

Ecology Services

Paul R Gregory CEcol MCIEEM
840 Wolseley Road
Plymouth
Devon PL5 1JU
Tel: 07766462273
Email: pgregory1967@googlemail.com
Website: www.ecologyservicessw.com
 facebook.com/ecologyservicessw

Land adjacent Landulph Church
Landulph Parish Council
Landulph
Saltash
Cornwall
PL12 6NG

Landulph Duchess Green, Saltash
Ecology Enhancement Options Plan and
Landscape Ecology Management Plan (LEMP)

Grid Reference: SX 43200 61449

January 2024

Report by

Paul Gregory BSc (*Hons*), MSc, CEcol, CEnv, MCIEEM, MRSB, Mem.MBA



Chartered
Institute of
Ecology and
Environmental
Management

Contents

1.	Introduction and Background	3
2.	Ecological Enhancement Options Plan	8
3.	Landscape Ecology Management Plan (LEMP)	12
4.	Additional Comments	13
5.	Biodiversity Budget	14
6.	Maintenance Tables	16
7.	References	25
8.	Images	26
9.	Field Survey Sheets (Notes)	28

1. Introduction and Background

Ecology Services was commissioned to produce an Ecological Enhancement Options Plan including Landscape Ecology Management Plan (LEMP) for Landulph Duchess Green, Saltash, Cornwall, PL12 6NG.

The report is to support the creation of a community park for recreational purposes, and as a place to 'connect with nature' for Landulph Parish Council and community. The enhancement of a greenspace for biodiversity is not part of a planning application and is of the sole use by Landulph Parish Council and community.

However, Ecology Services has prepared the report with respect to the National Planning Policy Framework (NPPF); paragraphs 174 and 175, and the Cornwall Local Plan Strategic Policies 2010 – 2030; Policy 23: Natural Environment.

An ecological walk-over survey was undertaken on the 05/01/2023 to identify and classify the habitats on-site and to identify the potential to support any protected and/or notable species that maybe present on-site.

The c. 0.75ha site is located adjacent Landulph Church: Grid Reference: SX 43200 61449; and consists of an improved grassland field, species-rich and species-poor hedgerows, tree-lines, with 'carr' woodland or wet woodland and marshy grassland. The marshy grassland is due to siltation and vegetation encroachment of standing water.

The Ecological Enhancement Options Plan and LEMP document comprises a set of objectives and actions on how to best manage the ecological resources within the site and increase the biodiversity value in relation to what exists at present. The prescriptions and options recommended for the site are based on background knowledge of the site, brief desk study and site walk-over.

The Landscape Ecology Management Plan (LEMP), initially covers a five-year period. The LEMP has been produced in table format for the maintenance of the existing and the creation of new habitats and feature options within the site. Maintenance for these habitats and features are located within the Landscape Ecology Management Plan (LEMP).

Recommendations/options for ecological enhancement and restoration have been put forward for the habitats on-site, to include, grassland and hedgerow enhancement, pond creation/restoration and the creation of a wildflower meadow and existing improved grassland (bulb) planting and a small orchard of local providence. Biodiversity enhancements also includes, the provision for bat, bird and mammal nest/roosting boxes, insect boxes, hibernacula, and potential bee hives.

A qualitative biodiversity budget has also been included within the document, which achieves a positive biodiversity net-gain in relation to the project.

The report is to be seen as a working document, where enhancement prescriptions may be altered from time to time in relation to evolving conservation objectives and site conditions.

Code of Professional Conduct

The information which we have prepared is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

BS 42020:2013

The document has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of practice for planning and development.

Validity of Survey Data and Report

The report is a working document and should be up-dated accordingly as and when it seen fit. A suitably qualified ecologist should be consulted in relation to additional options and future monitoring.

Author

The EMES has been undertaken by Paul R. Gregory of Ecology Services. Paul R. Gregory is a member of the Chartered Institute of Ecology and Environmental Management (CIEEM), Chartered Environmentalist (CEnv) and Chartered Ecologist (CEcol), and subject to the CIEEM Professional Code of Conduct.

Paul Gregory BSc (*Hons*), MSc, CEcol, CEnv, MCIEEM, MRSB, Mem.MBA



Site description

The site is approximately 0.75 ha of improved grassland field, species-rich and species-poor hedgerows, tree-lines and wetland, with woodland 'car' or wet woodland and marshy grassland. The site is located adjacent Landulph Church: Grid Reference: SX 43200 61449 (Figures 1 and 2).

