

Brooks

Ecological

Grounded advice

Biodiversity Enhancement Management Plan

Interchange 26 — Former sewage works North Bierley

Unit 1 and 2

ER-4003-03

April 2021



Report Reference:	Biodiversity Enhancement Management Plan Interchange 26 — Former sewage works North Bierley Units 1 and 2
Report Reference:	ER-4003-03
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Date	23.04.2021

The information which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions. This report does not constitute legal advice.

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Introduction

This Biodiversity Enhancement Management Plan (BEMP) is produced to show how biodiversity has been designed into the proposed development of Units 1 and 2 at the site known as Interchange 26, a former sewage works at North Bierley, Oakenshaw, West Yorkshire (SE 180 274).

The BEMP is produced in accordance with Chapter 11 of British Standard 42020. Reports which set out how wildlife interests will be enhanced, restored and maintained go under a variety of names, generated by the planning case officer or their internal consultant. This BEMP is the equivalent of 'Biodiversity Management Plans' (BMPs), a term referenced in BS42020 Clause D.4.5.

In producing this plan, the following information sources are referred to:

- **Preliminary Ecological Appraisal.** Brooks Ecological R-1623-01. September 2013.
- **Environmental Statement.** Land at North Bierley Waste Water Treatment Works, Oakenshaw. July 2016.
- **Environmental Statement Addendum (ESA) – Volume 1** Keyland Redevelopment of Former North Bierley WWTW. November 2017.
- **Biodiversity Management Plan.** Brooks Ecological ER-4003-02.4. August 2020.
- **Plot A Site Plan,** 2115 SK14 (A) Ellis Healey Architects.
- **Site Landscape Plan, Drawing 823/LA1 ,** Arlene McIntosh. April 2021.

Scope of Plan

This BEMP relates to development of part of the former sewage works into business units with associated landscaping and infrastructure (see Figure 1). The BEMP addresses biodiversity enhancement across this development plot with particular management prescriptions for areas of retained natural habitat and new features to support biodiversity created through development.

The BEMP accords with aims and objectives of the submitted BEMP (reference ER-4003-02.4) produced for the Phase 1 of development incorporating the overall site. This BEMP provides additional detail and biodiversity enhancement appropriate to the layout and development of Units 1 and 2 specifically.

The BEMP is to be read in accordance with the Site Landscape Plan which address specification for new native tree and shrub planting within the development footprint. The BEMP provides additional prescriptions for biodiversity features and their management not addressed in the Landscape Plan.



Figure 1

Phase 1 unit 1 and 2 layout



Delivering the Plan

The developer is responsible for the creation and establishment works for a five-year period.

The developer will appoint either a Specialist Ecological Management Company (SEMC) or a company working under the direction of an Ecological Clerk of Works (ECow) to oversee the delivery of this plan prior to any work commencing on site.

The ECow would be a qualified Ecologist and member of the Chartered Institute of Ecology and Environmental Management, or be otherwise approved by the LPA.

After Year 5, this plan will be the responsibility of a Site Management Company. This plan and the use of an ECow or SEMC will be included in the terms of reference of the Site Management Company and incorporated into their long-term Management Plan.

Legal and Funding Mechanisms

The developer will award a contract appointing either a Specialist Ecological Management Company or a suitable company working under the direction of an Ecological Clerk of Works (ECow) to implement this plan to Year 5, prior to commencement of any works. In-perpetuity management will be secured from the Site Management Company's management fund.

Funds needed to manage the site in perpetuity will be set by the Developer before the Site Management Company is instructed so that management prescriptions are itemised and budgeted for.

Description and evaluation of features

The area relating to Units 1 and 2 is shown in Figure 3 below within the purple line boundary. The Preliminary Ecological Appraisal report identified the main habitat areas and features that are present within the wider site red line boundary. The habitat map is reproduced below and described in detail in the PEA report.

The wider site is characterised as a large parcel of land which includes a strip of pasture and former water treatment works on the outskirts of Cleckheaton adjacent to the junction of the M62 and the M606. Significant features of likely wildlife value in the wider areas include Hanging Wood, along the eastern boundary of the site.

