Protection Act 1996.

EPS

5.9. EPS are protected under the Conservation of Habitats and Species Regulations 2017 as well as the WCA 1981 (as amended), which are specifically under Regulation 42⁷ and Schedule 5⁸ respectively. The Countryside and Rights of Way Act 2000 amended the WCA 1981 and added 'or recklessly' to existing mentions of 'intentionally' as detailed below. These species include great crested newt, all bat species, hazel dormouse and otter. This level of protection for these species (at all stages of their life cycle) makes it an offence to do the following:

- Intentionally or recklessly capture or kill a wild animal of an EPS;
- Intentionally or recklessly disturb any such animal;
- Intentionally or recklessly to take or destroy the eggs of such an animal;
- Intentionally or recklessly to damage or destroy a breeding site or resting place of such an animal; or
- To keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of an EPS, or any part of, or anything derived from, such an animal.

Non-European Protected Species

5.10. Widespread amphibians (including smooth newt, palmate newt, common toad and common frog) are all protected under the WCA 1981 (as amended). For these species, only one section of Schedule 5 applies, which is section 9(5), and protects against the sale of any live or dead animal.

⁴ Available at: <http://www.legislation.gov.uk/ukxi/1997/1160/schedule/1/made>

⁵ Available at: <http://www.legislation.gov.uk/ukxi/1997/1160/schedule/2/made>

⁶ Available at: <http://www.legislation.gov.uk/ukxi/1997/1160/schedule/3/made>

⁷ Available at: <https://www.legislation.gov.uk/ukxi/2017/1012/regulation/42/made>

⁸ Available at: http://jncc.defra.gov.uk/PDF/waca1981_schedule5.pdf

5.11. Badgers and their setts are protected under the Protection of the Badgers Act 1992⁹. Activities that can harm badgers include destroying a sett, causing noise, additional lighting or vibration and pile driving, quarry blasting, lighting fires or using chemicals. It is an offence to:

- Wilfully capture, kill or injure badgers;
- Damage, destroy or block access to setts (even accidentally);
- Disturb badgers in their setts;
- Cruelly ill-treat a badger;
- Deliberately introduce a dog into a sett;
- Bait badgers;
- Dig for badgers;
- Possess, sell to offer for sale a live badger;
- Possess or control a dead badger or parts of the a badger (if unlawfully obtained); or
- Mark or attach a device to a badger.

5.12. All wild birds¹⁰ and their nests, irrespective of their conservation status, are protected under the WCA 1981 (as amended). It is an offence to:

- Intentionally or recklessly kill, injure or take any wild bird;
- Intentionally or recklessly take, damage or destroy the nest of any wild bird whilst it is in use or being built;
- Intentionally or recklessly take or destroy the egg of any wild bird;
- Have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act or the Protection of Birds Act 1954;
- Have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act or the Protection of Birds Act 1954;
- Use traps or similar items to kill, injure or take wild birds; or
- Have in one's possession or control any bird of a species occurring on Schedule 4¹¹ of the Act unless registered, and in most cases ringed, in accordance with the Secretary of State's regulations.

⁹ Available at: http://www.legislation.gov.uk/ukpga/1992/51/pdfs/ukpga_19920051_en.pdf

¹⁰ Available at: <https://www.gov.uk/wild-birds-protection-surveys-and-licences>

¹¹ Available at: http://jncc.defra.gov.uk/PDF/waca1981_schedule4.pdf

5.13. In addition to the above offences for all wild birds, some species including barn owl are listed on Schedule 1¹², which makes it an offence to:

- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird; or
- Intentionally or recklessly disturb any wild bird listed on Schedule 1 at an active nest site with eggs or young or before eggs are laid, or to disturb the dependant young.

5.14. Widespread reptiles¹³ (including common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica* and adder *Vipera berus*) are protected under the WCA 1981 (following amendments in 1988 and 1991). For these species, two sections of Schedule 5 applies, which are part of section 9(1) and all of section 9(5). It is therefore an offence to deliberately kill, injure, sell or trade widespread reptiles.

