
# Biodiversity Enhancement Scheme

## Matrix Park, Beaufort Road, Morriston, Swansea, SA6 8HQ

## May 2024

| | Name | Position | Date |
|---|---|---|---|
| Prepared by | Bonnie Illingworth | Assistant Ecologist | 14/05/2024 |
| Reviewed by | Wendy Larcombe | Ecologist | 14/05/2024 |
| Approved by | Iestyn Evans | Director I&G Ecological Consulting Ltd | 15/05/2024 |
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Contact:
Glyn Lloyd-Jones glyn.igecol@gmail.com 07973 685423
Iestyn Evans iestyn.igecol@gmail.com 07733 214829
Office office.igecol@gmail.com

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**Summary**

I & G Ecological Consulting Ltd were commissioned to produce a Biodiversity Enhancement Scheme (BES) in connection with a proposed development consisting of the construction of new industrial units over hardstanding. The proposed development is on an area of land approximately 3.03 hectares, located off Beaufort Road, Morriston, Swansea, SA6 8HQ. The site is allocated in the Swansea Development Plan for commercial/industrial development. The site is seen as making an important contribution towards job creation/economic growth, the site falls within a comparatively extensive, essentially plan-led, commercial area.

The BES is to include key impacts and mitigation measures to comply with the general principals set out in *Policy 9 of Future Wales (2040).*

The site consists of marshy grassland, broadleaved semi-natural woodland, dense and scattered scrub, ephemeral and short perennial, and hardstanding.

## 1. INTRODUCTION

1.1.1 I & G Ecological Consulting Ltd were commissioned to produce a Biodiversity Enhancement Scheme in relation to a planning application for a commercial development consisting of the construction of new industrial units and associated access and parking at Matrix Park land, Beaufort Road, Swansea, hereafter referred to as, 'the Site'.

1.1.2 This report is to satisfy requirements for Biodiversity Enhancement and to ensure no detrimental impact on local ecology.

1.1.3 The Preliminary Ecological Assessment (I&G Ecological Consulting Ltd Sep. 2023) describes the habitats within the site as consisting of marshy grassland with broadleaved semi-natural woodland, dense and scattered scrub, and ephemeral / short perennial, with an area of hardstanding.
See Fig. 1 for location and Fig. 3 for habitats.

1.1.4 This report presents a Biodiversity Enhancement Scheme to provide habitat and forage for the following:

- Nesting Birds
- Bats
- Hedgehogs
- Invertebrates
- Reptiles and Amphibians

1.1.5 The site is located to the north of the Beaufort Reach roundabout, with the River Tawe found immediately adjacent, to the east. Two office building complexes and associated hard standing carparks are found to the immediate south, belonging to NHS Wales and Matrix One. The site is located centrally at SS 67038 96493, with dominant marsh vegetation communities and associated scrub.

**Figure 1. Location of the site. Grid Ref: - SS 67038 96493**

## 2. SCOPE FOR ENHANCEMENT

2.1 Sketch Layout shows the footprint of the proposed works. See Fig. 2.


**Figure 2. Proposed Sketch Layout form Architect Drawing No. 222190/1**

2.2. Habitats within and adjacent to the site can be seen at Fig. 3 below.

**Figure 3. Aerial image of site showing habitats:Bare Ground, Marshy Grassland, Treeline, Scrub within the wider habiats of Wooded belts, Native Broadleaved Woodland, watercourses, and waterbodies.**

## 3. ENHANCEMENTS FOR SPECIES (see ENHANCEMENT PLAN AT APPENDIX 1)

**3.1** The current site layout provides limited resources for enhancement. However, there is scope for small areas of additional planting and hibernacula siting.

3.1.2 Additional native perennial planting will benefit birds, invertebrates, and small mammals, providing food, and shelter.

3.1.3 No additional site visit has been made in relation to this BES report and all recommendations have been made based upon desk-based resources (including the PEA Report I&G Ecological Consulting Ltd September 2023), Architectural Plans and online maps.