Summary findings from all ecological surveys of protected species and designations for the site are given on page 5. Much of the site comprises areas of low distinctiveness habitat which have value to site based wildlife, and present opportunities for enhancement in key locations through development. This Site for Units 1 and 2 (purple line boundary below) comprises an area of former improved pasture grassland of low ecological value, and a single tree.

Figure 2 Typical views of pasture grassland habitats within Unit 1 and 2 area



Figure 3 Phase 1 habitats map from Preliminary Ecological Appraisal. Area of Units 1 and 2 shown in purple.



Ecological Trends and Constraints

The following assessment relates to the wider red line boundary of the development site within which Unit 1 and 2 are contained (purple boundary below). This area comprises an area of former pasture grassland of low ecological value and a single tree.

Protected sites

The wider development site adjoins Hanging Wood, a Kirklees SWS. The development will need to provide appropriate vegetation and habitat enhancement to its eastern boundaries to provide a buffer to this locally important site.

Protected Species

No protected species have been identified on the site. Summary findings from dedicated surveys state:

Bat survey

Bat activity has been found to be low on site during the summer, confirming the assessment that the habitats on site are of relatively low importance for local bat populations. More valuable habitat is found to the east – this should be buffered within the masterplan to ensure minimal impacts on local bats.

Riparian mammal and crayfish survey

Dedicated survey has demonstrated the likely absence of water vole, otter and white clawed crayfish from the watercourse passing through the application site. Proposed development would therefore present minimal risk of impacting upon these species.

Reptiles

No reptiles have been found on site and impacts on reptiles are not predicted by the site's development.

Nesting birds

To prevent the proposed works impacting on nesting birds, site clearance will need to be undertaken outside of the breeding bird season which is 1st March – 31st August inclusive. Any clearance that is required during the breeding bird season should be preceded by a nesting bird survey to ensure that the Wildlife and Countryside Act (1981) is not contravened.

Invasive species

Three invasive species have been found on the site. Himalayan balsam is present in the stream corridor and has spread into the former sewage works. Japanese knotweed is present in stands along the stream. A small patch of

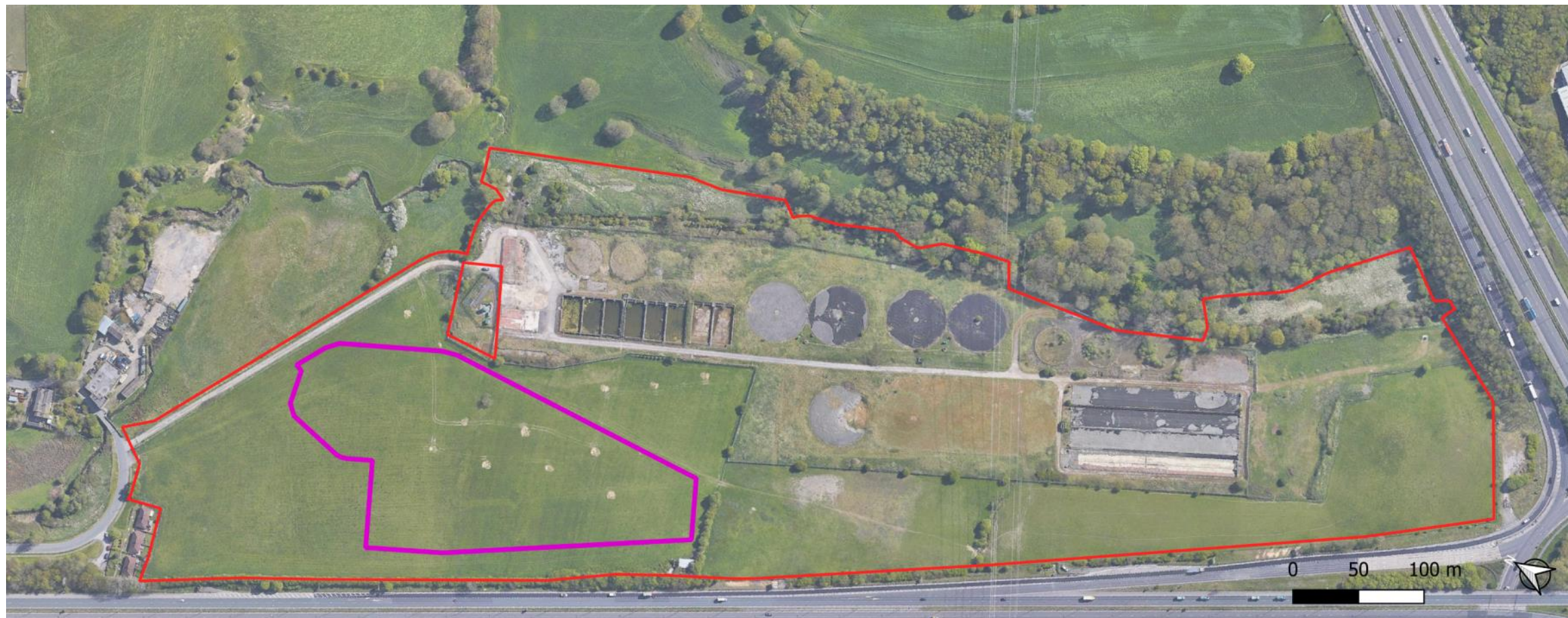
Cotoneaster is present towards the Site centre. Where growing in areas planned for excavation these plants pose a risk and must be controlled in accordance with an agreed plan or method statement. Where present in retained areas these plants degrade the quality and biodiversity of the habitats and their control should form part of habitat enhancement.