5.15. Wild hares *Lepus* spp, wild rabbit *Oryctolagus cuniculus* and hedgehog are protected under sections of the WCA 1981 (as amended). Wild hares and rabbit are covered under sections relating to protection of other animals and prevention of poaching. Brown hare *L. europaeus* and mountain hare *L. timidus* are listed on Schedule 5A¹⁴ and it is an offence to intentionally or recklessly kill, injure or take these animals during their 'close season', which for brown hare is 1st February - 30th September, and sale and possession is an offence for any of these animals taken unlawfully. Hedgehog is listed on Schedule 6¹⁵, which makes it an offence to kill or take by certain methods. Brown hare, mountain hare and hedgehog are listed as a priority species under the NERC Act (2006).

Planning Policy

National Planning Policy Framework

5.16. The National Planning Policy Framework (NPPF)¹⁶ sets out planning policies on protection of biodiversity and geological conservation through the planning system for local authorities in England. The NPPF outlines the role of the decision maker in considering the requirements of wildlife legislation to protect wildlife.

5.17. The NPPF states that the planning system should contribute to and enhance the natural and local environment, by measures including the following:

¹² Available at: http://jncc.defra.gov.uk/PDF/waca1981_schedule4.pdf

¹³ Available at: <http://naturenet.net/law/herps.html>

¹⁴ Available at: <https://www.legislation.gov.uk/ukpga/1981/69/schedule/5A>

¹⁵ Available at: http://jncc.defra.gov.uk/PDF/waca1981_schedule6.pdf

¹⁶ Ministry of Housing, Communities and Local Government (2018). *National Planning Policy Framework*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf

- Minimising impacts on biodiversity and providing net gains in biodiversity;
- Contributing to the Government's commitment to halt the overall decline in biodiversity;
- Establishing coherent ecological networks that are more resilient to current and future pressures; and
- Recognising the wider benefits from natural capital and ecosystem services.

5.18. The NPPF states that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying principles including the following:

- If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated for, or, as a last resort, compensated for, then planning permission should be refused; and
- Development on land within or outside a SSSI, and which is likely to have an adverse effect on that designated site (either individually or in combination with other developments), should not normally be permitted. Where adverse effects on the site's notified special interest features is likely, an exception should only be made where the benefits of the development clearly outweigh both the impacts that it is likely to have on the features of the site that make of special scientific interest and any broader impacts on the national networks of SSSIs.

5.19. The Government Circular 06/2005¹⁷ accompanies the NPPF and sets out the application of the law in relation to planning and nature conservation in England.

¹⁷ Office of the Deputy Prime Minister (2005). *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available at: <
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/147570.pdf>>

6 MITIGATION

Hedgerows

6.1. Impacts

- 6.2. The hedgerows within the boundaries will have some areas removed to enhance the hedgerows further, with new native planting as part of the proposal. The hedge is 2-3m in height and is dominated by hawthorn. The hedgerow is not an important hedgerow under the Hedgerow Regulations.

Compensation

- 6.3. The loss of scrub from the hedgerow will be compensated by planting native hedgerow species¹⁸. Although the length of scrub from the hedgerow is unknown throughout the site approximately 5m of scrub will be lost and replaced with native species.
- 6.4. With compensation, it is considered that there would be a **neutral effect**.

Reptiles

Impacts

- 6.5. Site clearance and construction activities (without precautionary methods of working, habitat manipulation or capturing) would probably result in killing and/or injury of reptiles; the risks of which vary depending on the time of year in which activities are carried out.
- 6.6. Clearance in the active reptile season (generally considered to be March/April - September/October) allows an opportunity for animals to respond to vibrations and disperse of their own accord, because they are likely to be active, although animals are more likely to be present above-ground and thus encountered more frequently, during the active season. In winter, reptiles hibernate and are particularly vulnerable to disturbance. Sometimes it is possible to predict good hibernation areas and therefore avoid disturbing them, during winter clearance, but in many cases, the hibernation habitat of reptiles must be assumed to be identical to the general occupied habitat extent, particularly sites with tussocky grassland and no obvious hibernation features. They can hibernate both underground and in relatively shallow depressions, depending on what is available.

Mitigation/Compensation

- 6.7. Prior to any trapping operation, the proposed receptor area will be demarcated by installing reptile exclusion fencing.

