

Preliminary Ecological Appraisal
and Bat & Protected Species Survey

Bowling Green
Plymtree
Devon
EX15 2LF



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1.1 Introduction

It is proposed to build a residential eco-house within the garden of an existing residential property: 'Bowling Green', Plymtree, Devon. This will involve the loss of an extent of amenity grassland and a small extent hedgerow to improve site access.

1.2 Site Ecology

The site has potential for/supports:

- Amphibians – the hedgerows and amenity grassland provide suitable habitat for amphibian species. Further survey is recommended for the likely presence or absence of great crested newt;
- Badger – the site may provide foraging and dispersal habitat for badger (*Meles meles*);
- Bats – the habitats on and surrounding the site will provide feeding and dispersal habitat for bat species;
- Birds – the habitats on site provide nesting sites for bird species;
- Dormouse – the hedgerows on site are suitable to support dormice;
- Hedgehog – the site may provide foraging and dispersal habitat for hedgehog (*Erinaceus europeaus*); and,
- Reptiles – the habitats on site provide limited shelter and foraging opportunities for reptiles.

1.3 Further Survey

Further survey will be required to confirm the presence or absence of great crested newt.

1.4 Key Impacts & Mitigation Measures

The key impacts are:

- The removal of a small area of grassland and hedgerow, which will remove a limited extent of habitat suitable for dormice, hedgehog, reptiles, amphibians and birds; and,
- Construction and post-construction occupation of the site including external lighting, could further negatively impact upon species using the site, retained boundary vegetation and areas beyond the site.

Key mitigation measures, to include:

- Prior habitat management and removal to be informed by a Construction Ecological Management Plan (CEMP);
- Protection of retained habitats;
- Hedgerow removal to be undertaken with considerations/precautionary measures for amphibians, reptiles, active bird nests and dormice;
- Precautions with regards to the prior management and removal of site vegetation and site excavations; and,
- A sensitive lighting plan will be required to avoid illuminating retained and created habitats and any areas beyond the site.

Compensation and enhancement measures to include:

- Bat, bird and invertebrate provisions to be incorporated into the development (see Appendices 4, 5 & 6);
- New native hedgerow planting (separating the new property from the existing property);
- Creation of a pond on the eastern extent of the site; and,
- Creation of at least two habitat piles, consisting of logs, brash and/or grass cuttings 2 m², within a relatively undisturbed area/s of the site.

1.4 Conclusions

Subject to the results of the further survey, the proposed development represents an initial minor negative ecological impact, through removal of a limited extent of amenity grassland and hedgerow, and thus removal of habitat for amphibians, bats, badger, birds, reptiles and invertebrates.

Through implementation of ecology mitigation, compensation and enhancement measures, the proposal would represent a positive biodiversity impact, creating habitat for amphibians, bats, badger, birds, reptiles and invertebrates.

Local Planning Authority Check List & Biodiversity Budget

Habitat, Species & Feature	Potential Impact	Specific further survey:		Precautionary recommendations, avoidance, mitigation, compensation &/or enhancement	Biodiversity Budget: + or -
		required	complete		
Habitats	Removal of an extent of amenity grassland and hedgerow Potential for direct damage to retained hedgerows and/ or compaction/disturbance of ground/ tree root zones which could cause deterioration of individual trees and shrubs	No	N/A	The retained hedgerows and grassland are to be protected with tree protective measures during construction Landscaping to include hedgerow planting and new pond Future management of retained and created habitats to be informed by a Landscape Ecological Management Plan (LEMP) Works not to cause spread of non-native, invasive cotoneasters and pheasant berry	Neutral
Amphibians	Potential to injury amphibians and removal of amphibian habitat for construction	Yes	No	Nearby pond to be subjected to great crested newt Habitat Suitability Index (HSI) and/or eDNA tests (If great crested newt is present, a Natural England licence would be required prior to any habitat removal or disturbance) Continue to maintain the grassland with a short sward to encourage dispersal of amphibians Hedgerow removal to be undertaken sensitively, allowing dispersal of amphibians Creation of a pond on site and two habitat piles, consisting of logs, brash &/or grass cuttings, within relatively undisturbed area/s of the site	TBC
Bats	Removal of habitat Potential to discourage nocturnal activity of bat species	Yes	Yes	A wildlife sensitive lighting plan will be required Landscaping to include hedgerow planting and new pond The development is to include an inbuilt bat roosting provision (Appendix 4)	Neutral
Birds	Removal of habitat Potential to disturb active bird nests	No	N/A	Hedgerow removal to be undertaken outside the bird nesting season (bird nesting season is March to August, inclusively) or following a bird nesting check. Landscaping to include hedgerow planting and new pond The development is to include an inbuilt bird nesting provision (Appendix 5)	Neutral
Dormouse	Removal of habitat	No	No	Limited extent of hedgerow removal to be undertaken sensitively, allowing dispersal of dormice New native hedgerow planting	Neutral
Reptiles	Potential for injury to reptiles and removal of reptile habitat	Yes	Yes	Continue to maintain the grassland with short sward to encourage dispersal of reptiles Hedgerow removal to be undertaken sensitively, allowing dispersal of reptiles Creation of two habitat piles, consisting of logs, brash &/or grass cuttings, within relatively undisturbed area/s of the site	Neutral

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Habitat, Species & Feature	Potential Impact	Specific further survey:		Precautionary recommendations, avoidance, mitigation, compensation &/or enhancement	Biodiversity Budget: + or -
		required	complete		
Invertebrates	Removal of habitat	N/A	N/A	The development is to include an inbuilt bee provision at rate of 2 per residential unit (Appendix 6) Creation of two habitat piles, consisting of logs, brash &/or grass cuttings, within relatively undisturbed area/s of the site Landscaping to include hedgerow planting and new pond	Positive
Site excavations	Potential for any open excavations to cause entrapment and/or injury of mammal species e.g badger, hedgehog	No	N/A	Any excavations deeper or pipework, which are to remain open overnight, should be fenced or covered to prevent potential access by wildlife species	Neutral

For further reference see:

- Extended Phase 1 Habitat Map – Appendix 1;
- Constraints Plan – Appendix 2
- Mitigation & Enhancement Plan – Appendix 3

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2.1 Proposals

It is proposed to build a residential eco-house within the garden of an existing residential property, 'Bowling Green' with improved access. This will involve the loss of an extent of amenity grassland and a small extent hedgerow to improve site access.