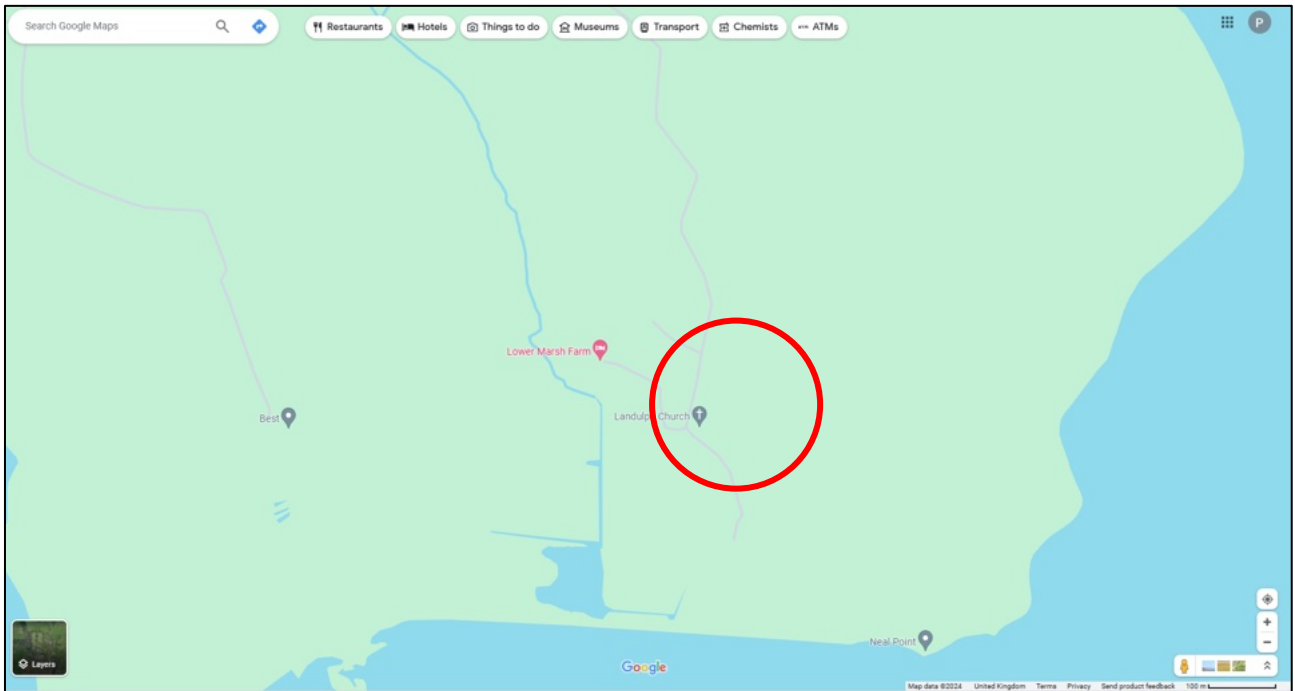


Figure 1. Site location. — Google®.



Figure 2. Location plan boundary — Google®.

Habitat description

Habitats were classified using the Phase 1 Habitat Survey methodology developed by the Joint Nature Conservation Committee (JNCC, 2010), which was pre-modified by the Institute of Environmental Assessment (IEA, 1995). The main plant species were recorded, and broad habitat types classified. Plant species were identified according to Stace (1997). The habitats were also classified using UK Habitat Classification Version 2.01 (2023): [ukhab – UK Habitat Classification](#). This classification system is used in relation to Biodiversity Net Gain (BNG): [Calculate biodiversity value using the biodiversity metric - GOV.UK \(www.gov.uk\)](#).

Habitat Description (based on JNCC Phase 1 habitat descriptions). Habitats present within the site included:

- Improved grassland (Habitat codes: B4 I).
- Species-rich hedgerow with trees (Habitat codes: J2.3.1 RHT).
- Species-poor hedgerow with trees (Habitat codes: J2.3.2 PHT).
- Semi-natural broadleaved woodland (wet); (Habitat codes: JA1.1.1 BW)
- Marsh/marshy grassland (Habitat codes: B5 MG).

Habitat Description (based on UK Habitat Classification habitat descriptions). Habitats present within the site included:

- Modified other neutral grassland (Habitat codes: g4).
- Native species-rich hedgerow with trees (Habitat codes: h2a): **Priority habitat***
- Native species-poor hedgerow with trees (Habitat codes:h2b).
- Wet woodland (Habitat codes: w1d): **Priority habitat***
- Marshy/marshy grassland, (which is due to siltation and vegetation of standing water) (Habitat codes: g1^).

* [Habitat Classification Systems: UK BAP Broad & Priority Habitats | CIEEM](#)

The habitat descriptions used throughout this document used the JNCC Phase 1 habitat classification.

Habitat overview

The majority of the site consists of an improved grassland field with species-rich, species-poor hedgerows, and tree-lines, with 'carr' woodland or wet woodland along the boundaries. Marshy grassland, (which is due to siltation and vegetation encroachment of standing water) occurs at the southern boundary.

Habitats

Improved grassland

The improved grassland field is dominated by perennial rye-grass (*Lolium perenne*), broad-leaved dock (*Rumex obtusifolius*) and chickweed (*Stellaria media*).

