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Ecological Surveys • Habitat Management • Arboricultural Surveys • Vegetation Clearance

Biodiversity Method Statement (BMS)

White Towers, Wood End, Bluntisham
[NGR: TL3622 7507]

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1.0 Introduction

1.1. Purpose of Report

Greenwillows Associates Ltd. has been commissioned to provide a Biodiversity Method Statement (BMS), to comply with Condition 5 of the Prior Approval of Permitted Development pertaining to a proposed development at White Towers, Wood End, Bluntisham, Cambridgeshire, PE28 3LE. The purpose of the BMS is to provide detailed mitigation, compensation and enhancement measures, and a management programme for the site. The aim is to mitigate the likely impacts the proposed development may have on notable and legally-protected priority species and habitats.

1.2. Development Proposals

Prior Approval of General Permitted Development was granted by Huntingdonshire District Council on 17th May 2024 for the proposed conversion of barn into 4 small dwellinghouses (Ref: 24/00535/PMBPA). For the avoidance of doubt, this consent also includes the demolition of a disused workshop within the site. The barn is referred to as B2 within this BMS (and the previous ecology reports below) and the workshop is referred to as B3.

Ecological surveys and reports referred to include:

- Preliminary Ecological Appraisal Report (PEAR) published by ROAVR Group August 2023 following a preliminary bat roost assessment undertaken on 2nd August 2023.
- Bat Letter Report published by Greenwillows Associates October 2023 following a series of bat walkover surveys and emergence surveys in August and September 2023.

This report should be read in conjunction with the findings of the above and the recommendations set out in the above still stand.

It is noted that a bungalow (B1) is contained within the Land Registry Title Plan. Although this structure was included in the ecological assessments/surveys undertaken by ROAVR Group and Greenwillows Associates Ltd, it is the subject of a separate planning application (23/02146/PRI027: Additional storey to existing bungalow to form new dwellings/flats) which was approved 22nd February 2024, and which was not subject to any ecological conditions.

The existing site plan for planning application 24/00535/PMBPA shows all three structures although the red-line boundary only encompasses the barn *i.e.* not the workshop. The proposed site plan shows all three structures within the site boundary even though the proposed development of structures B2/B3 are a different planning application to that for the proposed development of structure B1.

1.3. Condition 5 of Permission 24/00535/PMBPA

No development shall commence until a Biodiversity Method Statement which provides details of how the recommendations in the documents specified below will be carried out, has been submitted to and approved in writing by the Local Planning Authority.

- Bat Letter Report - Recommendations section

- Preliminary Ecological Appraisal August 2023 - The Required Mitigation Measures in Table 6.1.1 (excluding GCN and Bats Surveys) and recommendations 7.2 through to 7.15. The details shall include but not be limited to; specification, location, timing, an implementation programme, maintenance, and monitoring. The development shall be carried out in accordance with the approved details.

Reason: To ensure the conservation and enhancement of on-site biodiversity in accordance with Section 15 of the National Planning Policy Framework 2023.

1.4. Purpose of Report and Scope

The purpose of the BMS is to detail the mitigation compensation and enhancement measures and define the management programme for the site with regard to notable and legally-protected priority species and habitats. The aim is to ensure the reason for Planning Condition 5 is realised *i.e.* to ensure the conservation and enhancement of on-site biodiversity in accordance with Section 15 of the National Planning Policy Framework 2023.

The BMS sets out how the nature conservation value will be safeguarded and how habitats will be enhanced and maintained. It covers the following:

- Aims and Objectives
- Mitigation and Enhancement Measures (to Include Specification, Location and Timing) and
- Implementation Programme, Maintenance and Monitoring.

The scope does not include mandatory Biodiversity Net Gain (BNG). The proposed development is exempt from BNG using the Statutory Metric as the original planning application was made before 12th February 2024.

2.0 Aims and Objectives

2.1 Overview

The principal aims of the BMS are as follows:

- To detail how mitigation measures will be implemented to ensure the conservation of protected species and habitats.
- To provide enhanced habitat for locally important species (including legally protected, priority and local BAP species).
- To positively comply with local, regional, and national wildlife legislation and policy.

The specific objectives of the BMS are:

- To detail how mitigation measures will be implemented to ensure legal compliance with wildlife legislation pertaining to great crested newts and bats.
- To detail measures to mitigate the impacts of works and enhance the site for reptiles, birds, invertebrates, hedgehogs and badgers.
- To detail proposed planting with the final design of the site.
- To outline any management or monitoring needed for the above measures.

These objectives will be met by completing the Mitigation and Enhancement Measures detailed in Section 3 and the Implementation and Ongoing Management in Section 4.

