



Ecological Mitigation, Enhancement and Management Plan

97 Woodside Green, Great Hallingbury, Bishop's Stortford, Essex CM22 7UJ

Sinead Brophy

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

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1.0 Introduction

Arbtech Consulting Limited was instructed by Sinead Brophy to produce an Ecological Mitigation, Enhancement and Management Plan for 97 Woodside Green, Great Hallingbury, Bishop's Stortford, Essex CM22 7UJ (hereafter referred to as “the site”). A planning application for a double storey side extension, single storey rear extension and a loft conversion (hereafter referred to as “the proposed development”) was granted approval, with conditions, by Uttlesford District Council in October 2023 (UDC, 2023). This plan has been produced to inform the discharge of Condition 5, which states:

Prior to any works above slab level, a Biodiversity Enhancement Strategy for bespoke enhancements prepared by a suitably qualified ecologist in line with the recommendations of the Preliminary Ecological Appraisal and Preliminary Roost Assessment (Arbtech, January 2023) and Bat emergence – re-entry surveys report (Arbtech, June 2023), and shall be submitted to and approved in writing by the local planning authority.

The content of the plan will include the following:

- a) Purpose and conservation objectives for the proposed enhancement features*
- b) Detailed designs or product descriptions to achieve the stated objectives*
- c) Locations, orientations and heights of the proposed enhancement measures by appropriate maps and plans (where relevant)*
- d) Persons responsible for implementing the measures*
- e) Details of initial aftercare and long-term maintenance (where relevant)*

Reasons: To enhance protected and priority species and habitats and allow the local planning authority to discharge its duties under the NPPF 2023 and s40 of the NERC act 2006 (priority habitats and species)

A plan showing the proposed development is provided in Appendix 1.

The aim of this plan is to outline mitigation measures required to minimise impacts on biodiversity as well as to outline habitat creation and enhancement opportunities and long-term management which will ensure that a net gain in biodiversity is achieved and maintained on the site, in accordance with the National Planning Policy Framework (NPPF).

This plan has been informed by a Preliminary Ecological Appraisal and Roost Assessment survey and subsequent Bat emergence / re-entry surveys which were completed by Arbtech Consulting Ltd on 16/01/2023 and the 2023 bat survey season respectively (PEA PRA, Arbtech 2023) (BERS, Arbtech 2023).

2.0 Site Context and Survey Information

2.1 Site Location and Landscape Context

The site is located at National Grid Reference TL 5118 7442 and has an area of approximately 0.1ha. The site comprises a single semi-detached dwelling, a garage, two sheds and associated garden areas. The site is located rurally south east of Bishop's Stortford. Other residential plots are found to the west and south. The village of Woodside Green is found to the south, with Hatfield Forest found to the east. A site location plan is provided in Appendix 2.

2.2 Ecological Information

Table 1 summarises the survey findings for the site and outlines any potential impacts as a result of the proposed development along with recommendations and biodiversity enhancement opportunities, as detailed in PEA PRA report (Arbtech, January 2023).

Table 1: Summary of baseline survey information, potential impacts, recommendations and biodiversity enhancement opportunities for the site (PEA PRA, Arbtech, January 2023)

Feature	Foreseen impacts	Recommendations <i>Measures required to adhere to guidance, legislation and planning policies.</i>
Habitats and flora	No vegetated habitat removal is proposed. The proposed extensions will be erected on existing hard standing. No impacts to any notable habitats are anticipated due to the small scale and distance of the proposed development from such habitats as well as the urban location of the site with surrounding physical barriers. However due to proximity of development area to hedgerows and ponds there is a risk of tree damage and pollution during construction	Best practice measures to minimise the possibility of pollution and tree damage must be implemented during construction.
Amphibians	The proposed development is limited to the removal of hardstanding and therefore no vegetated habitats on site will be impacted. The loss of the hardstanding is likely to be inconsequential to local amphibian populations owing to their low value and the presence of more extensive habitat locally. However, site clearance could result in the death or injury of amphibians, if present. This could include Great crested newts if they are present with in the nearby ponds. When the proposed development was run through the Natural Risk assessment, the result was green which highlights that an offence as a result of the works is highly unlikely. As such, the potential for impacts is low enough that a precautionary working method to be implemented during the works is considered to be sufficient.	Owing to the nature of the proposed development and the low potential for impacts to great crested newts, further surveys are considered to be disproportionate. A precautionary working method will be implemented for common amphibians during construction.
Roosting bats	The proposed development will result in the renovation to this building. This could result in destruction of any bat roosts present and could cause disturbance, death or injury to bats.	Two bat emergence and re-entry surveys are required during the active bat season (optimal May to August, suboptimal September) to confirm presence or likely absence of a bat roost in the building. Both of the