Species-rich hedgerows with trees

The hedgerow consisted of common hazel (*Corylus avellana*), common ash (*Fraxinus excelsior*), grey willow (*Salix cinerea* subsp. *oleifolia*), holly (*Ilex aquifolium*), common hawthorn (*Crataegus monogyna*), common sycamore (*Acer pseudoplatanus*), blackthorn (*Prunus spinosa*), English oak (*Quercus robur*), field elm, (*Ulmus minor*), common beech (*Fagus sylvatica*), European gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.); with a field layer of cock's-foot grass (*Dactylis glomerata*), false oat-grass (*Arrhenatherum elatius*), common ivy (*Hedera helix*), bracken (*Pteridium aquilinum*), hogweed (*Heracleum sphondylium*), Yorkshire fog (*Holcus lanatus*) creeping buttercup (*Ranunculus repens*), herb-Robert (*Geranium robertianum*), hedge bedstraw (*Galium mollugo*), dog rose (*Rosa canina*), heart's tongue fern (*Asplenium scolopendrium*), male-fern (*Dryopteris filix-mas*), common polypody (*Polypodium vulgare*), stinking Iris (*Iris foetidissima*), barren brome (*Anisantha sterilis*), cleavers (*Galium aparine*), common nettle (*Urtica dioica*), creeping thistle (*Cirsium vulgare*), wood sage (*Teucrium scorodonia*), common ragwort (*Senecio jacobaea*), germander speedwell (*Veronica chamaedrys*), honeysuckle (*Lonicera periclymenum*), red campion (*Silene dioica*), hedge bindweed and (*Calystegia sepium*).

Species-poor hedgerow with trees

Same species as Species-rich hedgerow with trees as above, but dominated with mature Leyland cypress (*Cupressus × leylandii*) and cherry laurel (*Prunus laurocerasus*).

Although surveyed outside the optimal botanical season, bluebell (*Hyacinthoides non-scripta*) and primrose (*Primula vulgaris*) would be expected to be present in both hedgerow habitats.

Semi-natural broadleaved woodland (wet) and Marsh/marshy grassland

This habitat has been combined and included as a 'mosaic' as the most appropriate description of the habitat present. Grey willow (*Salix* spp.) is the dominant woodland component with a singular stand of butterfly-bush (*Buddleja davidii*). The marshy grassland component consisted of lesser burdock (*Arctium minus*), pendulous sedge (*Carex pendula*), soft rush (*Juncus effusus*), wild angelica (*Angelica sylvestris*), common reed (*Phragmites australis*), bulrush (*Typha latifolia*), floating sweet-grass (*Glyceria fluitans*), fool's-water-cress (*Apium nodiflorum*) and common duckweed (*Lemna minor*).

Potential to support protected and/or notable species

The Species-rich and species-poor hedgerow with trees and Semi-natural broadleaved woodland (wet) and Marsh/marshy grassland have the potential to support:

- Nesting and roosting birds
- Roosting bats
- Dormice
- Hedgehog
- Reptiles and amphibians

Ecology Enhancement Options Plan

Recommendations/options for ecological enhancement and restoration have been put forward for the habitats on-site, to include, grassland and hedgerow enhancement, pond creation/restoration and the creation of a wildflower meadow, existing improved grassland (bulb) planting and a small orchard of local providence. To increase the biodiversity of the site in relation to what occurs at present, it is recommended that bat, bird and mammal nest/roosting boxes, insect boxes, reptile and amphibian hibernacula and potential bee hives are installed.

Enhancing existing grassland

The existing improved grassland is dominated by perennial rye-grass, which is the grass species that is prominent in most lawns, amenity grassland. Therefore, to increase the biodiversity of this habitat and benefit wildlife, the grassland maybe enhanced by incorporating wildflower bulb planting. Areas of wildflower bulb planting should be incorporated into the landscape design of the proposed development. Planting should be maintained in areas where there is minimal shade. Species should include native species of local providence, such as wild daffodil (*Narcissus pseudonarcissus*), and common snowdrop (*Galanthus nivalis*). The proposed wildflower bulb planting will increase the value of the habitat to invertebrates, and subsequently foraging bats, insectivorous birds and mammals. Snowdrops bulbs should be planted in aggregates of 100 per m², whilst wild daffodil should be planted in aggregates of 50 per m². Example of suppliers that can supply sufficient quantities of wildflower bulbs: <http://www.wildflowersuk.com/details.asp?ID=44>

Enhancing existing hedgerows with trees

Existing hedgerows with trees on-site are to be retained and enhanced. Further planting and enhancement would increase the biodiversity of this habitat and benefit wildlife. The planting should include sourced tree and shrub species of local, Devon provenance, as these are more suitable to the climatic and soil conditions, more resistant to bacterial and fungal infections and therefore more likely to be successful. They have a greater insect diversity associated with them and are of similar genetic stock to those within the local area. Saplings should ideally have been grown in peat free compost and this should be requested, even if not readily available.