Access

Access to the majority of the site unrestricted and the proposed development does not present clear obstacles to the establishment and management of habitats and features specified in this document. Occasional access for management of land to the east of the stream may require agreement with neighbouring land owners.

Hydrology

Hydrological issues are not anticipated though measures are specified in the CEMP be in place to buffer runoff from the construction towards the stream corridor.



Aims and Objectives of Management

The plan aims to protect and enhance the biodiversity of natural habitats that are present, and create new habitat features that improve the ecological value to local wildlife.

Specific aims of management are to:

- Establish target sown and planted habitats
- Maintain an open and diverse range of grassland, wildflower, and woody vegetation
- Encourage use of the site by target groups such as pollinating insects, birds and riparian mammals.

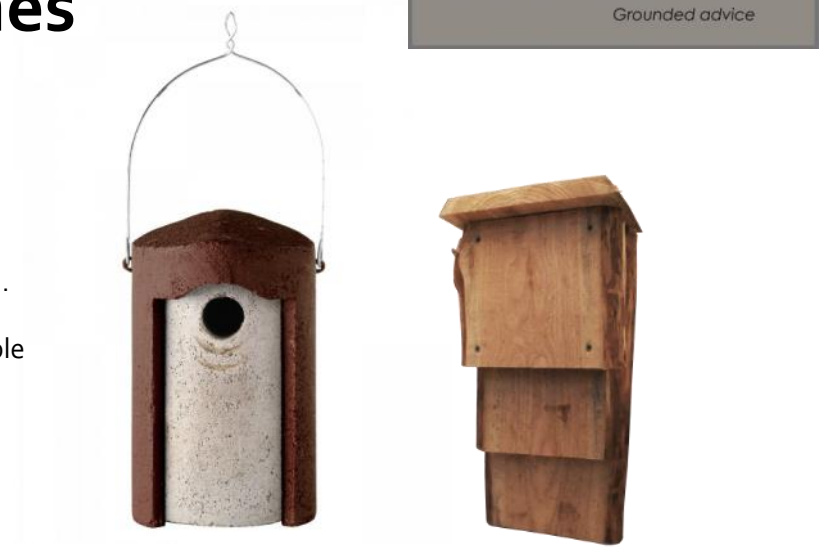
Specific objectives of management to achieve the aims are:

1. Native tree and hedgerow planting and management.
2. Wildflower grassland—establishment and management
3. Establish attenuation basins as new wetland meadow habitat
4. Features for bats and birds
5. Features of hedgehogs and amphibians

Opportunities and Themes

Homes for declining birds & bats.

A wide range of designs of faunal boxes are now available which can either be integrated into built structures or positioned in optimal habitat locations



Wildflower grassland and wetland

Tall uncut areas make great refuges for small mammals which attract birds of prey and other predators. Voles are attracted to the dense 'thatch' of dead grass that accumulates and invertebrates that live out their lifecycle in undisturbed environment thrive here. Long grass is particularly important for late summer moths which rise out of the grass at dusk and attract bats to forage.