### 3.2 Nesting Birds

3.2.1 Proposed Enhancement Provision:
Provision for bird nesting can be achieved by incorporating a mix of open-fronted and small-hole fronted boxes for garden and woodland species. See Appendix 2 for suggested designs and products. Please see Appendix 5 for timing of works to avoid the bird nesting season.

***Recommendation 1:***

15 x Woodstone/woodcrete small-holed nest box : to be affixed to North / North West facing side of retained mature trees, at a minimum height of 2m from the ground.

***Recommendation 2***:

15 x Woodcrete open-fronted nest box to be affixed to North /North West facing side of retained mature trees, at a minimum height of 2m from the ground.

***Recommendation 3:***

2 x Woodcrete Tawny Owl Boxes to be affixed to North / North West facing side of retained mature trees, at a minimum height of 3m from the ground.

3.2.2 Woodcrete boxes will last longer than those constructed of wood – at least 20-25 years. The small-holed nest box has a hole of 32mm which is designed to attract Coal Tit, Blue Tit, Great Tit and House Sparrow. The open-fronted box will attract Robins and Wrens (from RSPB Product Guide).

See Appendix 2. for further information including product examples.

3.2.3 Positioning of bird boxes will be based on advice from on-site ecologist and supplier support (E.g., WildCare.co.uk, RSPB, NHBS.com or another specialist provider).

3.2.4 Annual maintenance (e.g., cleaning out, checking attachment is secure) will be undertaken by site owner.

3.2.5 Management of existing trees will be minimal and only as necessary to maintain the health of trees and prevent unacceptable encroachment onto property/public areas, where it may present a safety risk. All such management will be undertaken outside of the bird breeding season (1st March to 31st August).

**3.3 Bats**

3.3.1 Bats may utilise the site for foraging and roosting. Additional capacity can be provided by installing woodcrete bat boxes on mature trees within the site boundary if present, at a minimum height of two meters, and without obstruction (clear flight line to front of box).

3.3.2 Proposed Enhancement Provision:

***Recommendation 1*:**

A minimum total of 10 Bat Boxes mounted on suitable trees within curtilage of land ownership. A mix of single crevice and double crevice bat boxes (e.g. self-cleaning single crevice bat box or equivalent). To be sited in a sheltered, elevated (2–7m and ideally 4m) position away from artificial light and potential predation, and ideally not close to public access pathways. There must be a dark route into feeding areas, and clear flight path to the

bat box. See Appendix 1 for recommended siting locations and Appendix 2 for product examples.

3.3.3 If it is evident that the boxes are in use by bats, they must not be disturbed and only moved/cleaned under the supervision of or by a licensed bat ecologist.

### 3.4 Hedgehogs

3.4.1 Any boundary structures will be of a style that will allow Hedgehogs free access throughout the site, ensuring they can benefit from habitat and forage resources found both on and off site, e.g., surrounding gardens, open habitats, hedge-banks and ponds.

3.4.2 Proposed Enhancement Provision:

***Recommendation 1***
All property and site boundaries, will allow free movement of native animals, particularly Hedgehogs. Any such boundaries should have sufficient ground-level gaps to allow commuting to the surrounding habitat. Gaps to be 13cm x 13cm with no sharp protrusions, and always maintained in perpetuity.

***Recommendation 2***
If available space can be identified within the site layout, then it is recommended that a purpose-built hedgehog refuge can be installed in a secluded/undisturbed location within the site. Simple designs using bricks can be constructed or purpose-made wooden boxes are readily available. See Appendix 3 for construction design and ready-made examples.