2.2 Survey Objectives

The Preliminary Ecological Appraisal (PEA) was undertaken to consider and assess the perceived ecological impacts associated with the proposal, including any perceived impacts to:

- Legally protected species or species of conservation concern;
- Legally protected habitats or habitat of conservation concern;
- Any statutory or non-statutory sites of conservation interest; and,
- Opportunities to provide biodiversity enhancement(s).

2.3 Site Description

The site at Bowling Green is located on the eastern extent of the village of Plymtree. The immediate surroundings to the proposed development area include:

- Agricultural land to the north and east;
- A trackway, further bound by a hedgerow and agricultural land to the south; and,
- Residential housing to the west.

The survey area comprised of an extended garden including amenity grassland partially enclosed by native hedgerows with mature trees along the northern, southern, and eastern boundaries (Figure 1).

The western extent of the grassland formed a children's play area and vegetable garden. There were three small sheds located along the northern boundary. A ditch ran along the northern site boundary which was partial bound by wooden fencing.

Two wooden access gates were located on the southwest corner and along the eastern boundary. The survey site is approximately 0.17 ha. The area surveyed included the habitats within the site, boundary, the sheds, and the access lane.



Figure 1. The survey site outlined in red

3.1 Preliminary Ecological Appraisal

3.1.1 Scope of the Assessment

The zone of influence covers the extent of the site, the site boundaries, and areas directly adjacent to the site. The assessment considers designated sites, habitats, and species of importance for biodiversity conservation and protected species.

3.1.2 Desk Study

A desk-based review was undertaken for the proposed development area and its surroundings within 2 km, comprising of ecological data obtained from web-based resources.

3.1.3 Field Survey

The field survey comprises of a walkover assessment of the site using Phase 1 Habitat Survey methodology (JNCC, 1993 as amended by IEA, 1995). This is a standard technique for classifying and mapping British habitats.

The site survey was undertaken on 12th December 2021 by Andrew Charles and Erin Reardon. All areas within the site were surveyed and assessed for indicators of ecological value, including the presence or signs of any protected or rare habitats and species.

3.2 Building Inspections

The building survey comprised of internal and external inspection, conducted with the aid of head and hand-held torches, an endoscope, close-range binoculars, an extendable ladder and a digital camera.

The aim of the survey was to assess levels of use by bats through the presence of actual animals or their field signs, such as droppings, insect prey remains and/or urine staining, and the potential suitability of the buildings for roosting.

The presence of other protected species, notably nesting birds and barn owl/s, was also investigated, including the presence and behavior of any actual animals or their field signs, such as whitewash, pellets and or nest debris.

4.1 Desk Study

Statutory Designated Sites

There were no statutory designated sites identified within 2 km of the site.

Non-Statutory Designated Sites

The desk-based review identified five County Wildlife Sites (CWS) within 2 km of the site:

- Colliton Moor Wood CWS, a secondary broadleaved woodland with wet heath clearings, located ~1.9 km northeast of the site;
- Colliton Moor Wood CWS, wet heath habitat, located ~1.8 km northeast of the site;
- Stockland Woods CWS, wet secondary broadleaved woodland, unimproved marshy and semi-improved neutral grassland located ~1.6 km northeast of the site;
- Clyst William Cross CWS, an unimproved marshy grassland located ~1.8 east of the site; and,
- Luton Green CWS, a wet secondary broadleaved woodland and unimproved marshy grassland, located ~2.0 km southeast of the site.

Priority Habitats

Priority Habitat Inventory for lowland heathland is located ~1.9 km northeast of the site within the Colliton Moor Wood CWS. Small areas of Priority Habitat Inventory for lowland fens are located ~1.6 km within the Stockland Woods CWS. Small areas of Priority Habitat Inventory for Traditional Orchards were scattered around the site in all directions with the closest area located ~600 m southeast of the site. Similarly, small areas of Priority Habitat Inventory for deciduous woodland were scattered around the site in all directions with the closest area located ~ 160 m north of the site.

Consultation Zones

The desk-based review identified that the site lies within a great crested newt (*Triturus cristatus*) consultation zone.

4.2 Field Survey

Table 1. Environmental conditions on 12th December 2021

Temperature (°C)	Wind Speed (Beaufort Scale)	Cloud cover (%)	Precipitation	Sunset time
11	2	100	0	NA

Constraints on the survey:

The survey was undertaken in which may preclude summer annual botanical species. However botanical diversity was considered sufficient to classify and assess the habitats present.

4.2.1 Habitats

The site consisted of an amenity grassland enclosed by native hedgerows and short extends of wooden fencing. There was small vegetable patch enclosed by wooden fencing and a children's play area. An Extended Phase 1 Habitat Survey Map is provided in Appendix 1.

Amenity Grassland

The main site area consisted of short sward amenity grassland (Figures 2 & 3) dominated by perennial rye grass (*Lolium perenne*) and annual meadow grass (*Poa annua*) with Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*), creeping buttercup (*Ranunculus repens*), broadleaved dock (*Rumex obtusifolius*), St John's wort (*Hypericum perforatum*), hogweed (*Heracleum sphondylium*), bramble (*Rubus fruticosus*), nettle (*Urtica dioica*), tufted hair-grass (*Deschampsia cespitosa*), creeping thistle (*Cirsium arvense*), false brome (*Brachypodium sylvaticum*), violet (*Viola riviniana*), ground ivy (*Glechoma hederacea*), hedge woundwort (*Stachys sylvatica*), herb Robert (*Geranium robertianum*), and spear thistle (*Cirsium vulgare*).