3.0 Mitigation and Enhancement Measures

3.1 Habitats including Adjacent Traditional Orchard/Boundary Trees/Hedgerows

3.1.1 Mitigation/Enhancement

The orchard (which is classified as a Priority Habitat Traditional Orchard on the Defra Multi-Agency Geographic Information for the Countryside (MAGIC) website) to the immediate west and north of the site was grubbed-up (*NB*: unrelated to the proposed development), on or around 9th October 2024. Therefore, the potential impacts specified in Table 6.1.1 (Protected Habitats) of the ROAVR Group PEA are not anticipated and the mitigation is not required as this habitat no longer exists. Nevertheless, all other retained trees and shrubs (*e.g.* the silver birch at the west of the entrance to the site) will be protected from construction works in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition & Construction – Recommendations'. Prior to commencement of construction works, protective Heras fencing will be set up around the root protection areas and these will be kept in place for the duration of the works.

New planting will be included within the development as per Recommendation 7.15 of the ROAVR Group PEA. The Proposed Site Plan A.3.01 dated October 2024 (Appendix Two) illustrates:

- Six fruit trees to the immediate east of B2 and one fruit tree with associated shrubs (pampas grass *Cortaderia selloana* or similar) at the southwest corner of the footprint of B3. A detailed planting plan is not yet available, but the plan specifies native fruit tree species such as crab apple (*Malus sylvestris*), wild cherry (*Prunus avium*) and common pear (*Pyrus communis*).
- A hedgerow along the northern boundary of the site and three short sections of hedgerow along the western boundary of the footprint B3. A detailed planting plan is not yet available, but, in line with Recommendation 7.14 of the ROAVR PEA, the species mix will include common beech (*Fagus sylvatica*), common hawthorn (*Crataegus monogyna*), rowan (*Sorbus aucuparia*), crab apple (*Malus sylvestris*) and holly (*Ilex aquifolium*).
- A meadow with wildflowers to the west, north and east of B2 (and also surrounding the bungalow B3). A detailed planting plan is not yet available, but this grassland will incorporate nectar-rich species to encourage invertebrates (and consequently bats). See Appendix Three for suitable species.
- Ornamental planting in the form of Pampas grass (or similar) is also proposed at the head of each of the six parking bays. This planting is not anticipated to increase the biodiversity of the site, and it will need to be managed to ensure it does not encroach upon adjacent habitats.

3.2 Great Crested Newts (GCN)

3.2.1 Mitigation/Enhancement

The mitigation specified in Table 6.1.1 (Amphibians incl. Great Crested Newts) of the ROAVR Group PEA has been superseded. A Natural England GCN District Level Licence (DLL) was granted 26th July 2024 for the proposed development (2024-00698-EPS-DLL) and will expire 25th July 2026. The DLL application was independently made by the developer and the developer will assume sole responsibility for complying with the terms and conditions of this licence in addition to Natural England's 'Guidance for Works Carried Out Under Great Crested Newt District Level Licensing. The developer also assumes sole responsibility for complying with all relevant legislation related to this species.

3.3 Bats

3.3.1 Mitigation/Enhancement

As structures B2 and B3 both contain confirmed low-conservation status bat roosts, a Natural England mitigation licence is required to allow the proposed development to progress lawfully. The principal recommendation of the Greenwillows Associates Ltd. Bat Report was that an application should be made to register the site under the CL21 Bat Mitigation Class Licence (BMCL) as the site meets the criteria for this 'low-impact' licence.

Once planning consent is granted and a detailed construction schedule/methods of working have been agreed, the Greenwillows Associates Ltd. Registered Consultant will register the proposed development as a BMCL site. The use of the CL21 BMCL is subject to a series of terms, conditions and requirements and these must be observed to ensure the licence remains valid and the works undertaken are lawful. This includes a written record that all those who will be involved in works attend a toolbox talk covering information about the legal protection of bats, where they might be found and what to do if one is encountered unexpectedly, working under the licence including methods of demolition once checks have been undertaken to ensure a structure is free of bats and mitigation and compensation for all impacts on bats and/or their roosts.

Although exact methods will be confirmed at the time of the licence application, it is expected known roost sites or other potential roosting habitat will be 'soft-stripped' under the supervision of the Registered Consultant (or an accredited agent). This will take place outside of the winter months (avoiding December-February inclusive) to minimize the risk of unexpectedly disturbing hibernating bats. One or two temporary bat boxes will be placed on site to provide habitat if any bats are encountered during the supervised soft strip. If bats are placed in this refuge, the box will need to be retained as it will become a legally-protected roost.