The following native tree species should be incorporated into the planting schedule. Suitable species of local character should include English oak (*Quercus robur*), common holly (*Ilex aquifolium*), common hazel (*Corylus avellana*) and crab apple (*Malus sylvestris*). Trees should be planted no less than 5 m apart. Native shrub species should include, species such as spindle (*Euonymus europaeus*), alder buckthorn (*Frangula alnus*) and guelder-rose (*Viburnum opulus*). These will supply food for insects during the summer and food for birds during the autumn and early winter periods. Exact quantities of trees and shrubs required should be assessed by the appointed landscape architect/contractor. [New Wood Trees - British Grown Multi-stem Trees](#)

Pond creation/restoration

The marshy grassland component of the semi-natural broadleaved woodland (wet) and marsh/marshy grassland habitat, has evolved due to siltation and vegetation encroachment of standing water. Standing water or pond creation/restoration maybe created by dredging with the aid a mechanical 'digger'. Enhancement would increase the biodiversity of this

habitat and benefit wildlife. The pond, once dredged, should be left to colonize 'naturally'. However, if desired planting aquatic and marginal vegetation should include, reed sweet-grass (*Glyceria maxima*), flowering rush (*Butomus umbellatus*), brooklime (*Veronica beccabunga*), water plantain (*Alisma plantago-aquatica*), branched bur-reed (*Sparganium erectum*), ivy-leaved crowfoot (*Ranunculus hederaceus*), pondweed sp. (*Potamogeton* sp.) - make sure *Potamogeton* is native; yellow loosestrife (*Lysimachia vulgaris*), purple-loosestrife (*Lythrum salicaria*), meadowsweet (*Filipendula ulmaria*) and yellow iris (*Iris pseudacorus*). Links to the construction of wildlife ponds and stocking with emergent and aquatic native plants is located here: [How to build a pond | The Wildlife Trusts](#), [Dig for glory with a large pond | The RSPB](#) and [Pond Creation Toolkit - Freshwater Habitats Trust](#)

The inclusion of log or habitat piles from deadwood, boulders, rocks and large stones to create microhabitats and contoured substrate (5cm to 15cm) to increase topographical relief around the margins of the pond and wetland will greatly increase the ecological value and biodiversity of this habitat.

Please note: 'On no account must fish be introduced into the pond as this will significantly reduce the wildlife value of this habitat'.

Wildflower meadow creation

Wildflower meadows maybe created in areas on-site within the improved grassland. These maybe created in 'scalped' areas that are least frequented by people or least disturbed. Wildflower meadow creation would increase the biodiversity of this habitat and benefit wildlife. Seeding should include wildflower species of local, Devon provenance, as these are more suitable to the climatic and soil conditions, more resistant to bacterial and fungal infections and therefore more likely to be successful. They have a greater insect diversity associated with them and are of similar genetic stock to those within the local area.

Mixes may be made to order or be a general mix and contain 20% herbaceous wild flora and 80% wild grasses by weight. Twenty percent wildflowers may contain, yellow rattle (*Rhinanthus minor*), catsear (*Hypochaeris radicata*), rough hawkbit (*Leontodon hispidus*), wild red clover (*Trifolium pratense*), wild white clover (*Trifolium repens*), common spotted orchid (*Dactylorhiza fuchsia*), lesser stitchwort (*Stellaria graminea*), field forget-me-not (*Myosotis arvensis*), corky-fruited water dropwort (*Oenanthe pimpinelloides*), common knapweed (*Centaurea nigra*), birdsfoot trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*), meadow buttercup (*Ranunculus acris*) and red sorrel (*Rumex acetosella*). Eighty percent of grasses may contain, 8% smooth stalked meadow grass, 4% sweet vernal grass, 2% quaking grass, 16% crested dog's-tail, 16% sheep's fescue, 16% chewing's fescue, 8% slender red fescue, 4% meadow barley, 4% yellow oat-grass and 2% rough bent. A suitable wildflower local species mix suitable for the area maybe obtained here:

[Devon Meadow Mix | British Wildflower Meadow Seed | Habitat Aid](#)

Small orchard

A small orchard planted with 'traditional' fruit varieties of local provenance to the southwest would benefit and compliment the park, its community and pollinating insects. Traditional fruit varieties for the southwest maybe obtained here: [South West England | UK Orchard Network](#).

Additional tree species that benefit pollinators include, fruit trees (plum, cherry, almond, blackthorn and apricot (*Prunus*); apple, crabapple (*malus*); and pear (*Pyrus*): [AIPP-Farmland-Orchards-2023-WEB.pdf \(pollinators.ie\)](#)

Bat, bird, (inc. barn owl) and insect boxes, hedgehog, dormouse and insect boxes, reptile and amphibian hibernacula construction and installation of bee hives.

Bat and bird boxes should be installed on the mature trees located along the boundaries of the site. Boxes should be erected on the east or southeast side of the trees above 4m off the ground. The positioning and installation of the boxes should be supervised by an ecologist and not by a contractor to be most effective. This would be undertaken by aerial tree climbing, Mechanical Elevated Work Platform (MEWP) or ladders.