There were a series of small trees planted throughout the amenity grassland including two small elms (*Ulmus minor*), three apple (*Malus x domestica*), and one plum tree (*Prunus sp.*).

There were several introduced shrubs present throughout this area including buddleia (*Buddleja davidii*), pampas grass (*Cortaderia selloana*), Cotoneaster (*Cotoneaster horizontalis*), and pheasant berry (*Leycesteria formosa*). Cotoneaster is a Schedule 9 non-native, invasive species.

Two log piles were located within the eastern side of the site (Appendix 1).



Figure 2. The amenity grassland with hedgerows along the northern and southern boundaries with two sheds along the north boundary. Photo updated in May 2022



Figure 3. The western aspect of the amenity grassland. Photo updated in May 2022

Hedgerows

The northern boundary is lined with a ~0.5 m deep ditch, hedgerow, and an extent of wooden fencing towards the western side of the hedge (Figure 4). The hedgerow was ~1.5 m high with an intermittent stand of broadleaved trees ~10 m high. Wooded species present including oak (*Quercus robur*), elm, elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), spindle (*Euonymus europaeus*), non-native cotoneaster (*Cotoneaster sp.*), blackthorn (*Prunus spinosa*), and dogrose (*Rosa canina*). Ground vegetation included bramble, hard fern (*Blechnum spicant*), fox glove (*Digitalis digitalis*), wall pennywort (*Umbilicus rupestris*), male fern (*Dryopteris filix-mas*), red campion (*Silene dioica*), nettle, and ivy (*Hedera helix*).

The southern and eastern site boundary is formed of a banked hedgerow with wooden access gates on each end, further bound by an unsurfaced green land (Figure 5). The grassland side of this hedgerow had a ~0.5 m high bank with vegetation ~2 m high and an intermittent stand of broadleaved trees ~12 m high. The bank on the green lane side of the hedge ranged from 0.5-1.5 m high with ~2 m high vegetation. Wooded species present included oak, ash, field maple (*Acer campestre*), holly (*Ilex aquifolium*), spindle, hazel (*Corylus avellana*), privet, (*Ligustrum vulgare*), and the non-native invasive hollyberry cotoneaster (*Cotoneaster bullatus*). Ground vegetation on the grassland side of the hedge included cleavers (*Galium aparine*), ivy, common pennywort (*Hydrocotyle vulgaris*), bramble, hard fern, fox glove, wall pennywort, male fern, red campion, nettle, ivy, cyclamen (*Cyclamen sp.*), periwinkle

(*Vinca major*), dog's mercury (*Mercurialis perennis*), and hart's tongue fern (*Asplenium scolopendrium*).



Figure 4. The hedgerow along the site's northern boundary



Figure 5. The hedgerow along the site's southern boundary and the bordering green lane

4.2.2 Building Descriptions

Shed 1 was single storey with wooden walls with a corrugated metal sloping roof (Figure 2). Potential bat access points were along the eaves of corrugated roof.

Shed 2 was single storey with breeze block walls with a flat corrugated roof. Potential bat access points were a small hole in the roof at the southwest corner and along the eaves of the corrugated roof (Figure 2).

Shed 3 was a single storey potting shed with wooden walls and sloping wooden roof. Positioned to the west of the fenced in vegetable patch (Figure 3).

In addition, there was a wooden climbing frame, a trampoline, and 2 ~1.5 m high plastic storage boxes sited along the western portion of the site (Figure 3).

4.3 Species

4.3.1 Amphibians

Common Species

The hedges, ditch and amenity grassland provide terrestrial habitat for amphibian species.

Great Crested Newt

The site is located within a consultation zone for great crested newt. The consultation zone is centred upon a great crested newt record located 3.6 km northeast of the site. Such zones extend for 5 km from existing and historical great crested newt recordings.

Two suitable waterbodies are known within 500 m of the site. In this instance, the ponds are located approximately 150 m and 200 m to the northeast and north of the site, respectively.

4.3.2 Badger

No badger setts are present within or in the immediate surroundings to the survey field, and field signs of badger activity were also absent. However, it is considered that badger/s are likely to frequent the site when dispersing and/or foraging.

4.3.3 Bats

Five European Protected Species Licences (EPSL) for bats were granted within 2 km of the site, which included species: common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long eared (*Plecotus auritus*), whiskered (*Myotis mystacinus*), and lesser horseshoe (*Rhinolophus hipposideros*). The closest EPSL was 1.4 km northwest of the site.

Bat Foraging & Dispersal

The hedges and trees provide foraging resources and commuting routes for bats.

Bat Roosting

None of the trees on site support any feature that could be utilised by roosting bats.

No field signs of bats or any other protected were identified in association with the three sheds on site.

4.3.4 Birds

The amenity grassland, hedgerow and trees will provide general habitat for birds.

The hedgerows and trees will provide nesting opportunities for birds.

4.3.5 Dormice

There are no EPSL for dormice within 2 km of the site.

The hedgerows on site, in combination with suitable habitat in the surrounding area, are likely to provide foraging resources and nesting opportunities for dormice.

4.3.6 Hedgehog

The hedgerows and amenity grassland areas may provide shelter and foraging resources for hedgehog.

4.3.7 Reptiles

The amenity grassland and hedgerows on site provide suitable habitat for reptiles, such as slow-worm, common lizard, and grass snake.

4.3.8 Non-native Invasive Species

Two species on site were identified as Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). These included hollyberry cotoneaster and *Cotoneaster* for which it is prohibited to cause to spread in the wild.

5.1 Proposed development

It is proposed to build a residential eco-house within the garden at Bowling Green with improved access. This will involve the loss of an extent of amenity grassland and a small extent hedgerow to improve site access.