As compensation for the loss of roosts, a minimum of three integrated (*i.e*. built-in) bat boxes will be installed on structure B2 (Appendix Two). These will be placed at a height between 3 to 6m from the ground in a westerly orientation, with all lighting angled away to avoid direct

illumination of the box. Nearby branches (if present) will be cleared to provide an unrestricted flight path to and from the box. They will also be situated in a location where they cannot be accessed by domestic animals or easily interfered with by humans; and placed in a dark area away from artificial lighting. Suitable boxes are shown in Appendix Three. If this exact model is not available due to supply chain difficulties *etc.*, an equivalent model should be installed is that constructed of woodcrete or a similarly durable material.

All lighting proposed for the development, both during construction and post completion, will be installed in accordance with the guidelines from the Bat Conservation Trust and ILP (Institute of Lighting Professionals) - Guidance Note 08/23: Bats and Artificial Lighting at Night are followed.

Particular attention will be made to avoid lighting of key habitats which are essential for the function and stability of bat populations both onsite and neighbouring the development site, for example boundary trees and linear hedgerows.

Any new lighting impacts associated with the proposed development (both during and post-construction phase) will be minimised using warm white light sources (2700Kelvin or lower) to reduce blue light component. Lighting types to be avoided include any blue-white light sources, metal halide, compact fluorescent sources and any form of up-lighting, which lights above the horizontal plane illuminating foraging habitat. The use of bollard or low-level downward-directional luminaires is strongly discouraged. Only if all other options have been explored, accessories such as baffles, hoods and louvres can be used to reduce light spill and direct light to where it is needed, however this should not be solely relied upon. Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1- or 2-minute timer is likely to be appropriate.

If the proposed development will involve roofing felt, the felt used will be bitumen 1F felt with a hessian matrix. Non bitumen coated roofing membranes (NBCRMs) that do not have a test certificate approved by Natural England should not be used due to the risks posed to bats (Essah et al., 2020, Waring et al., 2013). This includes the use of NBCRMs to line any cavity walls, where bats may be able to enter the cavity for roosting purposes. *NB:* This is an explicit condition of the CL21 BMCL.

The proposed meadow with wildflowers (Appendix Two) incorporating some of the nectar-rich species listed in Appendix Three, will encourage invertebrates to use the site which will provide a foraging resource for bats.

3.4 Birds

3.4.1 Mitigation/Enhancement

In accordance with the mitigation specified in Table 6.1.1 (Birds) of the ROAVR Group PEA, any vegetation that provides suitable nesting habitat and works that involve the removal of features on/within buildings suitable for nesting birds, will be cleared/undertaken outside of

the bird nesting season (March to September inclusive) or, if this should prove impracticable, clearance will be preceded by a precautionary check survey for active nests, undertaken by a suitably experienced ecologist. Any active nests would be cordoned off and retained undisturbed until the nest(s) cease to be in active use.

Retained hedgerows/trees will not be impacted by the ongoing works or thereafter.

As per Table 6.1.1 (Birds) and Recommendations 7.5-7.7 of the ROAVR Group PEA, integrated bird boxes will be incorporated into the building B2, in the form of two sparrow terraces (Appendix Two). Suitable box designs are shown in Appendix Three. If this exact model is not available due to supply chain difficulties *etc.*, an equivalent model should be installed is that constructed of woodcrete or a similarly durable material.

The nest boxes will be installed at a height of 2m or above, facing north where they are not receiving full day sunlight. All boxes will be located such that there is a clear flight path to them. They will also be situated in a location where they cannot be accessed by domestic animals or easily interfered with by humans.

3.5 Invertebates

3.5.1 Mitigation/Enhancement

Recommendation 7.11 of the ROAVR Group PEA specified the incorporation of bee-bricks into the proposed dwellings or alternatively the provision of invertebrate boxes within the site that are suitable for solitary bees.

Two solitary bee bricks will be incorporated into structure B2 (Appendix 2). These will be placed in a warm, sunny spot on a south-facing wall at a minimum height of 1m, with no vegetation obstructing the holes. Suitable brick designs are shown in Appendix Three. If this exact model is not available due to supply chain difficulties *etc.*, an equivalent model should be installed.

The fruit trees and the meadow with wildflowers (Appendix Two) will benefit a range of invertebrates.

Table 6.1.1 (Invertebrates) of the ROAVR Group PEA specified the creation of 'loggeries' if stumps are removed or logs created during vegetation clearance. The Site Plan A.3.01 (Appendix Two) includes a log house at the northeastern corner of the site.