Deadwood for fungi and invertebrates

Wood piles make homes for invertebrates, amphibians and small mammals. They also slow the release of carbon into the atmosphere.



Establish New Wildflower Grasslands

Rationale

The grassland area shown in the figure provides a rich corridor of beneficial habitat to the SW boundary of the units. The rationale is to maximise the number of flowering plants to benefit invertebrates and in turn, larger fauna that will prey upon these. This will be achieved through a combination of wildflower seeding and wildflower management.

Objectives

1. Ensure that all seeding in the locations shown not already supporting grassland contains wildflower seeds (grass only mixes not used)
2. Ensure that flowering plants attain, and remain at, no less than 30% of the sward
3. Ensure that plants can flower (are not cut too often).

Specification

Preparation

In all areas that are damaged through construction: no more than 5cm of topsoil will be spread over the subsoil profile. This will be loose tipped and spread with back actor to avoid compaction, and harrowed to a fine tilth ready for seeding.

Seeding

Seed according to supplier's instructions. If soils have been spread before September, any weed growth that has established in the meantime will be sprayed off with glyphosate and a seedbed be re-prepared.

Seed will either be broadcast by hand or by approved lightweight machinery at c. 40Kg /Ha. Following seeding the area will be lightly rolled to incorporate the seed with the growing substrate.

Year 1 Management

Year 1

Five cuts, collect arisings and remove from site.

Use a weed wipe three times in year 1 to kill off weeds - Spear thistle, creeping thistle, broad-leaved dock, clustered dock, wood dock, curled dock, nettle, ragwort and others according to ECoW recommendations. Operative must be proven competent in identifying these in their early stages to prevent killing off sown wildflowers.

Monitoring

Year 2 Ecologist survey to record relative cover values according to objective 1-3

Output

ECoW report.

Remedial actions

Localised weed control or over sowing with wildflower seed under the instructions of the ECoW.



Seed Mix: Emorsgate EM2 Standard General Purpose Meadow Mix or equivalent approved by ECoW



Wildflower Grassland - Management – Annual cut and no cut areas

Rationale

Grassland cut once or twice a year can make great habitats for invertebrates and amphibians and in summer make attractive flower filled habitats. Managing for wildlife also means there is less need to use chemical fertilisers or pest treatments so make healthy sustainable environments. Uncut strips of grassland to be available to act as faunal refuges and habitat for small mammals and invertebrates that depend on coarse vegetation with a thatch layer.

Objectives

1. Flowing plants (forbs) make up no less than 40% of the sward
2. Flowers in bloom from April through to September
3. Competitive weeds no more than 10% cover
4. 10% of the grasslands on site remain uncut in any one year
5. Thatch present in uncut areas
6. Evidence of voles found in grasslands by year 5.

Specification

N/A

Management

Year 2 onwards:

September –annual cut in areas shown in the cutting plan and remove arisings as a hay crop, followed by hard raking.

In uncut areas, litter pick regularly, remove woody vegetation (if establishing) on a three year cycle.

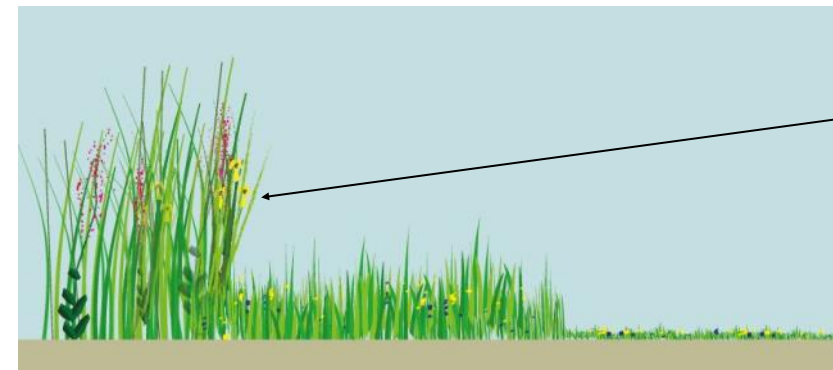
Monitoring

Year 4 Ecologist survey to record relative cover values according to objective 1– 6

Output

ECoW report

Evidence of voles is a sign of successful long term establishment



Tall uncut areas make great refuges for small mammal which attract birds of prey and other predators. Voles are attracted to the dense 'thatch' of dead grass that accumulates and invertebrates that live out their lifecycle in undisturbed environment thrive here.