5.2 Statutory & Non-statutory Designated Sites

There were no statutory designated sites within 2 km of the site. The desk study identified five non-statutory designated sites within 2 km of the site: Colliton Moor Wood CWS (two areas), Stockland Woods CWS, Clyst William Cross CWS, and Luton Green CWS.

It is considered that the proposal will not negatively impact any of these sites as they are separated from the site by roads and open countryside.

5.3 Amphibians

5.3.1 Great Crested Newt

The site is located within a consultation zone for great crested newt. The consultation zone extends from known/current great crested newt populations within East Devon.

The potential presence of great crested newt within the site would be dependent upon a suitable aquatic breeding habitat being present either within or in proximity to the site. Great crested newts are considered to typically travel up to 500 m to 1 km from breeding ponds, where habitat connectivity allows.

The OS map identifies two ponds located approximately 150 m to the northeast and 200 m to the north of the site. As such, this species could be present at the site during its terrestrial phase.

It is understood that the pond 150 m to the northeast was filled approximately 10 years ago. However, the habitat suitability of the pond 200 m to the north needs to be assessed to further consider the likely presence or absence of great crested newt.

Great crested newt is afforded protection under the UK Wildlife and Countryside Act 1981 (as amended) in Schedule 5, and the EC Habitats and Species Directive

(92/43/EC), enacted in the UK by the Conservation of Habitats and Species Regulations 2010.

This level of protection makes it illegal to:

- Deliberately capture, kill or injure great crested newt/s; and,
- Damage or destroy a breeding site or resting place (including aquatic and terrestrial habitat whilst great crested newts are or aren't present at the time).

It is understood that an extent of the hedgerow will be removed. Therefore, if great crested newt is present, the development would remove habitat for great crested newt, and could cause injury or harm to any great crested newts present at the time of the works.

If great crested newts are present, a European Protected Species License may be required to legally allow the removal of great crested newt terrestrial habitat and disturbance to great crested newts. Mitigation measures would also be required in association with the development in order to minimise any potential negative impact, with compensatory measures in order to ameliorate such impacts.

As such, the presence or likely absence of great crested is to be confirmed through a Habitat Suitability Index (HSI) been undertaken of the pond 200 m north of the site. Depending on the result of the HSI, eDNA and/or traditional great crested newt survey may be required to further confirm the presence or absence of great crested newt at the pond and potential development site.

Mitigation and compensation measures for great crested newt would be dependent on the results of the further assessment/survey. However, the creation of a pond onsite will create aquatic habitat for great crested newts and planting of new hedgerow will create terrestrial habitat for great crested newts.

5.3.2 Common Amphibians

The hedges, ditch and grassland are likely to provide terrestrial habitat for common amphibian species. The presence of common amphibian species is less dependent on the proximity of suitable aquatic breeding habitat, and species such as common frog, common toad, smooth newt and palmate newt may be present.

Common toad is listed upon the UK Biodiversity Action Plan (UK BAP) and must be considered through the planning process. This and further species of amphibian may be considered through the Natural Environment & Rural Communities Act (NERC) 2006, with public bodies, including LPAs, to ensure due regard to the conservation of biodiversity. Such considerations may seek to protect, re-establish or create habitat suitable for common and widespread reptiles and amphibians post-development.

It is understood that most of the hedgerows, ditch, and predominant area of the grassland will be retained. However, an extent of grassland and extent of hedgerow will be removed for the new housing and improved site access, which will remove habitat for amphibians.

Mitigation/compensation measures for amphibians are to include:

- Continued management of the amenity grassland;
- Sensitive clearance of the extent of hedgebank to be removed;
- Protection of retained lengths of hedgebank, ditch and grassland;
- The creation of habitat piles; and,
- New native hedge planting.

5.4 Badger

No evidence of badger is present on site. However, it is considered that badger/s are likely to frequent the site when dispersing and/or foraging.

Badgers are protected by the Protection of Badgers Act 1992 and the Wildlife and Countryside Act 1981 (as amended), Schedule 6. Under the Wildlife and Countryside Act it is illegal to intentionally kill, capture, injure or ill-treat any badger.

Precautionary measures should be employed to ensure no badgers are harmed or injured during the construction period of the development.

5.5 Bats

5.5.1 Roosting Bats

It is considered that there are no bat roosts within the buildings or trees on site.

5.5.2 Foraging and Dispersing Habitat:

The hedgerows and trees will provide suitable habitat for bat dispersal and foraging.

As a signatory to the Bonn Convention (Agreement on the Conservation of Bats in Europe) the UK has committed to protecting bat habitats, which necessitates the identification and protection from damage or disturbance of important feeding areas and commuting routes.

It is understood that the most hedgerows and amenity grassland are to be retained. However, an extent of grassland and limited extent of hedgerow will be removed for the new housing and improved site access, which will remove habitat for bats.

Mitigation/compensation measures for bat species are to include:

- A sensitive lighting plan;
- Protection of retained lengths of hedgebank and trees;
- New native hedge planting; and,
- The inclusion of inbuilt bat roosting provision/s incorporated into the development.

5.6 Bird Species

The amenity grassland, hedgerows, and trees are suitable foraging and nesting habitat birds.

All birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended by the CROW Act, 2000). Nesting is determined as being from when birds first initiate nest building up until the point when fledglings stop returning to the nest.

It is understood that the most hedgerows and amenity grassland are to be retained. However, an extent of grassland and limited extent of hedgerow will be removed for the new housing and improved site access, which will remove habitat for birds.

Mitigation/compensation measures for bird species are to include:

- Sensitive clearance of the extent of hedgebank to be removed;
- Protection of retained lengths of hedgebank and trees;
- New native hedge planting; and,
- The inclusion of inbuilt bird nesting provision/s incorporated into the development.

5.7 Dormouse

The hedgebank present on the site provides limited suitable habitat for dormouse. It is understood that a small section (approximately 5 m) of the hedgebank is to be removed in order to facilitate the construction of a hardstanding vehicle turning area.