### 3.5 Invertebrates (pollinator provision)

3.5.1 As stated in the PEA **Report total removal of Grassland habitats should be avoided**:

*"The preservation of, and incorporation into the design, of areas of marshy grassland should be a priority. Under the current design, the majority of this habitat will be removed, which will have a significant adverse impact on Environment (Wales) Act 2016 Section 6 duties. Appropriate mitigation may seek to retain areas of the habitat as is, or incorporate it into Sustainable Drainage Systems (SuDS). The proposed design may also seek to implement areas of permeable hardstanding."*

The forage and habitat provision lost from the development will be considerable, and so maximum opportunity for new native planting should be sought. Native planting will be incorporated into the development using species of local provenance. Such planting will ensure resources can be enhanced to benefit invertebrates, as well as birds and small mammals. See Appendix 6 for recommended species and management.

3.5.2 Proposed Enhancement Provision:

- **Additional pollinator resources** will be provided by planting native organic Spring/Summer bulbs**,** early flowering native perennials, and shrubs into beds or boxes throughout the site. The current plan shows only limited information, and so it is not possible to specify where such planting will occur. Should the design allow for beds or planters, their position and planting details to be agreed by LPA. Plants must be responsibly sourced to ensure no INNS are brought onto site. Species choice will be appropriate for soil type and growing location, and will provide nectar and/or berries, and are not classed as invasive.

- Northern boundary and Southern boundary, where it is indicated that a Swale is to be created, **should utilise current Grassland left in situ**. Any areas that must be cleared to create the swale are to be planted up as species rich grassland, using locally sourced seed or turf, if trans-locating turf from elsewhere across the site is not be possible. Appropriate **native trees and shrubs** will be included in the planting scheme here. This will provide a resource for invertebrates, small mammals, reptiles and birds. It will link the SuDS area to the habitats beyond the site boundary.

- **Living Walls** to be installed on all suitable elevations, using appropriate species (guidance should be available from the Living Wall manufacturer/supplier, if they are not planting it up as part of the procurement). The system should utilise a grey water or rain water harvesting and irrigation system, and should have a full maintenance programme in perpetuity. Please refer to Swansea Council's guidance for Living Walls: see **https://www.swansea.gov.uk/greenwallinfo**

- **10 x Insect Shelter/Hotels** to be sited in a sheltered location, away from any disturbance. See Appendix 1. For positioning and Appendix 2 for product examples.

- Advice for species choice, planting location and management can also be sought from local suppliers such as Celtic Wildflowers based in Gorseinon and Shipton bulbs of Whitland.

- See Appendix 6 for recommended species and management.

## 3.6 Reptiles and Amphibians

Area loss can cause populations of organisms to decline due to a decrease in habitat size. The area to be developed consists of a suite of habitats suitable for amphibians and reptiles – including bare ground, scrub, and Grassland with multiple sward heights throughout much of the site. According to the PEA (I&G 2023) Grass snake was evident on site, and a Reptile and Amphibian survey is neing undertaken. Enhancement measures are therefore required. The following recommendations may need to be reviewed to reflect outcomes of the a survey.

3.6.1 **Post-construction enhancement measures** for the site will include:

- Creation of 3 number reptile and amphibian refugia/hibernacula (log, rock and turf pile), sited in an undisturbed location. Materials such as stone, brash and logs resulting from site clearance can be used. If any other material is brought in for this purpose, it must not be 'clean' and not contaminated (INNS, chemical residue). See Appendix 1, for proposed location, and Appendix 4 for design.
- Retention of a proportion of peripheral vegetation (Marshy Grassland and Scrub) to provide connectivity, refuge and forage for reptiles and amphibians to the NE extent of Site, close to the area marked "Swale". This will be managed for biodiversity in perpetuity.