3.6 Reptiles

3.6.1 Mitigation/Enhancement

Table 6.1.1 (Reptiles) of the ROAVR Group PEA specifies that the grassland should be kept short through mowing to prevent the habitat from becoming more favourable to reptiles. In addition, Greenwillows Associates Ltd. assessed that the pile of builders and garden waste to leaning against the north elevation of structure B2 (labelled TN1 in the PEA), presents opportunities for resting/sheltering reptiles and possibly hibernating individuals.

As an alternative to ecologically supervised vegetation clearance, the client will independently clear this habitat using Reasonable Avoidance Measures to prevent accidental killing or injuring of reptiles onsite and avoiding the reptile hibernation season (October/November to February/March depending upon temperature). In the event of encountering reptile species during this clearance, works will stop immediately, and the advice of a suitably qualified ecologist will be sought.

Additionally, any materials, spoil or waste from the works will be stored on hardstanding away from vegetation, or on pallets/in skips to discourage sheltering reptiles.

Recommendation 7.8 (Herptiles) of the ROAVR Group PEA specified that suitable habitat for reptiles and amphibians is to be created on site. Suitable hibernacula designs are shown in Appendix Three. One hibernaculum will be constructed within the site, ideally on the eastern or western boundary on a gentle slope to prevent potential flooding.

3.7 Badgers

3.7.1 Mitigation/Enhancement

A site walkover to check for badger setts was undertaken by Alistair Grant of Greenwillows Associates Ltd. 10th October 2024 thus in-part satisfying the mitigation specified in Table 6.1.1 (Badgers) of the ROAVR Group PEA. If the construction phase does not commence within 6-months of this date, an update badger walkover will be undertaken by a suitably qualified ecologist.

In accordance with the other mitigation for this species specified in the PEA:

- Construction works will be limited to daylight hours in order to prevent disturbance to night-time foraging activity
- Excavations/pits/trenches created during the works will be covered/fenced nightly to prevent badgers from becoming trapped. Alternatively, a ladder/ramp, following British Standard 42020:2013 Biodiversity – Code of Practice for Planning and Development, will be installed to allow badgers to escape freely.

3.8 Hedgehogs

3.8.1 Mitigation/Enhancement

Table 6.1.1 (hedgehogs) of the ROAVR Group PEA specifies similar mitigation to that for badgers.

Accordingly, construction works will be limited to daylight hours to prevent disturbance to night-time foraging activity and excavations/pits/trenches created during the works will be covered/fenced nightly to prevent hedgehogs from becoming trapped. Alternatively, a ladder/ramp, following British Standard 42020:2013 Biodiversity – Code of Practice for Planning and Development, will be installed to allow hedgehogs to escape freely.

Additionally:

- During the hibernation season (October to March), piles of leaf litter and logs will be retained to ensure hibernating hedgehogs are not harmed. If removal is unavoidable, the piles will be carefully checked before removal
- Any new boundary or garden fences erected as part of the development will include a 13x13cm access hole at ground level to allow hedgehogs and other wildlife to navigate through the site. See Appendix Thee for further details.

3.9 Terrestrial Mammals

3.9.1 Mitigation/Enhancement

Recommendation 7.14 of the ROAVR Group PEA specified that native species-rich hedgerows should be planted to enhance connectivity and provide refuge for small mammals.

The Site Plan A.3.01 dated October 2024 (Appendix Two) includes a hedgerow along the northern boundary of the site and three short sections of hedgerow along the western boundary of the footprint B3 (*see 3.1.1*). A detailed planting plan is not yet available, as per Section 3.1.1., the species will include common beech, common hawthorn, rowan, crab apple and holly.

4.0 Implementation and Ongoing Management

Table One below sets out an implementation schedule for the timing of management prescriptions in relation to the construction period (prior/during and post).

Table One: Implementation and Management

Habitat Feature/ Measure	Management / Maintenance Instructions	Timing
Habitats		
Tree Protection Measures	Installation of protective fencing around existing trees- to be checked regularly throughout construction phase	Prior to construction phase – to be in place throughout
Planting	Creation of new hedgerows, fruit tree planting and nectar rich vegetation. To be maintained by new residents.	Final stage of construction phase and retained post construction
Great Crested Newts		
DLL	A District Level Licence will be in place to allow works to proceed. All works will be conducted in a manner to comply with the DLL conditions.	In place prior to construction phase
Bats		
CL21 BMCL Licence	A Bat Mitigation Class Licence (BMCL) will be in place to allow works to proceed on the onsite buildings. All works will be conducted in a manner to comply with the BMCL conditions which includes*, inter alia*, a toolbox talk to contractors and ecological supervision of works.	In place prior to construction phase- supervision throughout construction phase
Bat Box Installation	Installation of three integrated bat boxes. These are self-cleaning and do not need any ongoing maintenance or monitoring.	Installed during construction phase and retained post construction.
Lighting	Any additional/replacement lighting after works are completed will comply with the requirements set out in 3.3.1 and avoid being placed near/illuminating trees, hedgerows, or bat/bird boxes (buildings/trees).	During and post construction phase
Construction Materials	If the proposed development will involve roofing felt, this will be bitumen 1F felt with a hessian matrix. Non bitumen coated roofing membranes (NBCRMs) that do not have a test certificate	During and post construction phase