		surveys should be completed during the optimal survey period mid-May to August inclusive.
Foraging and commuting bats	<p>The proposed development will not result in the removal of any habitats which could be used by foraging or commuting bats.</p> <p>The proposed development will include the use of lighting which could spill on to bat roosting, foraging or commuting habitat and deter bats from using these areas.</p>	A low impact lighting strategy will be adopted for the site during and post-development.
Hedgehogs	The extensions will be erected on existing hard standing. The loss of such habitats could result in a reduction in hedgehog habitat and could result in the fragmentation of the local landscape. Furthermore, construction activities could result in the death or injury of hedgehogs, if present.	A precautionary working method will be implemented during construction.

3.0 Construction Management Plan and Provision of New Landscaping and Species-Specific Enhancements

Table 2: Construction Management Plan and Provision of New Landscaping and Species-Specific Enhancements

Works	Specification
Persons Responsible	The Biodiversity Champion will be responsible for the provision of the new landscaping and species-specific enhancements. The occupier of the proposed development (i.e. the landowner or managing agent) will be responsible for the management of these features post development.
Management Term	The management prescriptions outlined within this table must be implemented over a period of at least 30 years.
Site Visit and Reporting	The ECoW will make a final site check and sign off once the landscaping and installation of species-specific enhancements are complete.
Lighting Strategy	<p>Lighting will be controlled across the developed site. Research into the effects of artificial lighting on bats has shown that it can impact upon bat emergence times and lead to a reduced foraging time. Whilst no bat roosts were identified on site during the two Bat emergence / re-entry surveys, the site was seen to be used by foraging and commuting bats frequently; with the eastern boundary hedgerows being identified as the main commuting corridor. As bats are faithful to their commuting routes, often returning to the same site for many years so the impact of lighting on emergence times and in turn reduced foraging times can ultimately result in the roosts and foraging habitat being abandoned with impacts on survival and fecundity.</p> <p>Key areas of the site which are sensitive to artificial lighting are the key flight paths and site boundaries which consist of the eastern boundary hedgerow, the dark space between the house and the eastern hedgerow and the darkened road to the north of the site. Research has shown that if lighting is increased by more than 1 lux (equivalent to full moonlight) this could have an adverse impact upon bat commuting routes (Stone, E.L. (ed.) [2013] Bats and Lighting: Overview of Current Evidence and Mitigation. Bats and Lighting Research Project, University of Bristol). Therefore, the new lighting will be strictly confined to the new buildings and existing hard standing areas, thereby leaving dark corridors of not more than +1 lux, and preventing light spilling outside of the site boundary.</p> <p>The following recommendations have also been made to prevent light spilling onto this area of the site, hence protecting the bat foraging areas and commuting routes:</p> <ul style="list-style-type: none"> • No lighting will be installed within or shining onto the areas outlined above, or into the new bat box which has been proposed onto the new development. There must be no artificial lighting that illuminates the key flight paths identified. • Low impact lighting strategies will be adopted from the guidance outlined in the new Bats and Lighting Publication produced by the Institution of Lighting Professionals and the Bat Conservation Trust "Guidance Note 08/18 Bats and artificial lighting in the UK Bats and the Built Environment series publication: http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting. <p>The lighting on the site will:</p> <ul style="list-style-type: none"> • Use narrow spectrum light sources to lower the range of species affected by lighting

	<ul style="list-style-type: none"> • Use light sources that emit minimal ultra-violet light • Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin. • Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers, and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on. • Wall lights and security lights will be ‘dimnable’ and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available. <p>These measures will ensure that existing bat foraging areas and commuting routes are protected from light from the developed site. It will also ensure the recurrent usage of the bat boxes that are to be placed around the site. The recommendations are further to those recommended within the original PRA and Bat Emergence and Re-Entry Survey Reports (Arbtech Consulting Ltd, 2021).</p>
<p>Hibernacula</p>	<p>One hibernacula will be created using natural materials such as logs collected from the site, stone, vegetation arisings, and earth (see Figure 2) to enhance the site for great crested newts and other amphibians post-development. The hibernaculum will be installed in the southern area of the rear garden as it is the least disturbed and is within close proximity to the boundary hedgerows which provide suitable terrestrial opportunities (as outlined in the Great Crested Newt non-licensed mitigation plan).</p>