All bat and bird boxes should be made of 'Woodcrete', which consist of a sawdust and concrete impregnated material, and have the highest occupation rates of all box types in relation to bats. They are carefully designed to mimic natural birds nest sites and provide a stable environment for chick rearing and winter roosting. The boxes are expected to last approximately 25 – 50 years before needing to be replaced, and have low maintenance requirements. Links to commercially available boxes can be located here: [Bat Boxes | Practical Conservation Equipment | NHBS](#) and [Bird Boxes by Species | NHBS Practical Conservation Equipment](#) or may be constructed using DIY materials if available and undertaken as community or local school projects. See section, Building your own wildlife habitats.



1FF Schwegler bat box.



2FN Schwegler bat box.



1B Schwegler bird nest box.

A barn owl (*Tyto alba*) box would also be of benefit to barn owls as they are known to frequent the areas. Boxes should be erected on the east or southeast side of the trees above 4m off the ground. The positioning and installation of the boxes should be supervised by an ecologist and not by a contractor to be most effective. This would be undertaken by aerial tree climbing, Mechanical Elevated Work Platform (MEWP) or ladders. See links: [Conserving the Barn Owl and its environment \(barnowltrust.org.uk\)](#) and [Flat-Pack Barn Owl Nest Box | NHBS Practical Conservation Equipment](#).



Barn owl box.

Dormouse box.

Hedgehog boxes are also recommended. These offer shelter and nesting availability and should be located in quiet areas along linear boundaries and supplied with bedding. Links to commercially available boxes can be located here: [Hedgehog Boxes | NHBS Practical Conservation Equipment](#) and [Buy products for Hedgehogs online | CJ Wildlife \(birdfood.co.uk\)](#) or may be constructed using DIY materials if available. See section, Building your own wildlife habitats.



Hedgehog box.



Bee bricks.



Bee hive.

Dormouse boxes

Suitable habitat occurs on-site for potential dormouse presence, such as species-rich and species-poor hedgerows and trees. Therefore, the inclusion of dormouse boxes would be of benefit for this species and increase the ecological value and biodiversity of the site. Example of dormouse boxes, see links to commercially available boxes:

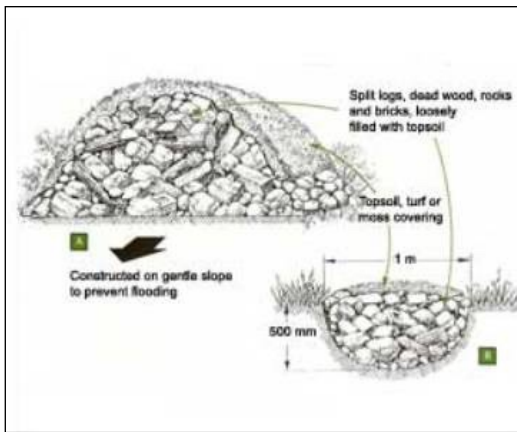
https://www.nhbs.com/standard-dormouse-nest-box?bkfno=252945&ca_id=1495&adlocale=uk&gad_source=1&gclid=EAlaIQobChMlv_Oe_n_rNgwMVBplQBh12XwgCEAQYASABEqJExvD_BwE. See also: [National Dormouse Monitoring Programme \(NDMP\) \(ptes.org\)](#)

Insect boxes

Insect boxes, hotels and/or bee brick should be located around the site in prominent sunny areas. The bee bricks require zero maintenance was installed. Example of bee bricks, see links to commercially available boxes: <http://greenandbluebuild.co.uk/> and [Insect Boxes | NHBS Practical Conservation Equipment](#), or may be constructed using DIY materials if available. See section, Building your own wildlife habitats.

Reptile and amphibian hibernacula

Reptile and amphibian hibernacula would provide shelter and hibernation sites for reptile and amphibians that are more than probably on the site. These should be constructed from rock, stone and brash. Stone/rocks are used to create the hibernacula, which should be located within a sunny south facing area within the site. Construction to consist of shallow excavations c. 0.5 -1m deep lined with logs; brash, dead wood stone/rocks. Stones/rocks to be 'built-up' to a height of c. 0.5 – 1m and covered in a layer (c. 10cm) of earth. Hibernaculum/s should have a dimension of c. 3m by 3m. [Habitat management for reptiles | Amphibian and Reptile Conservation \(arc-trust.org\)](#)



Hibernacula.
(Dimensions not to scale).



Hibernacula.

Potential bee hives: Installation of western honey bee (Apis spp.) hives

The details of keeping bees or apiculture are beyond the scope of this report, but may be something to be considered for the site. However, hives should be located in quiet sunny areas of the site and away from the public to avoid disturbance. Links to commercially available bee hives and equipment can be located here: [National Hive Starter Kit \(beekeeping.co.uk\)](http://NationalHiveStarterKit.beekeeping.co.uk) and [Assembled National Cedar Bee Hive Gabled Roof \(bee-keeping-equipment.com\)](http://AssembledNationalCedarBeeHiveGabledRoof.bee-keeping-equipment.com) or may be constructed using DIY materials if available. See section, Building your own wildlife habitats.