	approved by Natural England must not be used due to the risks posed to bats.	
Planting	Creation of nectar rich vegetation. To be maintained by new residents.	Final stage of construction phase and retained post construction
Birds		
Vegetation Removal	The removal of suitable nesting habitat will be completed outside of the nesting bird season (March to September inclusive) OR immediately following a nesting bird check by a suitably qualified ecologist.	Construction phase. If active nests are found during the nesting bird checks, trees will be cordoned off and retained until the end of the season, when any young have fledged the nest.
Bird Boxes	Installation of two integrated bird boxes. No ongoing maintenance necessary.	Bird boxes installed during construction phase and retained post construction.
Invertebrates		
Solitary Bee Brick	Installation of two integrated bee bricks. No ongoing maintenance necessary.	Bee bricks installed during construction phase and retained post construction.
Planting	Creation of new hedgerows, fruit tree planting and nectar rich vegetation will benefit a range of invertebrates.	Final stage of construction phase and retained post construction.
Loggeries	If stumps are removed or logs created during vegetation clearance, a loggery will provide habitat for a range of invertebrates,	Construction phase and retained post-construction.
Reptiles		
Reasonable Avoidance Measures	Reasonable avoidance measures will be employed to avoid harm to reptiles such as strimming long vegetation with a fingertip search and destructive search of refugia piles. Additionally, material and spoil/waste will be stored so as to discourage sheltering reptiles.	Construction phase

Artificial hibernaculum	Creation of an artificial hibernaculum will provide suitable habitat for reptiles. No ongoing maintenance necessary.	Pre-vegetation clearance and retained post-construction.
Badger		
Pre-Works Check	Pre works check to ensure no new badger setts	Prior to construction phase or update check if works not started within 6-months.
Construction Methodology	Construction works will be limited to daylight hours in order to prevent disturbance to night time foraging activity. Any trenches or other excavations left open overnight will be well covered to deter badgers from entering or a ramp installed to allow them to escape.	Construction phase only
Hedgehog		
Construction Methodology	As per badger recommendations.	Construction phase only
Hedgehog Access	Access opportunities will be provided through any new boundary/garden fencing. New residents to retain these post-development.	Hedgehog gaps to be installed during erection of fencing.

5.0 Conclusions

Measures are set out to mitigate any adverse effects on biodiversity potentially arising from the proposed development. Further measures are identified to provide biodiversity enhancement within the site, in the form of new planting, bat, bird and invertebrate box/brick provision and an artificial hibernaculum for reptiles. It is considered that these measures will provide an enhancement for biodiversity within the site and that they are proportionate to the scale of the development.

6.0 References

Bat Conservation Trust and Institute for Lighting Professional (2023) Guidance Note 08/23: Bats and Artificial Lighting at Night. BCT London.

British Standards Institute (BSI) (2013). BS42020 - Biodiversity Code of Practice for Planning and Development. BSI, London.

British Standards Institute (BSI) (2012) 5837:2012 - Trees in Relation to Design, Demolition and Construction – Recommendations. BSI, London.

E. A. Essah, S. J. Russell, S. D. Waring, J. Ferguson, C. Williams, K. Walsh, S. Dyer & R. Raynor (2020) Method for evaluating the snagging propensity of roofing membranes in buildings by roosting bats, Building Research & Information, DOI:10.1080/09613218.2020.1763773

Greenwillows Associates Ltd (2023). Wood End, Bluntisham Bat Letter Report.

HM Government (1981). Wildlife and Countryside Act 1981 (as amended).

HM Government (2000). Countryside and Rights of Way Act, 2000.

HM Government (2005). ODPM Circular 06/05 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

HM Government (2006). Natural Environment and Rural Communities Act 2006.

HM Government (2010). Conservation of Habitats and Species Regulations 2017.

HM Government (2021). Environment Act, 2021.

Langton T., Beckett, C. & Foster, J. (2001). *Great Crested Newt Conservation Handbook.* Froglife, Suffolk.

Multi-Agency Geographic Information for the Countryside: http://www.magic.gov.uk/

ROAVR Group (2023). 23_PEA_07_35: Preliminary Ecological Appraisal Report, White Towers, Wood End, Bluntisham, Cambridgeshire, PE28 3LE.