Dormice are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2010. This makes it illegal to:

- Intentionally kill, injure, take, possess, sell or disturb a dormouse; and,
- Intentionally or recklessly damage, destroy or obstruct their place of shelter or protection (i.e. dormouse habitat).

The limited removal of hedgebank is not considered to prevent the potential continued occupation by dormice, although precautionary measures should be employed to ensure no undue disturbance is caused to individual dormice. This should include pre-managing vegetation in a sensitive manner and at a suitable time of the year, allowing dormice to disperse away from the length of hedgebank to be removed of their own accord.

Mitigation/compensation measures for dormice are to include:

- Sensitive clearance of the extent of hedgebank to be removed;
- A sensitive lighting plan;
- Protection of retained lengths of hedgebank and trees; and,
- New native hedge planting.

5.8 Hedgehog

It is likely that hedgehog are present on site.

Precautionary measures should be employed to ensure no hedgehogs are harmed or injured during the construction period of the development.

5.9 Reptiles

The amenity grassland and hedgerows on site provide suitable habitat to support reptiles.

Reptiles are protected against intentional killing and injury under the Wildlife and Countryside Act 1981 (as amended). Natural England states that activities such as

site investigations, site clearance and movements of machinery may breach this legislation by causing death or injury to reptiles (English Nature 2004).

It is understood that most of the hedgerows, ditch, and dominant area of the grassland will be retained. However, an extent of grassland and limited extent of hedgerow will be removed for the new housing and improved site access which will remove habitat for reptiles.

Mitigation/compensation measures for reptiles are to include:

- Continued management of the amenity grassland;
- Sensitive clearance of the extent of hedgebank to be removed;
- Protection of retained lengths of hedgebank, ditch and grassland;
- The creation of habitat piles; and,
- New native hedge planting.

5.10 Invasive Species

Hollyberry cotoneaster and Cotoneaster listed as invasive species upon Schedule 9 of the Wildlife and Countryside Act 1981, were identified in the amenity grassland and in the southern hedgerow.

As invasive non-native plant species, these species should not be caused to spread in the wild.

6.1 Further Survey

Further survey will be required to confirm the presence or likely absence of great crested newt. The survey would be required to specifically identify any extent of required mitigation or compensation.

A great crested newt Habitat Suitability Index (HSI) will need to be undertaken of the pond 200 m to the north of the site. If the pond is suitable to support great crested newt, then an eDNA survey may be required, including collection of a water sample taken between mid-April to the end of June.

6.2 Recommendations for Avoidance/Mitigation of Ecological Impacts

6.2.1 Amenity Grassland Habitat Removal

The grassland should continue to be managed at a short sward to discourage establishment/encourage dispersal of amphibians and reptiles.

6.2.2 Hedgerow Habitat Removal

The extent of hedgebank to be removed will require considerations for amphibians, reptiles, active bird nests and dormice.

The wooded vegetation should be initially removed using hand tools (chainsaw, brush cutter etc.) during September or October inclusive (during the combined active period for dormouse, amphibians and reptiles, while outside of the bird nesting season).

Alternatively, the wooded vegetation may be removed during April to August, following a nesting bird check and confirmation that no active bird nests are present (if an active nest was present, the nest and hedge would need to remain undisturbed until nesting was complete).

Following removal of the wooded vegetation, the bank should remain undisturbed for 48 hours, allowing any remaining species to disperse. After this time the extent of hedgebank to be removed may be mechanically cleared as required.

6.2.3 Retained Hedgerow, Tree & Grassland Protective Measures

The retained hedgerows, trees and grassland are to be protected with tree protective measures during construction.

This is to avoid direct damage to the grassland, shrubs and trees, through the compaction and disturbance of the ground or root protection zones which could cause deterioration of the grassland, shrubs and trees. This measure will also protect potential habitat for bats, nesting and foraging birds, amphibians and reptiles.

6.2.4 Site Excavations

As a precautionary measure during the construction works, any excavations or pipework, which are to remain open overnight, should be fenced or covered to prevent potential entrapment and/or injury of species such as hedgehog or badger.

6.2.5 Sensitive Lighting Plan

A sensitive lighting plan will need to be formulated and specifically avoiding illuminating any retained or created habitats, and any areas beyond the site. This will be required to potentially avoid deterring nocturnal activity for bats.

Artificial lighting should specifically be positioned and designed to minimise illumination of the peripheries of the development areas, including the retained, hedgerows, ditch, any additional ecological habitat or any habitats beyond the site.

Lighting must be kept at the minimum height permissible. LED and/or low-pressure sodium lamps with glass glazing should be utilised instead of mercury or metal halide lamps. This type of lighting can be utilised more directionally and will reduce the range of light wavelengths emitted thus significantly reducing the levels of UV light which may attract increased levels of invertebrate bat prey items. Such light should be positioned to only illuminate the required areas, limiting light spill, both horizontally and vertically beyond the site. Additionally, hoods, cowls, louvers and/or shields may be utilised to further direct any lighting.

6.2.6 Invasive Species

The proposed plan could potentially cause spread of Hollyberry cotoneaster and Cotoneaster, through disturbance or spreading fragments of the plant roots. Therefore, any excavated material and or movement of machinery must ensure these species are not translocated offsite.

6.3 Ecology Compensation & Enhancement Measures:

The National Planning Policy Framework (NPPF, 2019) outlines the Government's commitment to minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

The required compensation and enhancements include:

- Bat, bird and invertebrate provisions to be incorporated into the development (see Appendices 4, 5 & 6);
- New native hedgerow planting (separating the new property from the existing property); and,
- Creation of at least two habitat piles, consisting of logs, brash and/or grass cuttings 2 m², within a relatively undisturbed area/s of the site.

The above-required compensation and enhancement measures should be illustrated on landscape plan(s), proposed plans and/ or elevation drawings, where appropriate.