¹⁸ ACD Environmental. (2021). *Hedgerow Assessment Letter*. ACD Environmental, Malmesbury 2021.

- 6.8. Prior to trapping, the receptor area will be enhanced by creating three reptile log piles and three reptile basking areas, made from rocks and logs.
- 6.9. The grassland in the receptor area will be allowed to grow long and will not be cut prior to the trapping programme.
- 6.10. Given the presence of a common lizard and slow worm population in the Application Site, habitat manipulation with hot-spot capture/exclusion and displacement of reptiles will be required across the site.
- 6.11. With regards to hedgerows proposed for removal, the removal will be done in two phases. The first includes hedgerow removal to 60cm above ground level in the winter with hand tools, to remove the bird nesting interest, but to avoid any disturbance to hibernating reptiles.
- 6.12. During the active reptile season, prior to site preparation or construction works, habitat manipulation (strimming and brush cutting) will be carried out in all suitable reptile habitat within the Application Site. The habitat manipulation will be done through two staged cutting, the first cut will be no lower than 150mm, the area will then be left for 24-48 hours to enable the reptiles to move away from the area, the second cut will then be to ground level. The habitat manipulation will be done directionally starting south and moving northerly.
- 6.13. Do not underestimate the amount of effort required to capture reptiles, particularly lizards, which are more difficult to capture than slow worms. A minimum of 30-40 days will be required to remove reptiles from a site supporting a good population, although this will be reviewed during the course of trapping, given that the majority of the Site has been disturbed by archaeological trenching. In order to find reptiles while they are basking, it is generally best to search when the air temperatures are between 9 and 18°C. On cooler days, bright sunshine is a good sign, while hazy or intermittent sun gives the best results at the warmer end of the scale. Rainy or windy conditions are usually unsuitable. The sequence of weather conditions is significant. Reptiles can be captured in their active season between March/April and September/early October, but the most profitable season is Spring, particularly April. Summer can produce intermittent trapping results because it can become too hot to trap and reptiles may be reluctant to emerge above ground. September is also a good month.
- 6.14. Once 5 clear days of zero captures have been achieved in suitable weather conditions, trapping would cease and destructive searching would take place.

- 6.15. A destructive search will begin by stripping soil and removing spoil heaps using an excavator with a toothed bucket. Firstly, the top few centimetres of the ground will be removed, to expose reptiles sheltering in crevices just below the surface. Ecologists would be positioned to catch reptiles as they are disturbed. Following this, larger and deeper excavations could be made, concentrating on areas which afforded shelter to reptiles, such as tree stumps, debris and grass tussocks. Particular care will be taken when emptying the bucket in case any reptiles were dug up with the soil.
- 6.16. A destructive search, even when carried out using experienced contractors and ecologists, may kill or injure a small percentage of animals (perhaps 0-5%) and the lawfulness of this method requires careful interpretation. Hence why the destructive search is typically carried out after using other methods (i.e. trapping), particularly on sites with moderate to large reptile numbers.
- 6.17. With mitigation/compensation, residual effects would be **non-significant at the Local scale**.

Management

- 6.18. Because the reptile receptor area will also be a Public Open Space, a Nature Interpretation Board will be installed to make residents aware of the wildlife interest of the site, in particular the management of the site for reptiles.
- 6.19. To encourage a diverse tussocky structure and prevent succession to scrub, the grassland in the receptor site will be cut on a rotation of three years (i.e. one third of the grassland is cut each year), in late summer during temperatures above 15°C, when reptiles are active and can move out of harm's way.
- 6.20. Cutting will be undertaken by strimming/brush cutting.
- 6.21. Footpaths can be cut more regularly.
- 6.22. Given that the receptor site currently contains mainly grassland, with small pockets of developing scrub, scrub encroachment can be encouraged at roughly 10% of the overall habitat.
- 6.23. The management will aim to maximise the amount of edge or interface habitat where possible. Graded ecotones are particularly valuable, where the height and density of the vegetation reduces gradually from the tree/scrub edge to shorter herbaceous vegetation. Therefore, grassland adjacent to hedgerows will be allowed to develop and the hedgerow/woodland belt will be allowed to sucker out in places but controlled.