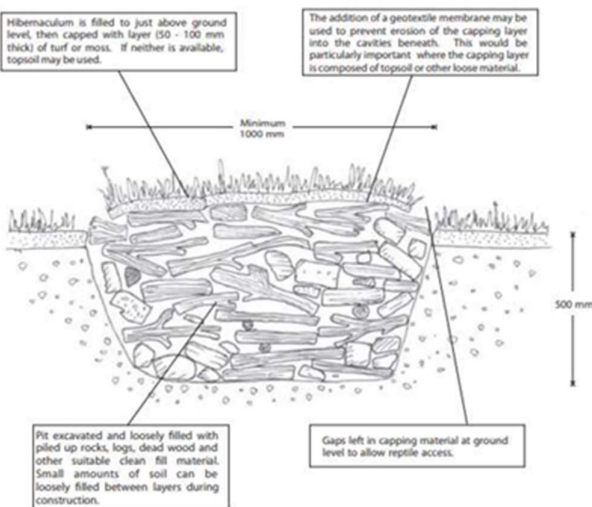
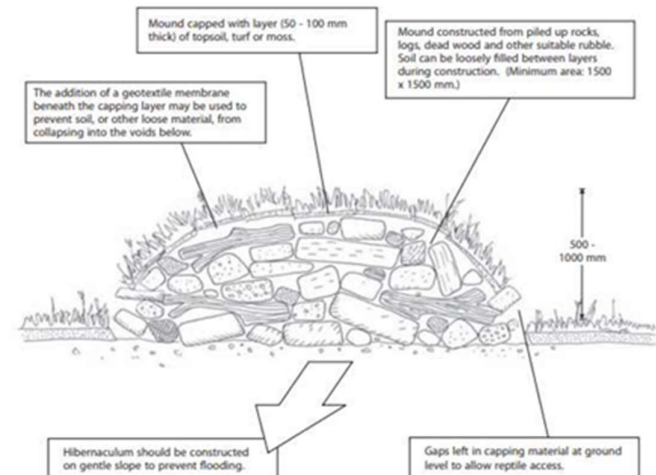
	<p>Hibernaculum on free-draining ground</p> <p>Where ground conditions allow, the hibernaculum should be incorporated into a shallow pit. This design is more likely to remain frost-free, and will be less obtrusive and thus unlikely to be subject to interference.</p>  <p>Hibernaculum on impermeable ground</p> <p>Where ground conditions are impermeable, then an 'above-ground' or mounded design should be utilised in order to prevent the hibernaculum from flooding. This design should also be used if it is not possible to excavate a pit for any other reason.</p>  <p>Figure 1: A schematic representation of a man-made hibernacula to provide suitable refuge.</p>
<p>Bat Boxes</p>	<p>A single bat box is recommended to be installed onto the retained dwelling post development.</p> <p>Bat boxes specification:</p> <ul style="list-style-type: none"> • The recommended bat boxes will be constructed of woodcrete/ woodstone. Boxes of this construction are designed to require no maintenance and have a lifespan of 25 years plus. • 1x Beaumaris Bat Box (or similar alternative brand) is recommended on the building, as shown in Figure 8. • Bat boxes should be positioned 3-5m above ground level facing in a south, southeast, or southwest aspect with a clear flight path to and from the entrance, away from artificial light.



Figure 2: Beaumaris Bat Box (image credit <https://www.nhbs.com/beaumaris-woodstone-bat-box>)

Recommended Management:

The proposed bat boxes are designed to require no management or maintenance. Furthermore, preventing physical disturbance of bat boxes will increase the chances of occupation by roosting bats. However, it is recommended that the bat boxes are inspected annually for the first five years outside of the typical active season for bats (May to September inclusive) following installation. Bat boxes must be replaced if they are damaged, removed, or have fallen from their recommended location.

Bird Boxes

One bird box are recommended to be installed on site, one onto the retained dwelling post development and the other onto the unimpacted garage.

Bird box specification:

- The recommended bird boxes will be constructed of woodcrete/ woodstone. Boxes of this construction are designed to require no maintenance and a lifespan of 25 years plus.
- 1x Vivara Pro WoodStone Swift Nest Box (or a similar alternative brand) is proposed on the building, as shown in **Figure 3**. Vivara Pro WoodStone Swift Nest Boxes should be positioned at the eaves of the building.



Figure 3: Vivara Pro WoodStone Swift Nest Box (image credit <https://www.nhbs.com/woodstone-swift-nest-box>)

Recommended Management:

The proposed bird boxes are designed to require no management or maintenance. Furthermore, preventing physical disturbance of bird boxes will increase the chances of occupation by nesting birds. However, it is recommended that the bird boxes are inspected annually for the first five years outside of the typical nesting bird season (March to September inclusive) following installation. Bird boxes must be replaced if they are damaged, removed, or have fallen from their recommended location.