**APPENDIX 1**

## Recommended Enhancements Plans

**Symbols representing the Artificial Refugia, trees, and shrubs show approximate locations. Symbol representing Wildflower planting indicates general area to be planted rather than specific individual 'patches' of planting. Only a representative sample of enhancements/locations are shown.**

**For key, see below.**

| | | |
|---|---|---|
| | Small-hole fronted bird nest box | Sited min 2m high, away from predators, and out of direct sunlight |
| | Open-fronted bird nest box | Sited min 2m high, away from predators, and out of direct sunlight |
| | Tawny Owl nest box | Sited min 3m high, woodland edge, away from paths |
| | Insect Hotel | Sited in a sheltered, undisturbed location |
| | Tree-mounted bat box | Sited away from artificial light, with clear flight line to box |
| | Hedgehog Shelter | Sited in an undisturbed, vegetated location |
| | Gaps in boundary fencing | ALL boundary fencing sections to have 13cmx13cm gaps (Only representative example shown) |
| | Living Wall | Applied to all appropriate elevations, maintained in perpetuity |
| | Reptile & Amphibian Hibernaculum | Sited in an undisturbed, vegetated location |
| | Flower Planting (native and non-native) | Where possible: Native, organic provenance, planted in appropriate locations for maximum vigour |
| | Native Tree & Shrub Planting | Appropriate species selected and managed for maximum benefit to wildlife |


UNIT A
UNIT B
UNIT C
UNIT D

**APPENDIX 2**

**Artificial Bird Nesting products**

**Woodstone Tawny Owl Nest Box (this example from C J Wildlife):**

"A durable owl nest box designed to provide a perfect nest site for Tawny Owls. A sturdy mounting bracket and two adjustable securing points near the base allow for straightforward fixing to a tree. The nest box should be sited at least 3m above the ground and on woodland edge, parkland or large gardens where it won't be in the sunlight all day. There should be a clear flight path to the entrance and be in an area that is normally free of human activity, although Tawny Owls and Jackdaws may use busier sites if the box is placed above 5m. Tawny Owl chicks will leave the nest sometime before they are able to fly, so it is important that they have access to branches with cover to hide in during the day. An ivy-covered tree is ideal."

**Below Left:** Example of an open-fronted nest box made from woodcrete, by Schwegler at RSPB.

**Below Right** small-holed nest box from RSPB. Woodcrete 32 mm entry hole nest box by Schwegler may attract tits, sparrows, redstarts and nuthatches.

Further siting advice can be found at Where To Put A Bird Box | Nestboxes - The RSPB or BTO.org.

## Artificial Bat Roosts

**Self-cleaning single crevice bat box for tree mounting**

https://www.greenwoodsecohabitats.co.uk/shop

Specifications are in cm and approximate.

External: 43 high x 21.5 wide x 6.8 deep

Internal: 41 x 16.5 x 1.8 crevices @ 1

Weight approx. 5kg

Designed for small groups of crevice dwelling bat species, such as Common and Soprano Pipistrelle.

**See https://www.bats.org.uk/our-work/buildings-planning-and-development/bat-boxes for further information**

## Artificial Insect Refugia

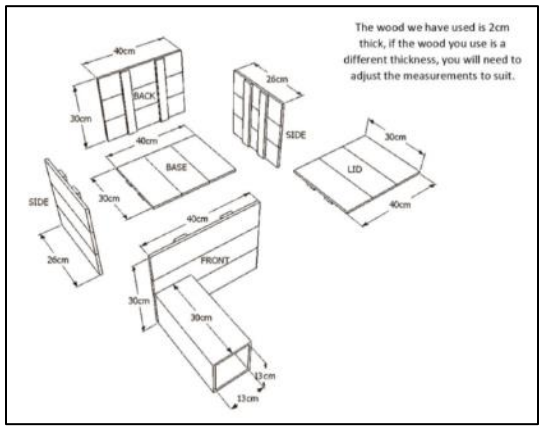
**Left:Schwegler Insect Nesting Aid** – can be affixed to established tree or a post.
**Right:** Free Standing Insect Hotel (image courtesy of Wildcare)