Image 3: Desired habitat mosaic for reptile receptor area

Water voles

Impacts

- 6.24. Site clearance and construction activities (without precautionary methods of working, licence or translocation/displacement) could result in killing and/or injury of water voles; the risks of which vary depending on the time of year in which activities are carried out and whether water voles are present at that time (the ditch is dry for long periods of the year and has limited value to water voles)..
- 6.25. Clearance and realignment of the ditch banks and realignment would lead to a reduction in suitable water vole terrestrial habitat, as well as suitable cover for their burrows. A spring survey will be carried out to confirm whether a licence will be required and enable an accurate population estimate. This in turn will enable a more accurate mitigation plan to be put in place to ensure the safety of the animals.

Mitigation/Compensation

- 6.26. Prior to any works occurring along the ditch a spring water vole survey is required (provided water is present). The spring survey will comprise of looking for water vole field signs, as well as include using floats. The floats will be placed in the ditch near the banks. This survey

will feed back into the licence application.

- 6.27. If water is not present in the ditch in Spring 2022 and there has been no water for a prolonged period, water voles are unlikely to be present. Subject to confirmation by water vole specialist Mike Dean, if no water is present, or no evidence is recorded in the Spring 2022 survey, then a destructive search will be carried out immediately, to reduce the likelihood that water voles will colonise. No licence will be required for either of these scenarios.
- 6.28. If water voles are confirmed present in the Spring 2022 survey, then a licence will be obtained to displace water voles in Autumn 2022, by strimming and de-watering, provided only low numbers are present. If high numbers are present (unlikely) trapping may be required.
- 6.29. If trapping is to take a receptor site would need to be established, preferably within the Application Site ahead on any trapping.
- 6.30. The realignment of the ditch will create a more naturalised channel, with opportunities for shallower bank gradients and aquatic plants to develop, which will provide cover and food sources for water voles. The attenuation ponds will be designed to hold water where possible, which will provide additional opportunities for foraging. Long-term, the watercourses in the Site will be more suitable for water voles than the current situation, provided that pets (predominantly dogs) are controlled.

Management

- 6.31. Because the water vole receptor area will also be a Public Open Space, a Nature Interpretation Board will be installed to make residents aware of the wildlife interest of the site, in particular the management of the site for water vole.
- 6.32. The proposed SUDs which can be used by water vole will need to ensure the banks provide a suitable profile and substrate for water voles to burrow. Marginal and bankside vegetation will be well established along with the surrounding terrestrial habitat. Within the surrounding terrestrial habitats tussocky species rich swards will be allowed to develop to provide cover for water voles.
- 6.33. The bankside, marginal and terrestrial habitat will need to be managed to ensure the habitat remains suitable for water vole in the long term.

Monitoring

- 6.34. A post-translocation monitoring programme would include monitoring the water vole population for a minimum of 2 years, comprising a survey in early spring, in years 2 and 4 post-displacement.

- 6.35. Following each survey, a report would be produced to review the water vole population dynamics, in relation to management objectives, to monitor the condition of the habitats, and to help decide whether management prescriptions need to be adjusted to reach the desired outcomes (for example the development of uneven-aged swards of tussocky grassland and bankside stability and vegetation). A copy of the monitoring report will be sent to the Local Planning Authority and Local Wildlife Trust.
- 6.36. The receptor site/open space will be managed in perpetuity for the conservation of water voles, by way of a suitable management agreement.

Precautionary Site Clearance – for Hedgehogs

- 6.37. During the construction phase, any temporarily stored materials (bricks, paving slabs, debris piles) will be kept above the ground on pallets to avoid forming refuge opportunities for hedgehogs.
- 6.38. Hedgehog links under any solid (e.g., close-board) fencing. Gaps approximately 15cm x 15cm along each length of fence will allow small mammals to move through the local landscape.

Nocturnal Animals (badgers and hedgehog)

- 6.39. Any deep holes or foundations left uncovered overnight will have an escape ramp (secured scaffold board), to enable any nocturnal animals that become trapped to escape.

Nesting birds

- 6.40. Any vegetation clearance will be undertaken outside the nesting bird season. If this is not feasible, a precautionary survey of the site prior to start of works will be carried out, to check for active bird nests, and avoid infringing legislation which protects all nesting birds (WCA 1981). If an active nest is recorded, vegetation clearance in that part of the site (including a buffer zone defined by the ecologist), will be postponed until all young birds have fledged and left the area.