6.4 Compliance Monitoring

The development should include a pre-commencement site meeting and subsequent compliance monitoring visits, undertaken and recorded by a suitably qualified and pre-appointed ecologist. Such visits would be required to confirm adherence to recommendations/ constraints and implementation of ecological mitigation and enhancement recommendations.

6.5 Conclusion

Subject to the results of the further survey, the proposed development represents an initial minor negative ecological impact, through removal of a limited extent of amenity grassland and hedgerow, and thus removal of habitat for amphibians, bats, badger, birds, reptiles and invertebrates.

Through implementation of ecology mitigation, compensation and enhancement measures, the proposal would represent a positive biodiversity impact, creating habitat for amphibians, bats, badger, birds, reptiles and invertebrates.

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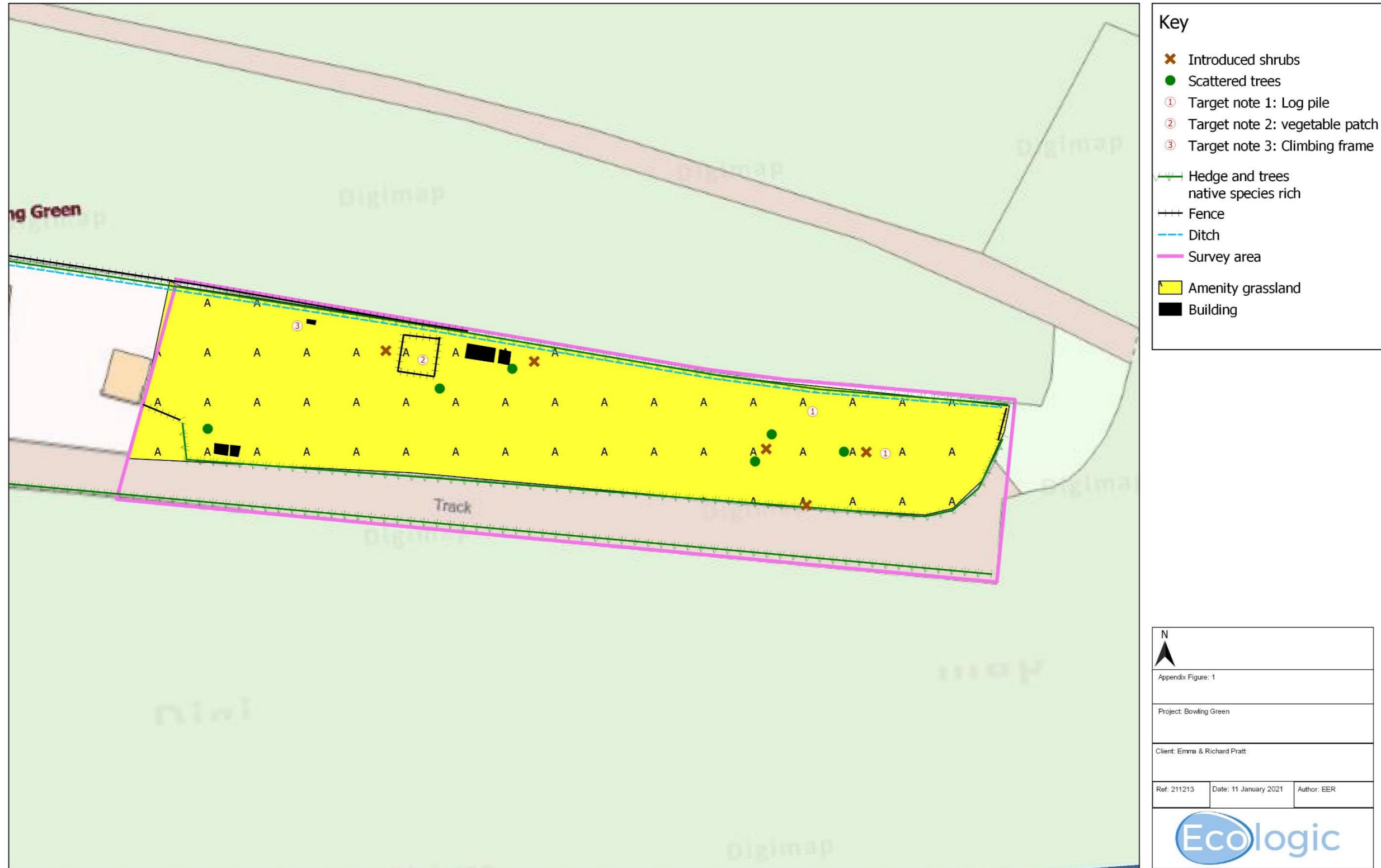
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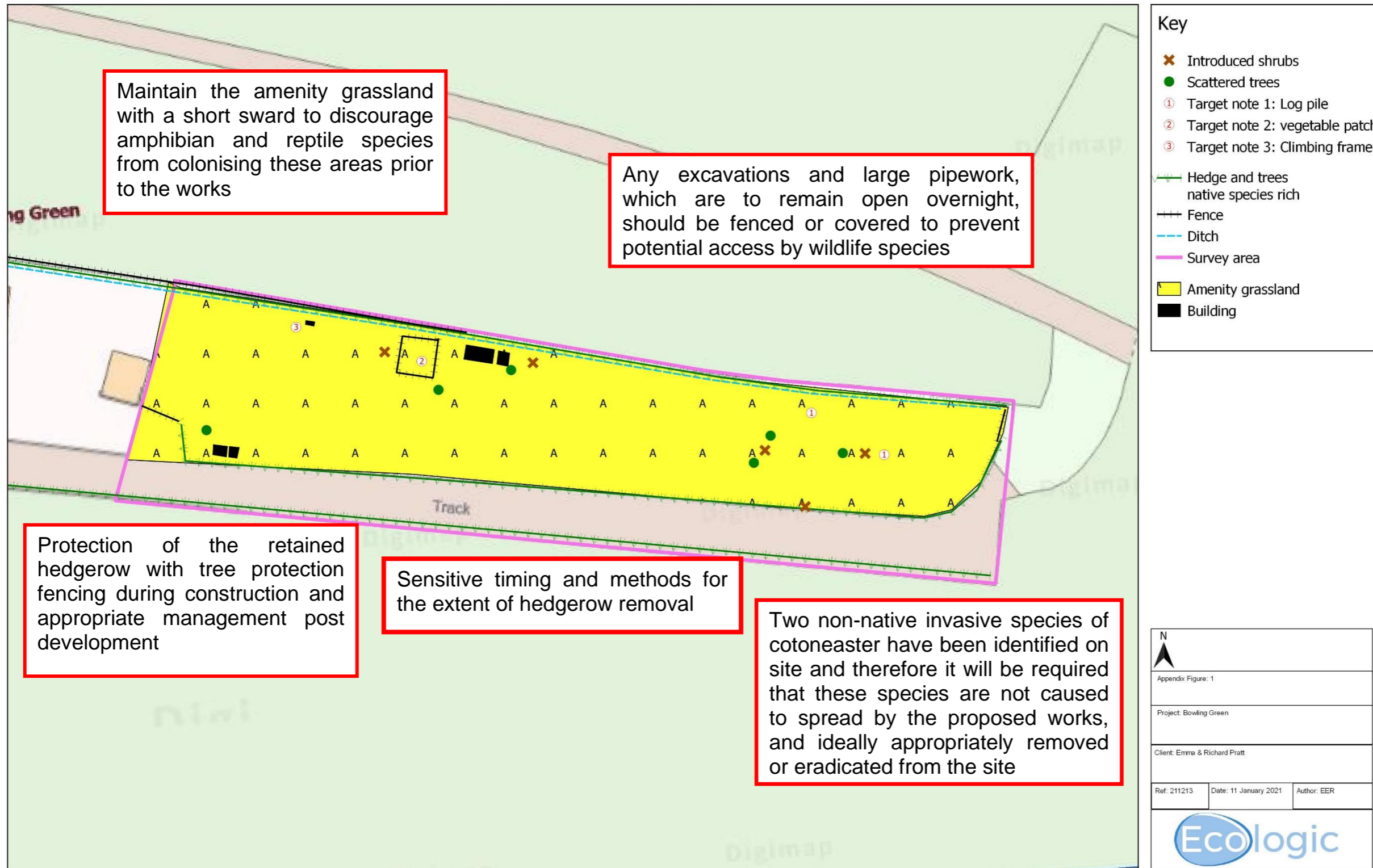
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APPENDICES