Waring, S. D., Essah, E., Gunnell, K. and Bonser, R. (2013). Double jeopardy: the potential for problems when bats interact with breathable roofing membranes in the United Kingdom. Architecture & Environment, 1 (1). pp. 1-13.

7.0 Appendices

Appendix One: Site Location Plan

Appendix Two: Site Plan with Biodiversity Enhancement Features

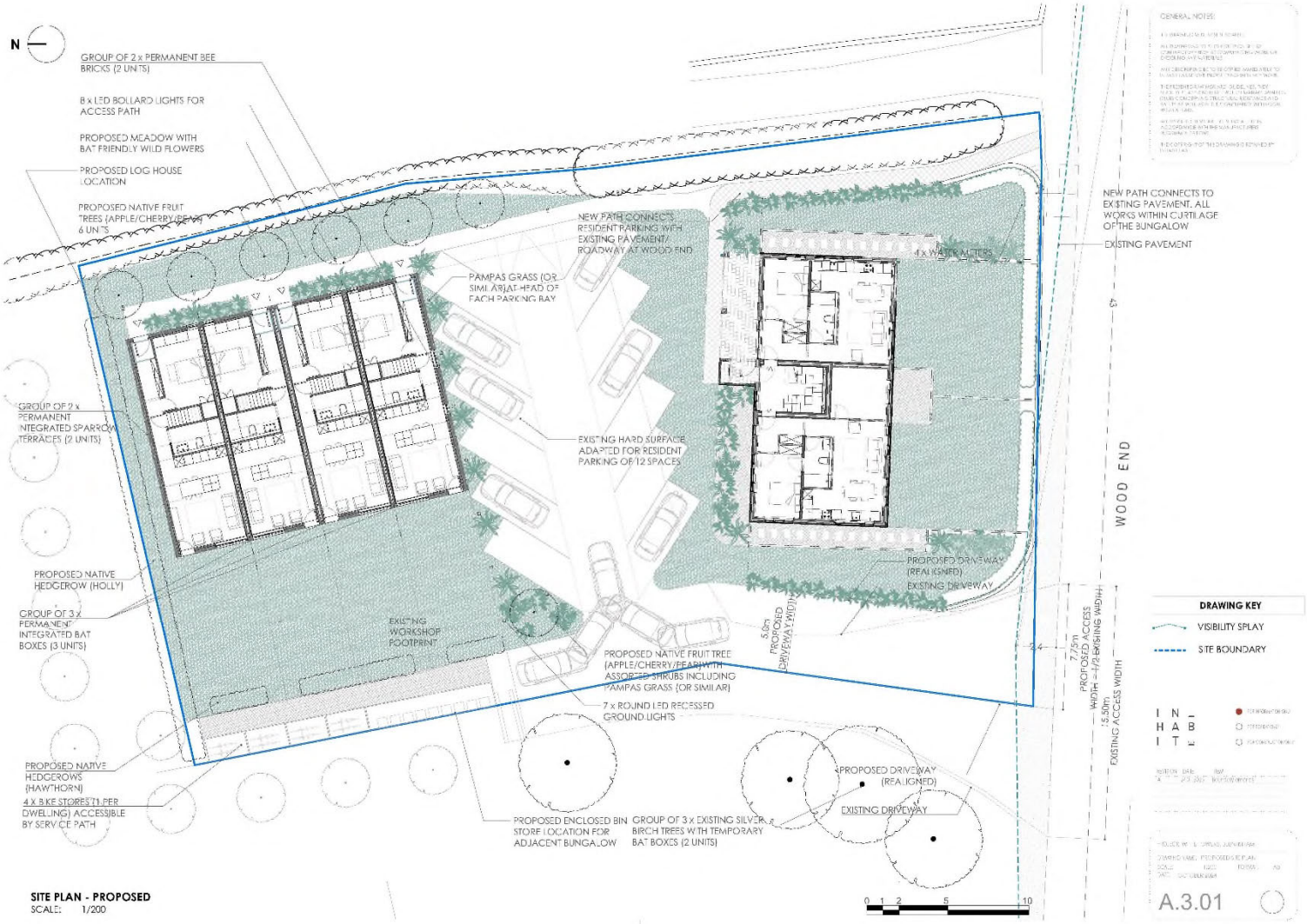
Appendix Three: Examples of Site Enhancements/Mitigation

Appendix One: Site Location Plan



Internal Reference: J377

Appendix Two: Site Plan with Biodiversity Enhancement Features



Appendix Three: Examples of Site Enhancements/Mitigation

Integrated Bat Boxes

Integrated boxes are to be placed in a westerly orientation at a height of 3-6m above ground level, with all lighting angled away to avoid direct illumination of the box. Nearby branches (if present) will be cleared to provide an unrestricted flight path to and from the box. They will also be situated in a location where they cannot be accessed by domestic animals or easily interfered with by humans; and placed in a dark area away from artificial lighting. **Three** integrated bat boxes will be installed on structure B2.