Note: This cutting plan is indicative and can be varied under agreement with the ECoW



Attenuation basin

Rationale

Constructed drainage attenuation basins can provide a range of microhabitat conditions with a range of conditions that provide beneficial habitat resources for invertebrates, amphibians and birds.

Objectives

1. Establishment of a wet meadow type habitat will seasonally wet pools and hollows
2. Pooling water present for at least 10 months of the year.
3. Open water makes up 50% of area at year 3.
4. Vegetation never attains more than 75% cover from year 4 onwards.

Specification

Surface soils to consist of low nutrient material

Base of basins to be roughened and over-deepened in places to allow pooling.

No planting into basin bottom

Seeding with EP1 pond margin seed on mix on lower basin margins

Seeding with EM10 low maintenance tussock mix on upper basin banks

Management

Year 1 –2 weed management.

Year 3 onwards periodic pond clearance to prevent infilling.

Monitoring

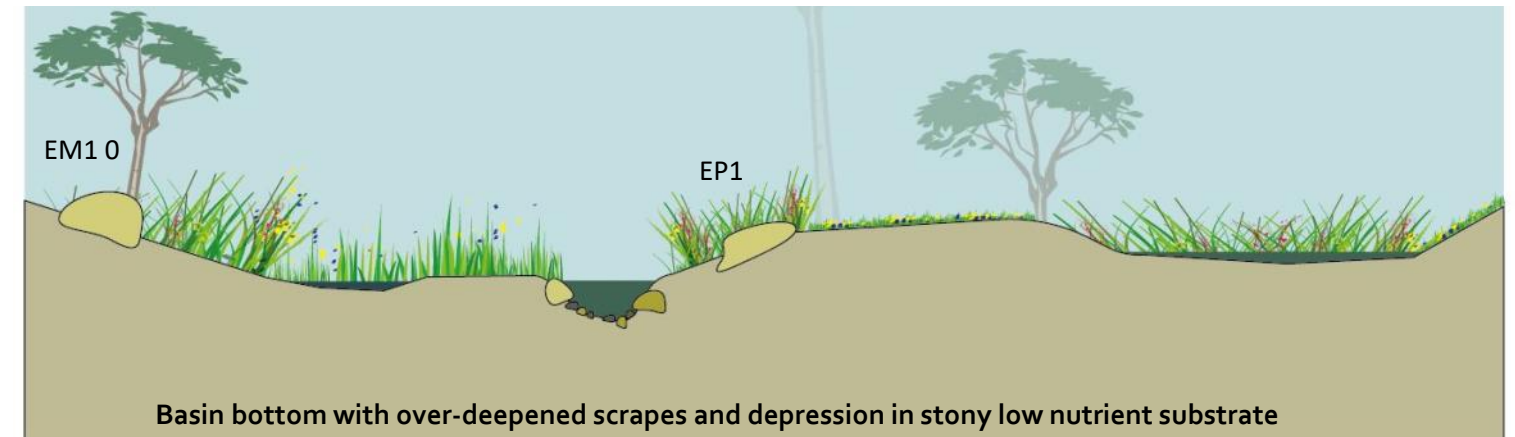
Year 3 and 5 Ecologist to record according to objective 1–3.

Output

ECoW report.

Remedial actions

Localised weed control and over sowing with marginal seed mix under the instructions of the ECoW.



Native Hedgerows

Rationale

Retained boundary hedges and new hedges within the development will be managed to maximise their value to fauna - both as source of food and shelter and as dispersal corridors.

Objectives

1. All hedgerows remain continuous and unbroken through gap planting where required
2. Berries, or berry bearing spurs remain on trees until the end of winter
3. A margin no less than 1m of uncut grass around at least one side of the hedge.

Specification

Hedges: Planting as Landscape Plan with species selected from example schedule shown right.

