

Plots 1A and 1B, Land off Bryn Lane Wrexham Industrial Estate

PROPOSED COMMERCIAL DEVELOPMENT

Produced For



HABITAT MANAGEMENT PLAN

ETIVE ECOLOGY Ltd

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Landscape Masterplan

Quality Assessment Record

Report Version	Written by	Date	Reviewed by	Date
1.0	Wendy O'Neil	22 December 2021	Russell Grey	29 December 2021

1 INTRODUCTION

1.1 Site Background

1.1.1 This document has been produced in relation to the proposed commercial development at Plots 1A and 1B, off Bryn Lane, Wrexham Industrial Estate (WIE).

1.1.2 The preparation of a Habitat Management Plan (HMP) has been requested from Natural Resources Wales (NRW) as part of their initial response to the planning application submitted for the proposed development. The HMP also supports the Great Crested Newt (GCN) Mitigation Strategy that has been prepared to address other aspects of the NRW response. The HMP is designed to ensure the delivery of the immediate and long-term biodiversity enhancements proposed within the GCN MS.

1.2 The Scheme

1.2.1 The consented scheme is to construct 2 no. new industrial units on former undeveloped land off Bryn Lane in Wrexham. The layout is shown in Figure 1 and includes:

- Develop Plot 1A and Plot 1B as separate single large industrial units.
- Create a new vehicle access in the northern site boundary for Plot 1A.
- Retain and improved the existing western boundary site access for Plot 1B.
- Provide sufficient car-parking and turning areas within each plot.
- Retain woodland, scrub, broadleaved trees and grassland around the east, west and north of the site, as mitigation for GCN and other biodiversity interests.
- Manage the retained habitats for their biodiversity value in-perpetuity, with monitoring and site wardening.

1.2.2 Details of the scheme are provided within the planning application, but the Landscape Arrangement is included here in Appendix A.

1.3 Site Ecology

1.3.1 The ecological sensitivities and features of the site comprise:

- GCN present within the site.
- Potential for reptiles
- Potential for bat roost within trees
- Potential for foraging and flight lines along hedgerows
- Badger present on site within the woodland
- Nesting birds within scrub and woodland habitats
- Semi-natural Broadleaved Woodland and Species-rich Native Hedgerow – Habitats of Principal Importance in Wales.

1.3.2 Various measures and actions are required to ensure that these ecological receptors are protected and mitigated appropriately as part of the proposed scheme, as detailed within the PEA Report¹. This HMP has been prepared to ensure the delivery of long-term conservation site management.

¹ Etive Ecology (2021), *Plot 1A + B, Bryn Lane, Wrexham Industrial Estate; Preliminary Ecological Appraisal*. July 2021

2 HABITATS & FEATURES

2.1 Overview

2.1.1 The landscape arrangement for the proposed scheme is provided in Appendix A and shows the following habitats and features:

- Amenity Grassland
- Native Wildflower Grassland
- Broadleaved Woodland and Tree Belts
- Butterfly Mounds
- Native Scrub
- Mixed Native Hedgerows
- Hibernacula
- Pond

2.1.2 Each of these habitats / features is described below in terms of location, functionality and potential biodiversity value.

2.2 Amenity Grassland

2.2.1 Newly created amenity grassland will be located in land immediately adjacent to the newly constructed industrial units car parking areas. There will also be an area of amenity grassland at the southwest corner of the site.

2.2.2 This grassland habitat is incorporated into the landscape plan for its aesthetic value. It's value to biodiversity will be limited and as such, areas of amenity grassland have been limited as far as reasonably possible.

2.3 Native Wildflower Grassland

2.3.1 Wildflower grassland will be the dominant groundcover across the site. This habitat will sit between the amenity grassland surrounding the built features and the trees and scrub that will form the site boundaries.

2.3.2 The wildflower grassland will deliver a species-rich sward across a large area of the site. This grassland will provide a rich source of pollen and nectar for foraging invertebrates, which will in turn attract small mammals, bats and birds. The abundance of insect life attracted to this habitat will also provide a good food supply for foraging bats. The variable sward structures that will be achieved through management will also be suitable for reptiles and amphibians, including GCN. This habitat is expected to add significant overall biodiversity capacity to the site.

2.4 Broadleaved Woodland / Tree Belt

2.4.1 Existing broadleaved woodland and tree belts are retained along the west and east boundaries. These habitats are dominated by poplars, oak crack willows. Some of the younger trees around the east sector of the existing site will be lost to the scheme but will

be replaced by a number of new native trees scattered across the site.