Building your own wildlife habitats

Preference may be shown to construct and build bat, bird, hedgehog and insect boxes for the site if DIY materials are available. However, the life expectancy would be considerably less than the commercial products, such as 'Woodcrete'. A list of designs and instructions are available in the links below:

- Building a bird box: [Build a bird box \(rspb.org.uk\)](http://BuildaBirdBox.rspb.org.uk)
- Build a bat box: [Build a bat box | The RSPB](http://BuildaBatBox.TheRSPB)
- Build a bat box: [Bat Box Information Pack May 2018\[1\] \(bats.org.uk\)](http://BatBoxInformationPackMay201811.bats.org.uk)
- Build a hedgehog house: [Build a Hedgehog House | The RSPB](http://BuildaHedgehogHouse.TheRSPB)
- Build a bug hotel: [Build a bug hotel | The RSPB](http://BuildaBugHotel.TheRSPB)
- Build a bee hive: [How to Build a Beehive \(DIY\) | Family Handyman](http://HowtoBuildaBeehive(DIY).FamilyHandyman)

Landscape Ecology Management Plan (LEMP)

The Landscape Ecology Management Plan (LEMP), initially covers a five-year period, starting once the project is completed (TBC). The LEMP has been produced for the maintenance of the existing and the creation of new habitats and planted areas within the site. The LEMP is represented as maintenance tables for ease of interpretation and management implementation (Table. 3). The LEMP consists of a one to five-year maintenance schedule. Conservation objectives for the site may change over time and after the five-year period the objectives should be revised.

Vegetation maintenance, or 'pruning' (in relation to nesting bird and roosting bats)

If works commence within the period September to February respectively, (outside of the bird nesting period) this will negate the need for an ecologist to undertake an inspection

survey (Table 1). Vegetation maintenance works should ideally be undertaken outside of the bird nesting season (September to February). The bird nesting season is generally March to August inclusive. Birds will nest within scrub and woodland vegetation during this period. Therefore, prior to works being undertaken, within this time period, an ecologist should be appointed to undertake an inspection survey prior to commencing works (Table 1).

Areas of scrub and woodland vegetation will be monitored for at least 20 minutes by an ecologist for bird activity, i.e., any birds flying into or out of the scrub woodland vegetation may indicate that nesting birds are present. Areas will be checked by the ecologist/s for any signs of breeding/nesting birds. If any active bird nest is located, then works within this area will cease and a five-metre exclusion zone will be created around the nest site, and fenced off with high visibility tape. The nests will be monitored by an ecologist until the young have fledged the nest, which can be up to 6 to 8 weeks. Ecologist/s will then check for any signs of breeding/nesting birds and if birds have fledged any works can re-commence.

Some of the mature trees along the boundary supported suitable bat roost potential (BRP) features, such as rot holes, loose bark, dense ivy and cavities etc. If maintenance works, such as 'crown-lifting' or branch reduction is required, then an inspection by a licensed bat ecologist must be undertaken to ascertain presence or potential absence of a bat roost. This would be undertaken with the aid of an endoscope and aerial tree climbing, Mechanical Elevated Work Platform (MEWP) or ladders. If evidence of bats are found, then further survey work will need to be undertaken.

Vegetation maintenance (in relation to reptiles and amphibians)

Any maintenance, clearance, strimming works should be undertaken outside the active season for reptiles and amphibians, i.e., when they are in hibernation, which is generally between (November to January inclusive). Outside of this period then reptiles and amphibians will be active and there is a high probability of causing harm to these species.

Table 1. Operations and timing.

Operations	Timings	Nesting Birds	Reptiles/Amphibians	Ecological Supervision Needed
Field layer maintenance	Nov to Jan Inc	N/A	No	No
Field layer maintenance	Feb to Oct Inc	N/A	Yes	Yes
Vegetation maintenance 'pruning'	Sept to Feb Inc	No	N/A	No
Vegetation maintenance 'pruning'	Mar to Aug Inc	Yes	N/A	Yes

* If undertaking the site clearance works during the reptiles active and birds nesting period (March to September inclusive), then ecological supervision must be provided.

Additional Comments

An ecologist should always be consulted regarding the installation of bat and bird boxes, insect, reptile and amphibian hibernacula construction and installation of bee hives. Installation must not be undertaken by the contractor, without consultation of the ecologist'.

Maintenance for these habitats is located within the Landscape Ecology Management Plan (LEMP) on page 17.

Please note: 'The internet links to suppliers within the recommendations are only for informative purposes and we do not advocate the use of these suppliers. They are intended as illustrative examples only'.

Biodiversity Budget

The table below provides details for the biodiversity budget of the existing habitats and creation and enhancement of habitats on the site (Table. 2). None of the present area of c.a. 0.75 ha of improved grassland field, species-rich and species-poor hedgerows, tree-lines, with 'Carr' woodland or wet woodland and marshy grassland will be lost, only enhanced.

The proposed habitat prescriptions will result in a positive impact on biodiversity and an increased positive Biodiversity Net-Gain (BNG).