Aftercare and Management

Year 1 –3 standard hedgerow establishment as per landscape plan.

Year 4 onwards - Cut no more than 90% of hedge in February, spread chippings under the hedge. Leave remaining sections to grow for 1 further year. Vary the location of sections which are left for two years each year.

Monitoring

Year 3 and 5 Ecologist to record according to objective 1- 3.

Output

ECoW report.

Remedial actions

ECoW to liaise with contractor to amended cutting regime, localised gapping up or replacement planting.

Native Hedge Species schedule

Percent mix	Shrub species	Common name	Size in cms
5	Acer campestre	Field maple	60-90
55	Crataegus monogyna	Hawthorn	45-60
5	Corylus avellana	Hazel	60-90
5	Ilex aquifolium	* Holly	45-60
2.5	Lonicera periclymenum	Honeysuckle	60-90
25	Prunus spinosa	Blackthorn	45-60
2.5	Rosa canina	Dogrose	45-60



Features for Birds and Bats

Pole mounted bat and bird boxes

Specification—as below or equivalent agreed by ECoW

Due to constraints with mounting of boxes on building cladding materials, bat and bird box locations are identified on poles within trees and grassland habitat to the south west boundary of the site. Additional boxes are specified as part of the wider site biodiversity plans for Phase 1 outside of the red line shown here.

- 9 x Kent Bat Box (NHBS.co.uk) - mounted in groups of 3 on poles.
- 4 x 1B Schwegler Nest Box (NHBS.co.uk) - individual pole mounted
(2 x 32mm hole, 2x 26mm hole)

Location Notes

See illustrations with location notes.

When erected?

Prior to site operation in Year 1

Verification

Ecological Clerk of Works Certificate.

Monitoring

Year 3 and 5 Ecologist survey to record utilisation and integrity checks.

Output

ECoW report.

Remedial actions

Remedial works or replacement of boxes as required following checks - to take place outside of the breeding season (March—August for birds). Visual external checks to bat box siting and integrity are sufficient to avoid undue disturbance to roosting bats or the need for licencing.

1B Schwegler Nest Box (with 32mm entrance hole) will favour species such as great tit, blue tit, marsh tit, coal tit and crested tit, redstart, nuthatch, collared and pied flycatcher, wryneck, tree and house sparrow. Bats may also make use of these boxes.

Mounting under ECoW instruction avoiding strong sunlight.



Kent Bat boxes to be located on poles according to the ECoW instructions at minimum of 4m with clear flight-lines and providing a range of orientation.



Features for hedgehog and amphibians

Specification

Dead wood arisings from site clearance will be utilised to create refuge features that are valuable for hedgehogs and amphibians as shelter and hibernation resources.

Location Notes

Refuges will be integrated into the area of the attenuation basin above the flood line and in the boundary hedgerow habitat where human disturbance is less likely.

Number

4

When Erected?

Refuges installed in Year 1

Illustrative examples of hedgehog / amphibian refuges (below) constructed from dead wood reclaimed during site clearance.





Work Schedule

The work schedule overleaf covers the 5-year establishment period (Developer’s responsibility) and the in-perpetuity period [6+] (Site Management Company’s responsibility).

‘Year 1’ is triggered as soon as any works commence on site. The following actions will be carried out by the site’s landscape maintenance company under the direction of the ECoW where required.

Task	ECoW to direct	ECoW to carry out	Prior to any work	Year 1	Year 2	Year 3	Year 4	Year 5	6+
Ground forming and soil cultivation				yes					
Prepare grassland areas for seeding				March-September	March-September				
Seed wildflower grassland				September-October	September-October				
Woody planting hedge planting and gapping	yes			November-February	November-February				
Establish wildflower grassland	yes			April-September	April-September				
Manage wildflower grassland	yes			April-Sept	April-Sept	April-Sept	April-Sept	April-Sept	April-Sept
Monitor grassland		yes			June				
Create hedgehog, amphibian refuges and otter holt	yes			Any time					
Establish attenuation basins scrapes and seeding	yes	April-September April-September							
Monitor attenuation basins		Yes				March-May		March—May	
Erect bird and bat boxes	yes	Any time Any time							
Planting defects maintenance	yes yes yes yes								