- Appendix 1: Extended Phase 1 Habitat Survey Map
- Appendix 2: Constraints Plan
- Appendix 3: Opportunities and Mitigation Plan
- Appendix 4: Examples of Bat Roosting Provisions
- Appendix 5: Examples of Bird Nesting Provisions
- Appendix 6: Example of Bee Bricks
- Appendix 7: Example of Hedgerow/tree Protection Fencing





Schwegler 1FE Bat Access Panel with Optional Back Panel

Material: Woodcrete (75 % wood sawdust, concrete and clay mixture)

Width: 300 mm

Height: 300 mm

Depth: 80 mm

Weight: 7.8 kg

Entrance: 20 mm slit



Position: Within external walls with a southerly aspect, beneath eaves or approximately 3m or higher from ground level.

Additional Information: Installation of access panel alone would allow bats to access into a building, potentially into a cavity wall spaces or loft spaces.

By fitting the optional back panel, the Schwegler 1FE becomes a self-contained bat roosting unit at the dimensions shown above.

Schwegler 1FR Bat Tube

Material: Woodcrete (75% wood sawdust, concrete and clay mixture)

Width: 200 mm

Height: 475 mm

Depth: 125 mm

Entrance Width: 150 mm

Entrance Depth: 20 mm

Weight: 9.5 kg



Position: Within external walls with a southerly aspect, beneath eaves or approximately 3m or higher from ground level.

Segovia Build-In Woodstone Bat Box

Designed to be built into a wall with the entrance face at the front, remaining exposed and visible. The boxes have removable sides so that an extension box can be placed next to this box, to create a larger roosting space.

Dimensions: 21 x 17 x 50 cm.



Ibstock Enclosed Bat Box 'B'

Available in red, buff and blue brick finish, and two sizes:

	Small	Large
Height:	215 mm	290 mm
Width:	215 mm	215 mm
Depth:	105 mm	105 mm
Weight:	5.8 kg	8 kg

Position: Within external walls with a southerly aspect, beneath eaves or approximately 3m or higher from ground level.

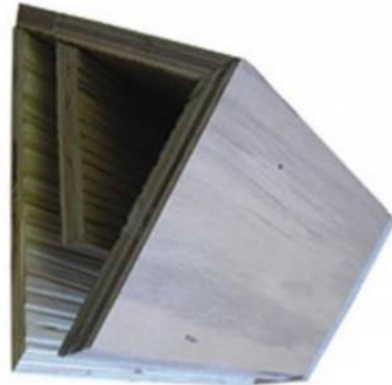


Soffit Bat Box

Dimensions: 30 cm long with a 2 cm entrance slot.

Entrance slot is 20 mm
Length of the roost 330 mm
Height of the roost at the highest point is 250 mm and the lowest is 140 mm
Manufactured from 12-18 mm FSC hardwood exterior plywood

Position: Above the soffit on a standard roof structure. The entrance is formed by cutting away a 20 mm slot in the back of the soffit board against the external wall, and a specially designed plate is then screwed through into the bat box to secure it and to make it a tidy finish.