Badgers

- 6.41. The western site boundary will be maintained as a commuting corridor through the site. Existing commuting paths will be lost (e.g. the hedgerow that will be removed), however this is not considered likely to generate any significant impacts to the local badger population. The Site is not considered to be optimal foraging habitat.

6.42. Any excavations will be covered when works are not taking place to ensure that they do not fill with water and prevent the potential for wildlife to become trapped (especially badger) and avoid encouraging amphibians during the course of the works.

Sensitive Lighting

6.43. To minimise risk of disturbance to potential foraging and commuting bats using the boundary tree/hedge-lines (both during and post development), external lighting will be minimised as follows:

6.44. Any task lighting (during construction) will not be directed at any of the boundary hedges.

6.45. Any necessary security lighting will be set on short timers and be sensitive to large moving objects only.

6.46. Lighting will be low-level, bollard-type, or directed downward and shielded to minimise light spillage.

6.47. Hoods, cowls or directional lighting will be used to avoid light directed at the sky or towards the boundary hedges or mature trees.

6.48. Lighting times will be limited, to provide dark periods.

6.49. Care must be taken during clearance/groundworks to ensure wildlife is not harmed and in the event any protected species are found when the ecologist is not in attendance, works must stop, they must not be handled and ACD Environmental Ltd contacted in the first instance.