Table. 2. Biodiversity Budget.

Habitat	Existing	Proposed	Likely biodiversity outcome	Timescale
Improved grassland field, species-rich and species-poor hedgerows, tree-lines, with 'Carr' woodland or wet woodland	0.75 ha existing	Retained and enhanced.	Habitat enhanced by 'thinning-out' scrub and planting with native species of local provenance woodland/hedgerow species. Planting the improved grassland with native geophyte (bulb) species of plants will provide a positive net-gain	Long-term gain for biodiversity
The creation of a wildlife pond	0 existing	Enhanced. Ecologist to be consulted on installation.	Creation of additional habitat will provide a positive net-gain	Long-term gain for biodiversity
Wildflower meadow creation	0 existing	Enhanced. Ecologist to be consulted on installation.	Creation of additional habitat will provide a positive net-gain	Long-term gain for biodiversity
Small orchard	0 existing	Enhanced. Ecologist to be consulted on installation.	Creation of additional habitat will provide a positive net-gain	Long-term gain for biodiversity
Creation of reptile and amphibian hibernacula	0 existing	Enhanced. Creation of hibernacula. Ecologist to be consulted on installation.	Net-gain , positive impact to biodiversity by creation of additional habitat	Long-term positive impact on biodiversity
Inclusion of bat, bird (inc. barn owl), hedgehog, dormouse and insect boxes.	0 existing	Enhanced. Inclusion of bat and bird (inc. barn owl) boxes to be erected on mature trees, hedgehog, dormouse and insect boxes to	Net-gain , positive impact to biodiversity by creation of additional habitat	Long-term positive impact on biodiversity

Habitat	Existing	Proposed	Likely biodiversity outcome	Timescale
		be installed in appropriate locations. Ecologist to be consulted on installation.		
Installation of bee hives on the site	0 existing	Enhanced. Located In appropriate locations.	Net-gain , positive impact to biodiversity.	Long-term positive impact on biodiversity.

Table. 3. Maintenance Tables.

Ecological Management Plan 1-5 Year Maintenance Schedule																					
Dates		Year 1				Year 2				Year 3				Year 4				Year 5			
Habitat or Planted Areas	Task Description	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct
		- Mar	- Jun	- Sep	- Dec	- Mar	- Jun	- Sep	- Dec	- Mar	- Jun	- Sep	- Dec	- Mar	- Jun	- Sep	- Dec	- Mar	- Jun	- Sep	- Dec
Retained and enhanced improved grassland and planted wildflower bulbs, species-rich and species-poor hedgerows, tree-lines, with 'Carr' woodland or wet woodland	Annual check of the planted area to ensure that the plants are establishing, as replacements may be required. General maintenance such as cutting or irrigation.																				
	The improved grassland maybe flailed or hand strimmed. Hedgerows and woodland maybe managed with the aid of chainsaws. The cut material produced should be retained on the site and used to create habitat piles, where they will provide a food source for a host of fungi and invertebrate species.																				

Ecological Management Plan 1-5 Year Maintenance Schedule

Dates		Year 1				Year 2				Year 3				Year 4				Year 5				
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	
Retained and enhanced planting of trees and shrubs. Species-rich and species-poor hedgerows, tree-lines.	Dead or dying trees may need to be cut down occasionally for safety. Wood should be retained on site, for example to provide refugia for invertebrates' adjacent scrub areas.																					
	Trees should be left grow to maturity. Shrubs, once established should be cut back to stimulate bushy basal growth. Shrubs should be allowed to get to a height of c. >3m and allowed to flower and produce fruit/seeds. Cutting when required should take place between September and February to avoid disturbance to nesting birds (March to August is the typical nesting bird period).																					

	<p>Scrub can be left to grow naturally but should be thinned out using a strimmer or brush cutter where and when the scrub canopy overshadows the field layer. Selective removal of the most dominant competitive scrub species should be undertaken to maintain diversity. Dead or dying scrub/trees may need to be cut down occasionally for safety, and the wood should be retained on site, for example to provide habitat for invertebrates.</p>																				
--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Ecological Management Plan 1-5 Year Maintenance Schedule																					
Dates		Year 1				Year 2				Year 3				Year 4				Year 5			
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Reptile and amphibian hibernacula and pond	Reptile and amphibian hibernacula will require no further maintenance once created. The wildlife pond will need to be dredged annually and excess aquatic vegetation removed. The excess aquatic vegetation should be removed and left in a pile next to the pond for 24 to 48hrs to let any aquatic fauna migrate back into the pond. The aquatic vegetation can then be removed and deposited in an appropriate area to compost; where it will provide a food source for a host of fungi and invertebrate species.																				

Ecological Management Plan 1-5 Year Maintenance Schedule

Dates		Year 1				Year 2				Year 3				Year 4				Year 5			
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Wildflower meadow	Wildflower meadow/s may be created by 'scalping' areas of the existing improved grassland. Planting in the spring months (March to April) and then managed or 'cut' once a year in the winter months.																				
	A hand strimmer or flail are recommended to undertake this operation. The cut material produced should be retained on the site and used to create habitat piles, where they will provide a food source for a host of fungi and invertebrate species.																				