Insect Box

An insect box will be installed on one of the four retained, mature trees present in the rear garden area (**Figure 4**). An insect box suitable for the site (or a similar alternative brand) can be found here: <https://www.nhbs.com/national-trust-apex-insect-house>



Figure 4: Insect box (image credit <https://www.nhbs.com/national-trust-apex-insect-house>)

Hedgehog House

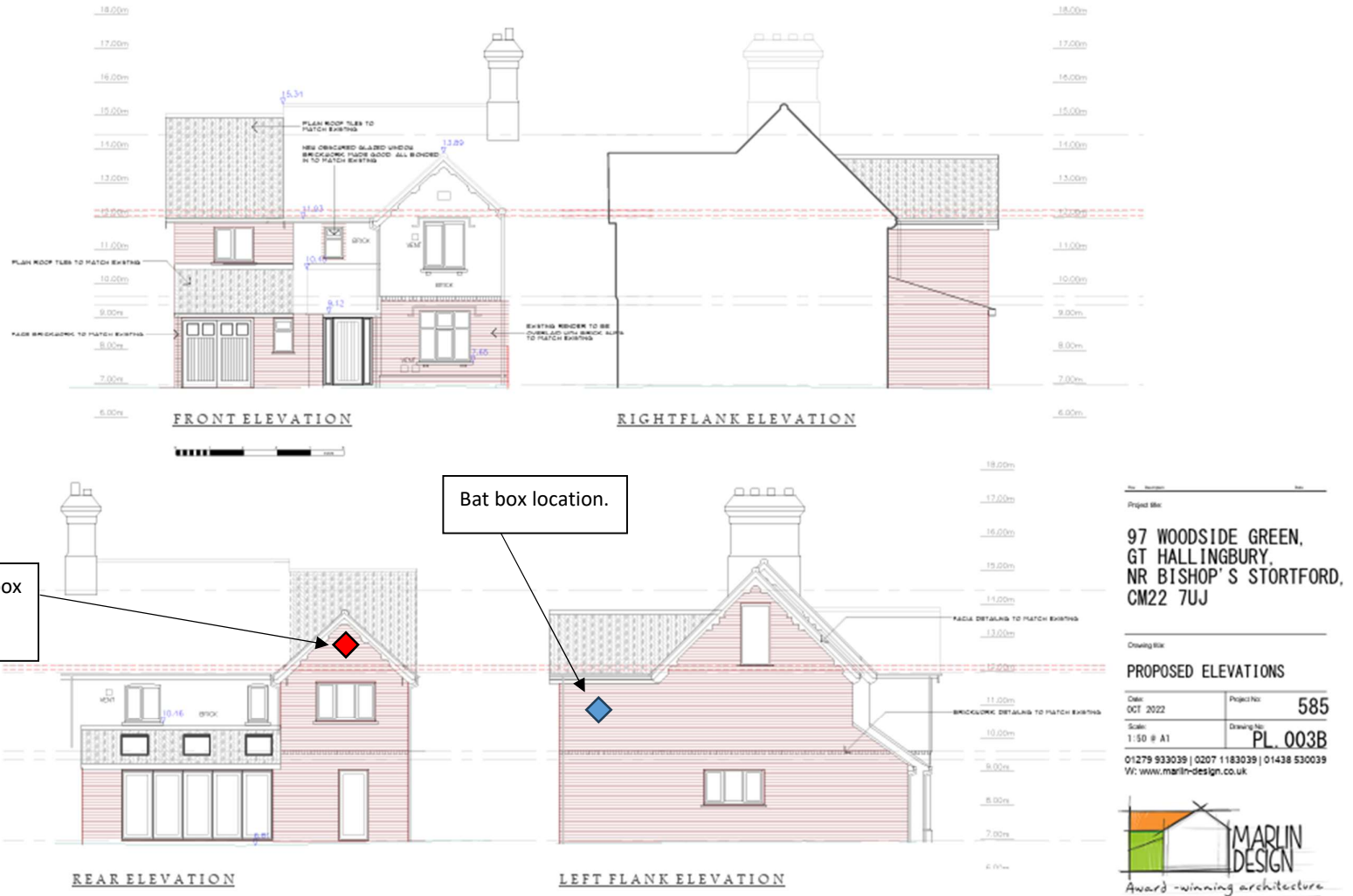
A hedgehog house will be installed within the rear garden area, close to the eastern boundary hedgerow which will likely provide suitable terrestrial opportunities (**Figure 5**). A hedgehog house suitable for the site (or a similar alternative brand) can be found here: <https://www.nhbs.com/hedgehog-house>



Figure 5: Hedgehog house (image credit <https://www.nhbs.com/hedgehog-house>)

Appendix 1: Proposed Development Plan

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Appendix 2: Site Location Plan



Appendix 3: New Landscaping and Species-Specific Enhancements Plan