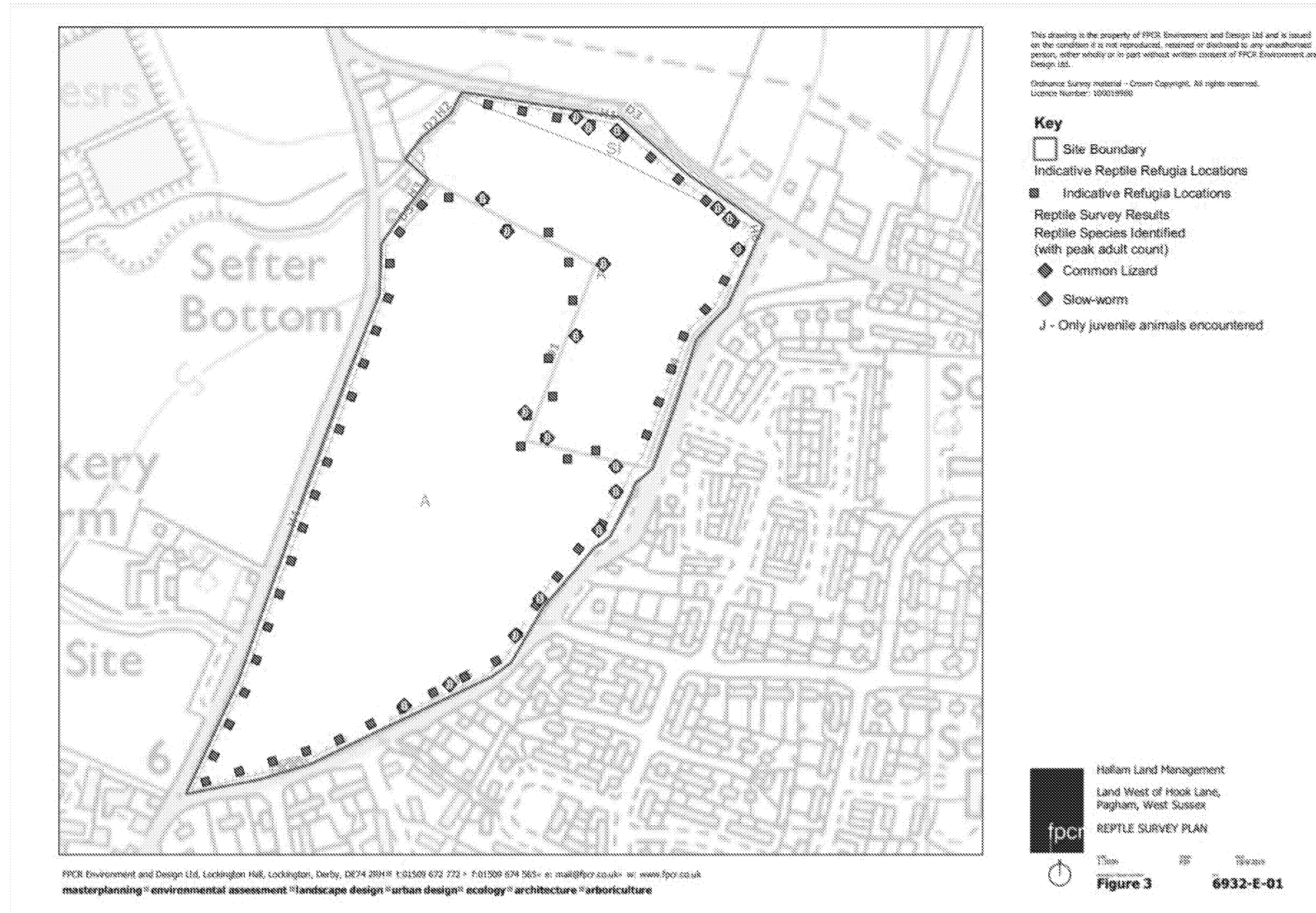
7 ENHANCEMENTS

- 7.1. Habitat 001 bat boxes will be installed on a minimum of 60 new houses within the development.
- 7.2. Bat boxes will be installed at least 4m above the ground and ideally be south facing. The boxes will be placed away from fences and windows to avoid conflicts with residents, as well as being out of reach of cats and other predators.
- 7.3. The following bird boxes will be provided on new buildings:
 - Schwegler 1SP sparrow terrace
 - Schwegler no.17 swift boxes
 - 32mm holes nest boxes for house sparrow *Passer domesticus*
- 7.4. The above boxes will be installed at least 4m above the ground and avoid direct sunlight (not directly south-facing), prevailing wind and be out of reach of cats and other predators.
- 7.5. The 32mm nest boxes will be located close together for this colonial nesting species, in a sheltered, minimally disturbed area close to a vegetated boundary.
- 7.6. Within the open space three log piles will be created to provide additional habitat for reptiles as well as one hibernaculum.
- 7.7. Within the open space insect towers will also be incorporated. Three insect towers will be placed within the open space.
- 7.8. Hedgehog highways will be incorporated within the garden fences, this will enable hedgehogs and other small mammals to access a wider range of foraging and nesting habitats.