Ecological Management Plan 1-5 Year Maintenance Schedule

Dates		Year 1				Year 2				Year 3				Year 4				Year 5				
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	
Small orchard creation	The creation of a small orchard planting should be undertaken in the winter months, to give the orchard the maximum chance of success and reduce the amount of irrigation needed for establishing. A light sunny location would be most suitable.																					
	Trees should be left grow to maturity. Shrubs, once established should be cut back to stimulate bushy basal growth. Shrubs should be allowed to get to a height of c. >3m and allowed to flower and produce fruit/seeds. Cutting when required should take place between September and February to avoid disturbance to nesting birds (March to August is the typical nesting bird period).																					

	Dead or dying trees may need to be cut down occasionally for safety. Wood should be retained on site, for example to provide refugia for invertebrates' adjacent scrub areas.																				
--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Ecological Management Plan 1-5 Year Maintenance Schedule

Dates		Year 1				Year 2				Year 3				Year 4				Year 5			
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Bat bird (inc. barn owl), hedgehog, dormouse and insect bricks	Erection of bird and bat boxes. The positioning and selection of all boxes is to be carried out by an Ecologist. Positioning of boxes in trees will be achieved with the aid ladder, MEWP or with the aid of a tree climber where appropriate. Hedgehog boxes and insect boxes to be located on the site in appropriate locations. Ecologist to be consulted on installation.																				
	Boxes should be routinely cleaned out on an annual basis and will require no further maintenance.																				

Ecological Management Plan 1-5 Year Maintenance Schedule

Dates		Year 1				Year 2				Year 3				Year 4				Year 5			
Habitat or Planted Areas	Task Description	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Bee hives	Installation and management of bee hives on the site is to be confirmed.	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#

7. References

Biodiversity Net Gain: [Welcome to GOV.UK \(www.gov.uk\)](http://www.gov.uk)

British Standards (2013) Biodiversity — Code of practice for planning and development. BS42020:2013.

BSI (2006) PAS 2010 Planning to halt the loss of biodiversity. Biodiversity conservation standards for planning in the United Kingdom – code of practice. British Standards Institute.

British Standard. BS 5837:2012 Trees in relation to design, demolition and construction.

Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). The UK Habitat Classification Version 2.1 at <http://www.ukhab.org/>

Institute of Environmental Assessment (IEA), 1995. *Guidelines for Baseline Ecological Assessment*, Institute of Environmental Assessment. E&FN Spon, aJn Imprint of Chapman and Hall. London.

Joint Nature Conservation Committee, 2010. *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit*. Reprinted by JNCC, Peterborough

Stace, C., 1997. *New Flora of the British Isles*. 2nd edition. Cambridge University Press, Cambridge.

Williams, C (2010) Biodiversity for low and zero carbon buildings: A technical guide for new build. RIBA publishing, Bat Conservation Trust.

Images



1. Eastern aspect.



2. Northern aspect.



3. Northwestern aspect.



4. Western aspect.



5. Southwestern aspect.



6. Southern aspect.



7. Hollow tree.

Field Recording Sheets (Notes)

11.30am 25/11/2023

Target note record

centre of site

SX 4320
61499

Target note record No.		Site name
Survey Title		Orig. ref. No.
Grid ref.	10km sq	Survey date
Surveyor		SSSI code (if any)
Conservation status (if any)		L. A. district
County		Alphanumeric code:
Habitat(s) Dominant		

Target note:
improved grassland field/mead
D perennial rye
A Dock
O chick-weed

Species recorded (species name)	Standard species code	Abundance (DAFOR)	Notes
Dominant plant species (common and Latin)			
Herb	Wesba hedge	pd y pdy O	
rdnt	D (M) cherry laurel	Hdy O	
O	heylanti O	gray willow O	
hogweed	Mountain O	scenicoguca - OW	
O	Horze F	E	
Ash	Ivy A	Net bugle other are / spread well	
Oak	sturdy iris R	Honey suckle	
elm	inbre oak O	O	
Goose	Folke rubigoss O	beech O	
Wedge bed	coke toof F	red campion O	
F	Creepin buttercup f	bindweed O	
Pagrus	* hedge brom A		
Blackthorn	grub F		
Other species of interest (notable, scarce, indicator etc.)			
hearts	mat tin R	R	
tenup	chairs O		
F	Yorkshire fog O		
	Nettle F		
	creepin thirk O		

Dens Bramble thicked

water course ditch

* native trees but roost point.

welland

Grey willow D

Hazel A

rosewood O

burned O

youthful fog O

lenna O

Fche water O

soft rush O

flaky ~~some~~ grass D

~~old man~~ beard O

great ~~burn~~ O

Anselica A

pandula sedge A

budle R

phelarus O

wrong time of year

* southern boundary material

holly yew derry laund