Schwegler 1FR Bat Tube

Integrated Bird Boxes

Integrated boxes can be incorporated into building designs and can support a range of species depending on their design. They will be installed at a height of 2 m or above, facing west where they are not receiving full day sunlight. The boxes will have a clear flight path to them so avoid any overhanging branches/materials that could block the box entrance. They will also be situated in a location where they cannot be accessed by domestic animals or easily interfered with by humans. **Two** integrated sparrow terraces will be installed on structure B2.



Schwegler 1SP Sparrow Terrace.

Integrated Bee Bricks

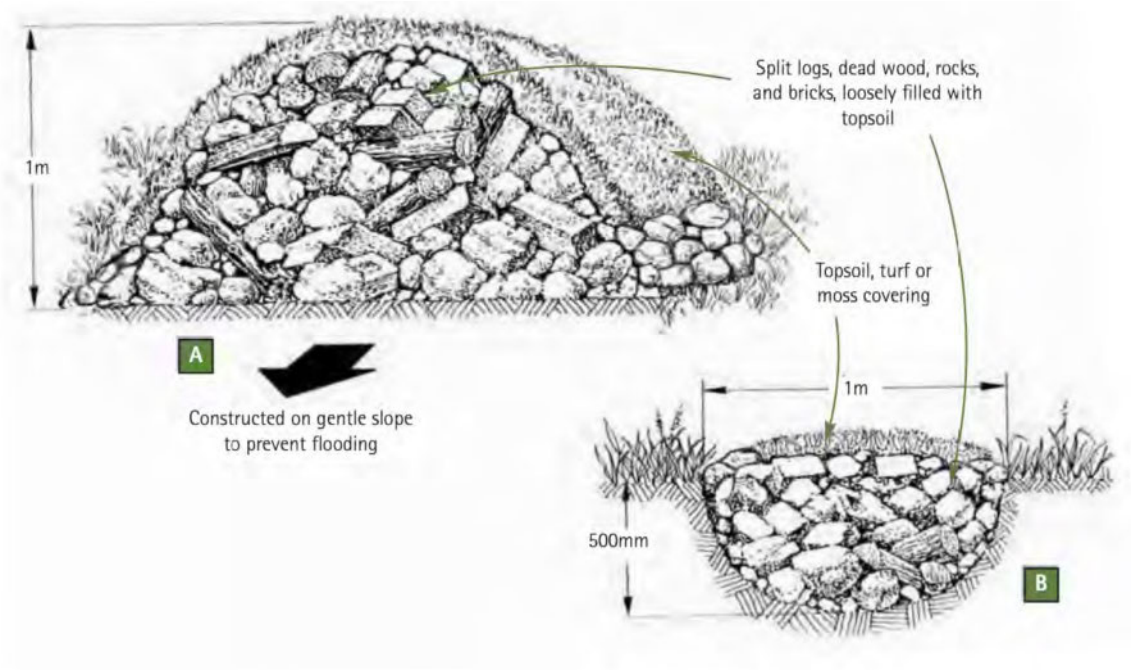
Integrated bricks can be incorporated into building designs and can support a range of species depending on their design. These will be placed in a warm, sunny spot on a south-facing wall at a minimum height of 1m, with no vegetation obstructing the holes. **Two** integrated solitary bee bricks sparrow terraces will be installed on structure B2.



Bee Brick Solitary Bee House

Artificial Hibernaculum

The provision of artificial hibernacula for shelter and overwintering/hibernation is important for the conservation of GCN and reptiles. Artificial hibernacula should generally be constructed within 200m of a pond although, the closer to a waterbody, the better. They should ideally be constructed in a shady location and encouraging moss/grass to grow on top, or adding a layer of topsoil, may help increase the humidity and stability of the internal environment. **One** hibernaculum will be constructed within the site, ideally on the eastern or western boundary on a gentle slope to prevent potential flooding.



Example of a Great Crested Newt Refuge taken from the Great Crested Newt Conservation Handbook (Langton, Beckett and Foster, 2011).

Hedgehog

Foraging hedgehogs may travel up to a mile in a night although their ability to feed and also find a mate, is limited by secure fencing. A 13x13cm access hole at ground level within any boundary/garden fence will allow hedgehogs and other wildlife to navigate through the site but will be too small for most domestic pets to fit through.



Example of access provision for hedgehogs into site (13 x 13cm).