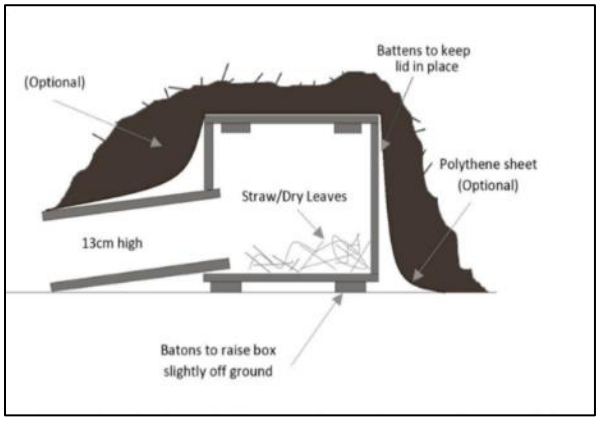
For further information about invertebrates and how you can help them, see https://www.buglife.org.uk/

## APPENDIX 3

## Hedgehog Hibernaculum/Shelter design

https://www.britishhedgehogs.org.uk/hedgehog-homes/



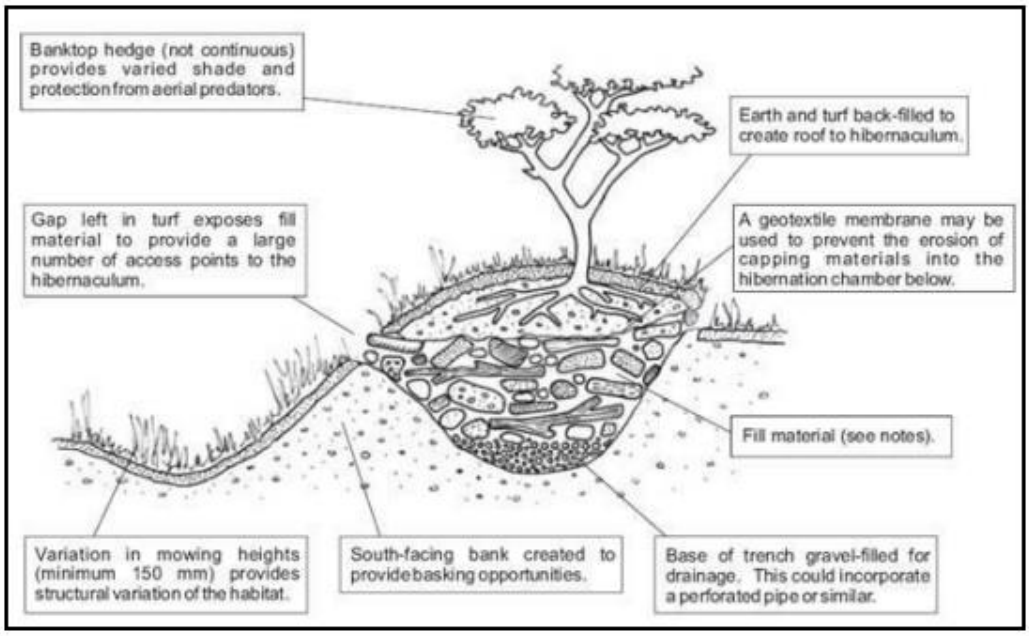




**Brick built Hedgehog home -** https://wildlifegadgetman.com/project-wildpatch/how-to-guides/make-a-hedgehog-home-using-bricks/