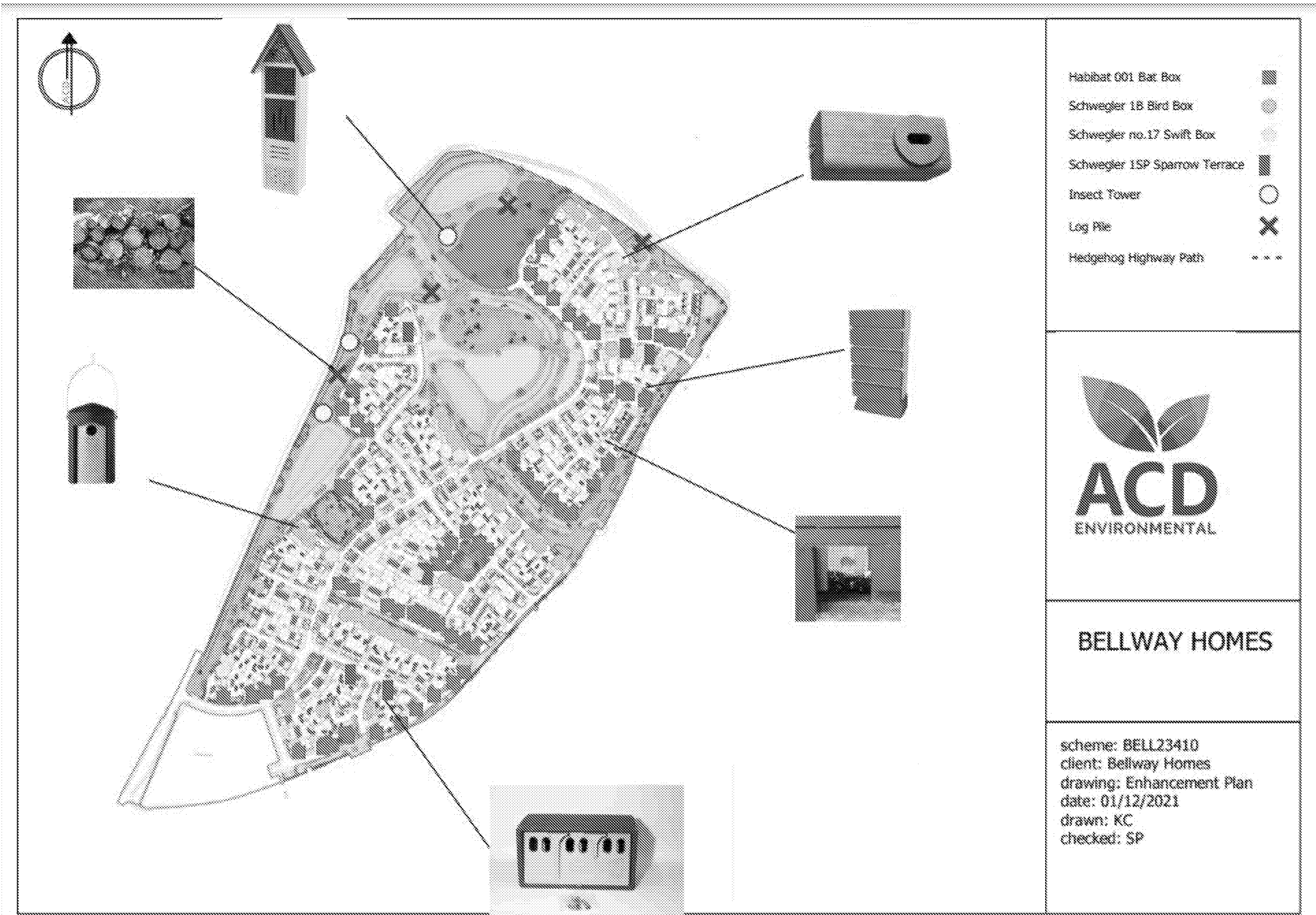
8 CONCLUSIONS

- 8.1. ACD Environmental Ltd carried out an updated Ecological Walkover survey, to support a outline application for the Site.
- 8.2. The reptile surveys recorded a peak count of 25 and 24 common lizards, which equates to a good population and a peak count of 3 slow worms, which equated to a 'low' population. As such, the detailed landscape proposals have been designed to provide reptile habitat in the new development, to ensure that the lizard population can be retained on-site.
- 8.3. Due to archaeological investigations having taken place after the reptile surveys, a combination of habitat manipulation and hot-spot trapping will be carried out, to ensure that risk of harm to reptiles is kept to a minimum, in line with compliance with legislation affording protection to the species.
- 8.4. A spring survey for water vole shall be undertaken to inform the requirement for a licence for the ditch realignment works. The ditch channel and SuDS features will be will be created and managed to benefit water voles and provide a net gain in suitable foraging and burrowing habitat..
- 8.5. Retained reptile habitat will be enhanced by creating new hibernacula and basking areas for the common lizard population.
- 8.6. Precautionary methods of working and pre-construction checks have been specified for badgers, nesting birds, and hedgehogs.
- 8.7. A sensitive lighting scheme will be produced to protect foraging and commuting bats.
- 8.8. A scheme of bird nesting and bat roosting boxes will be provided in the new scheme.
- 8.9. Implementing all of the above recommendations will ensure that there are no significant impacts upon protected species and that the proposals will be in conformity with relevant legislation and policy.

Appendix 1: Reptile Survey Results



Appendix 2: Ecological Enhancements Plan





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**ECOLOGICAL SURVEYS * PROTECTED SPECIES LICENSING * MITIGATION * IMPACT ASSESSMENT
ARBORICULTURAL SITE MONITORING AND SUPERVISION * ARCHAEOLOGY
LANDSCAPE & VISUAL IMPACT ASSESSMENT * LANDSCAPE AUDIT * PROJECT MANAGEMENT
EXPERT WITNESS* LANDSCAPE DESIGN & PLANNING LANDSCAPE MANAGEMENT**