For additional information & additional bat roost provision options please refer to the following websites:

www.wildcare.co.uk

www.nhbs.com

Schwegler 1SP Sparrow Terrace

Suitable for: House sparrows and individual blue & great tits

Material: Woodcrete

Height: 245mm

Width: 430mm

Depth: 300mm

Weight: 7kg

Position: At a height of at least 2m within/ upon an external wall



Schwegler Swift Nesting Boxes

Suitable for: Common swifts.

Material: Woodcrete

Height: 240mm

Width: 180mm

Depth: 180mm

Weight: 7.3Kg

Entrance hole: 55 x 33

Position: Within external walls with a northerly aspect, beneath eaves, at a height of 2m or above



Schwegler House Martin Nesting Cups

Suitable for: House martins

Material: Woodcrete with stainless steel fittings

Height: 175mm

Width: 430mm

Depth: 175mm

Weight: 5.5Kg

Positioning: On unobstructed walls directly beneath eaves, at a height of 2m or above



For additional information & additional bird nesting provision options please refer to the following websites:

www.wildcare.co.uk

www.nhbs.com

Bee Brick

Each bee brick includes nesting compartments for solitary nesting bees, including for egg laying and hibernation.

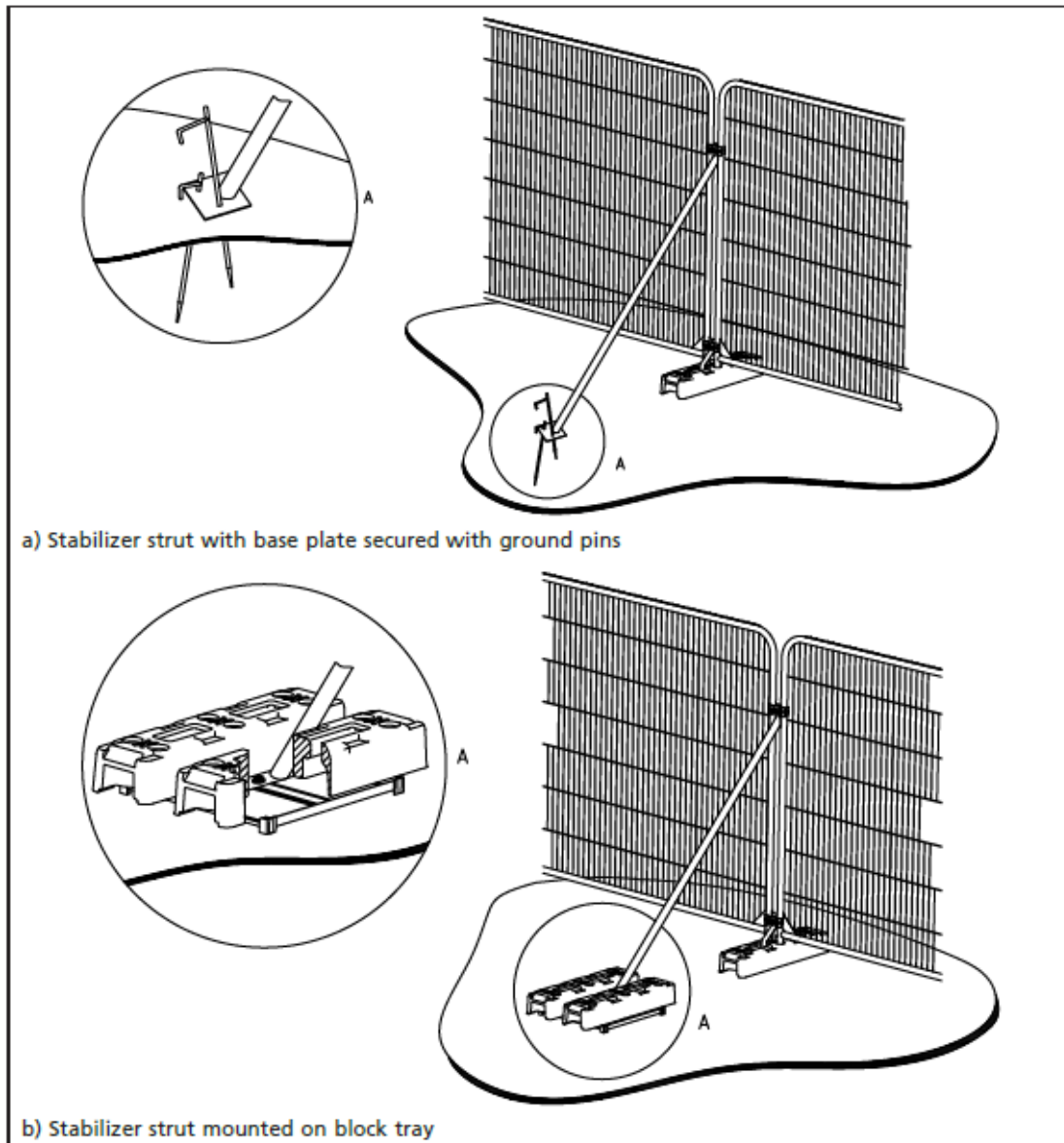
Bee bricks to be positioned within southerly elevations, which includes part or full sun, between 1 m to 2 m above ground level, and ideally facing garden or boundary habitats.



Bee Brick - case in concrete: 215mm x 105mm x 65mm
<http://greenandbluebuild.co.uk/product/bee-brick/>



Bee brick & bee block incorporated into an external brick wall



- Two-meter-high welded mesh panels on rubber or concrete feet.
- Fence panels joined together using a minimum of 2 anti-tamper couplers, installed so that they can only be removed from the inside of the fence
- The distance between fence couplers should be at least 1 m and be uniform throughout the fence-line
- Fence should be supported on the inner side by stabilizer struts, which should be attached to a base-plate with ground pins
- Stabilizer pins should be mounted on a block tray where ground pins are unsuitable due to hard surfaces or otherwise unfeasible
- All weather notices should be attached to the fence stating words to the effect of “Construction Exclusion Zone – No Access”