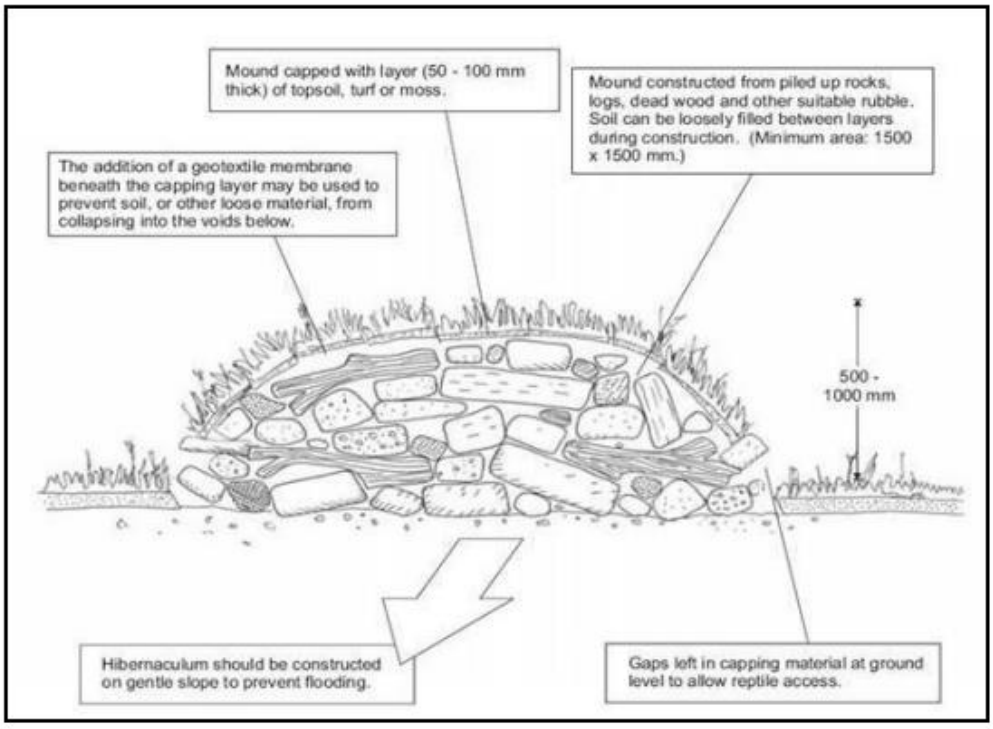
**APPENDIX 4**

**Reptiles & Amphibians Hibernacula**

The preferred hibernacula design where ground conditions allow




Impermeable / flat ground (where flooding is likely)




**An example of a suitable hibernaculum for the use of hibernating reptiles/amphibians to be employed within the SuDS buffer zone.**

## APPENDIX 5

## Timing Of Enhancement Actions

**Table 1. Timing of ecological works commonly undertaken, to ensure minimal impact to biodiversity**

| Action | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hedgerow/scrub management (avoiding birds/dormice) | | | | | | | | | | | | |
| Habitat manipulation (reptiles) | | | | | | | | | | | | |
| Grassland clearance (reptiles, Dormice) | | | | | | | | | | | | |
| Translocation of trees | | | | | | | | | | | | |
| Planting of new hedgerow shrubs and trees | | | | | | | | | | | | |
| Erection of bat and bird boxes, creation of reptile and hedgehog refugia | | | | | | | | | | | | |
| New wildflower seeding/planting | | | | | | | | | | | | |

## APPENDIX 6

## Planting List and Management Guide

### Perennial Native Plants

Seeds, bulbs and plugs must be organic and of local provenance, and the specific mix as advised by supplier/landscape architect, depending on soil type, topography and other growing factors such as shade levels etc. Specific planting and maintenance advice can be sought from supplier.

### Planting into Beds/Borders/Boxes

Species should be selected for their suitability to this environment, and for their nectar/berry/and shelter qualities. They do not necessarily have to be native, but must not be invasive non-native. They must be able to tolerate reasonable levels of management, but this management must be minimal to ensure best benefit for biodiversity. A system of grey water/rain water harvesting for irrigation is recommended. Planting can include bulbs (organic), small shrubs, nectar-rich ground cover, and hardy perennials.