Bat Friendly Planting Suggestions	
Common Name	**Scientific Name**
Flowers for Borders	
*Aubretia (spring to early summer)	
*Candytuft (summer to autumn)	*Iberis sempervirens*
*Cherry pie (summer to autumn)	*Heliotropium arborescens*
Corncockle	*Agrostemma githago*
Cornflower	*Centaurea cyanus*
Corn marigold	*Glebionis segetum*
Corn poppy	*Papaver rhoeas*
**Echinacea*	
English Bluebell (spring)	*Hyacinthoides non-scripta*
*Evening primrose (summer to autumn)	*Oenothera biennis*
*Honesty (spring)	*Lunaria annua*
*Ice plant 'Pink lady' (early autumn)	*Delosperma*
Knapweed (summer to autumn)	*Centaurea*
Mallow (summer to autumn)	*Malva*
*Mexican aster (summer to autumn)	*Cosmos bipinnatus*
*Michaelmas daisy (summer to autumn)	*Aster amellus*
*Night-scented stock (summer)	*Matthiola bicornis*
Ox-eye daisy (summer)	*Leucanthemum vulgare*
*Phacelia (summer to autumn)	*Phacelia tanacetifolia*
*Poached egg plant (summer)	*Limnanthes douglasii*
Primrose (spring)	*Primula vulgaris*
Red campion (spring)	*Silene dioica*
*Red valerian (summer to autumn)	*Centranthus ruber*
Scabious (summer)	*Scabiosa*
St John's wort (spring)	*Hypericum perforatum*
*Sweet William (summer)	*Dianthus barbatus*
*Tobacco plant	*Nicotiana affinis*
**Verbena (summer to autumn)*	
Wood forget-me-not (spring)	*Myosotis sylvatica*
Yarrow (early summer)	*Achillea millefolium*
Herbs	
Angelica	*Angelica archangelica*
Bergamot (summer to early autumn)	*Monarda citriodora*
Borage (spring to early autumn)	*Borago officinalis*
Coriander (summer)	*Coriandrum sativum*
English marigolds	*Calendula officinalis*
Fennel (summer to early autumn)	*Foeniculum vulgare*
Feverfew (summer to autumn)	*Tanacetum parthenium*
Hyssop (summer to early autumn)	*Hyssopus officinalis*
Lavenders	*Lavandula*
Lemon balm	*Melissa officinalis*
Marjoram (summer)	*Origanum majorana*
Rosemary (spring)	*Salvia rosmarinus*
Sweet Cicely (spring to early summer)	*Myrrhis odorata*
Thyme (summer)	*Thymus vulgaris*
Climbers	
Honeysuckle (native)	*L. periclymenum.*
White jasmine	*Jasminium officinale*
Dog rose	*Rosa canina*
Sweetbriar	*R. rubiginosa*

Field rose	*R. arvensis*
Ivy	*Hedera helix*
Bramble	*- many species*
Large trees, small trees and shrubs	
Oak	*Quercus robur & Q. petrea*
Ash	*Fraxinus excelsior*
Silver birch	*Betula pendula*
Field maple	*Acer campestre*
Hornbeam	***Carpinus betulus***
Hawthorn	*Crataegus monogyna*
Alder	*Alnus glutinosa*
Goat willow	*Salix caprea*
Gorse	*Ulex europaeus*
Guelder rose	*Viburnum opulus*
Hazel	*Corylus avellana*
Blackthorn	*Prunus spinosa*
Elder	*Sambucus nigra*
Buddleia	*Buddleja davidii*
Rowan	*Sorbus aucuparia*
Rock plants for walls	
Ivy-leaved toadflax	*Cymbana muralis*
Wall pennywort	*Umbilicus rupestris*
Stonecrop	*Sedum acre*
Wildflowers for pond edges & marshy areas	
Bog bean	*Menyanthes trifoliata*
Bugle	*Ajuga reptans*
Creeping Jenny (spring to summer)	*Lysimachia nummularia*
Flag iris	*Iris pseudacorus*
Hemp agrimony (summer)	*Eupatorium cannabinum*
Lady's smock (spring to summer)	*Cardamine pratensis*
Marsh mallow	*Althaea officinalis*
Marsh marigold (spring)	*Caltha palustris*
Marsh woundwort	*Stachys palustris*
Meadowsweet (summer to early autumn)	*Filipendula ulmaria*
Purple loosestrife (summer)	*Lythrum salicaria*
Water avens	*Geum rivale*
Water forget-me-not (summer to autumn)	*Myosotis scorpioides*
Water mint (summer to autumn)	*Mentha aquatica*

Plants marked * are hybrids or exotics that may be useful in gardens.