**SuDS Planting – Native species that may be suitable for SuDS schemes (from Swansea City Council SuDS Guidance Notes )**

**Shrubs:**

- **Dogwood (Cornus sanguinea)**
- **Guelder rose (Viburnum opulus)**
- **Willow (Salix spp.)**
- **Broom (Cytisus scoparius)**

- **Alder buckthorn (Frangula alnus)**

**Climbers:**
- **Ivy (Hedera helix)**
- **Honeysuckle (Lonicera periclymenum)**
- **Dog rose (Rosa canina)**

**Perennials:**
- **Hemp-agrimony (Eupatorium cannabinum)**
- **Pendulous sedge (Carex pendula)**
- **Flowering rush (Butomus umbellatus)**
- **Royal fern (Osmunda regalis)**
- **Yarrow (Achillea millefolium)**
- **Bugle (Ajuga reptans)**
- **Knapweed (Centaurea nigra)**
- **Cowslip (Primula veris)**
- **Self-heal (Prunella vulgaris)**
- **Thyme (Thymus polytrichus)**
- **Ox-eye daisy (Leucanthemum vulgare)**
- **Common birds-foot trefoil (Lotus corniculatus)**
- **Devil's-bit scabious (Succisa pratensis)**
- **Ragged robin (Silene flos-cuculi)**
- **Cuckoo flower (Cardamine pratensis)**

**Aquatic/marignal plants:**
- **Yellow flag iris (Iris pseudacorus)**
- **Purple loosestrife (Lythrum salicaria)**
- **Marsh woundwort (Stachys palustris)**
- **Gipsywort (Lycopus europaeus)**
- **Brooklime (Veronica beccabunga)**
- **Marsh marigold (Caltha palustris)**
- **Meadowsweet (Filipendula ulmaria)**
- **Water mint (Mentha aquatica)**
- **Water forget-me-not (Myosotis scorpioides)**
- **Frogbit (Hydrocharis morsus ranae)**
- **Water crowfoot (Ranunculus aquatilis)**

**Recommended supplier**:
Celtic Wildflowers of Gorseinon, Swansea **https://celticwildflowers.co.uk.**
Penlan Perennials **https://www.penlanperennials.co.uk/**
Shipton Bulbs https://www.shiptonbulbs.co.uk/

**Further Information: https://www.rhs.org.uk/gardening**

**Trees for planting within the development (most likely SuDS area) will be:**

- sourced responsibly so as not to introduce pests or diseases. See https://www.woodlandtrust.org.uk/plant-trees/uk-sourced-and-grown/.
- At least 10-12cm girth (Select Standard), to provide required compensation and ecological benefits as quickly as possible.
- Species should be advised by supplier/landscape architect, depending on soil type, topography and other growing factors such as shade levels etc. Recommended supplier – Woodland Trust.
- Planting location and spacing will depend on the species selected, and the maturity of those plants.
- Whips will require tree guards until they are mature enough to withstand attack from rabbits, deer etc. Larger trees may require supporting stakes and protective wire guards initially.
- Trees should be planted in areas where there is little foot-fall, to avoid compaction of root systems, and far enough away from taller established trees to ensure adequate and even growth.
- Trees should be maintained according to supplier guidance and will ensure berries and hips are left to mature, to provide food for birds.
- All maintenance will be timed to avoid disturbance to wildlife (See Appendix 5 for timings). Shrubs should be shaped and maintained, as appropriate for species.

**https://www.rhs.org.uk/plants/types/trees/native-tree-shrubs**

**https://www.woodlandtrust.org.uk/trees-woods-and-wildlife/british-trees/**

**APPENDIX 7**

**Living Walls/ Green Walls**

A framework/system attached to the sides of the Industrial Units which supports a diverse range of appropriate planting. These plants provide shelter and nectar resource for birds and insects; they also contribute to air quality and temperature control of buildings.

For Environmental benefits, Guidance and Best Practice, links to planting resources, management: please see **https://www.swansea.gov.uk/greenwallinfo**

An example of a Living Wall installation from https://www.livingwallsuk.co.uk/

**Should the above not prove viable for the industrial units, then an alternative style of Green Wall is required:**

For an example of Green Walls created as a stand-alone screen, i.e. not attached to walls: **https://www.buildingdesignindex.co.uk/entry/118508/MMA-Architectural-Systems/Green-wall-cover-for-industrial-units/**

An example of a Living Wall created for screening (from buildingdesignindex.co.uk)