- 2.4.2 Woodland and tree belts provide nesting habitats for birds, roosting opportunities for bats cover for badger, amphibians including GCN, and terrestrial mammals.

2.5 Butterfly Mounds

- 2.5.1 Three beds of butterfly grassland mounds will be created; in the northeast of the site around a group of newly planted trees, in the east of the site adjacent to a new hibernacula, and running through the centre of the site dividing the two industrial units.
- 2.5.2 The beds of butterfly grassland will deliver species-rich wildflower dominant swards in these discreet locations. A raised mound with bare patches provides a unique microclimate and are targeted towards invertebrate groups including butterflies as a result of the rich source of pollen and nectar that they offer. The abundance of insect life attracted to these habitats will also provide a good food supply for other species including amphibians, small mammals and foraging bats.

2.6 Native Scrub

- 2.6.1 A native scrub corridor wrapping around the northeast corner and running along the east boundary adjacent to Pond 2 will comprise four native species. This scrub will create an area of ~1500m² and provide screening from the adjacent road. The corridor retains some existing trees near the edge of the site boundary.
- 2.6.2 Scrub will perform both a landscape/visual function and a biodiversity function, by separating and screening the industrial buildings from adjacent land and offering habitat connectivity and its own intrinsic biodiversity value. The new scrub includes four native woody species and will be managed such that a more diverse flora can establish. The wildlife benefits include increased connectivity around the site, buffering from adjacent disturbance and provision of foraging and shelter for amphibians, terrestrial mammals and nesting birds.

2.7 Mixed Native Hedgerow

- 2.7.1 A number of new hedgerows will be created on site, edging the car parking area, wrapping around the northwest and southwest boundary corners and lining the two site entrances. The existing hedgerow along the west of the site will be retained.
- 2.7.2 Hedgerows will perform both a landscape/visual function and a biodiversity function, by separating and screening the industrial buildings from the adjacent busy road and offering habitat connectivity and their own intrinsic biodiversity value. The new hedgerows have been specified to include six native woody species and will be managed such that a diverse hedge flora can establish. The wildlife benefits include increased connectivity around the site, buffering from adjacent disturbance and provision of foraging and shelter for invertebrates, amphibians, terrestrial mammals and nesting birds.

2.8 Hibernacula

- 2.8.1 A total of five hibernacula will be created on site. Each hibernacula will cover a footprint 2m x 1m in size, built to a height of 0.5m. The structures will be comprised of inert material (brick, rubble, timber) and any brash recovered from vegetation clearance works on site.
- 2.8.2 The hibernacula will provide refuges for amphibians, small mammals and invertebrates and potential over-wintering habitat.

2.9 Ponds

- 2.9.1 Two existing ponds will be retained on the site. These will provide potential breeding site for GCN and other amphibian species. They will also provide habitat for aquatic invertebrates and offer biodiversity value in the form of species-richness and prey items for foraging birds and bats.
- 2.9.2 Currently these ponds are in sub-optimal condition as breeding ponds for amphibians, owing to heavy shading and the presence of fish. Their suitability will be improved through targeted enhancement measures and long-term management described herein.

3 AIMS & OBJECTIVES

3.1 Overall Aims

3.1.1 The broad overall aims of this HMP are as follows:

- To improve the suitability of on site ponds for GCN breeding and to provide high quality terrestrial habitat for amphibians.
- To enhance the biodiversity and carrying capacity of the site through habitat management.
- To provide a framework for ongoing monitoring and reporting of retained/created habitats.

3.2 Objectives

3.2.1 The following objectives are given for each habitat/feature retained or created as part of the scheme. The objectives are carried forward throughout this Management Plan as a means of determining appropriate management prescriptions, monitoring methods, performance indicators and remedial measures.

Amenity Grassland

3.2.2 The objective is to maintain the areas of amenity grassland for the duration of this Management Plan. The amenity grassland should be in good condition with a short sward. Amenity grassland is of low value to wildlife and will provide functional aesthetic space to avoid encroachment onto the more valuable wildlife habitats. The habitat is to be assessed on the basis of its extent/area and its aesthetic condition.

Native Wildflower Grassland

3.2.3 The objective is to create and maintain the area of wildflower grassland shown on the Landscape Plan in good condition for the duration of this Management Plan. The grassland will be created as part of the development and will be managed to provide suitable habitat to support small mammals, a range of invertebrates and to provide connectivity for species such as amphibians and reptiles. The wildflower grassland will be assessed on the basis of its extent/area, its species richness and its structural diversity.

Broadleaved Woodland and Tree Belts

3.2.4 Broadleaved woodland and tree belts should be in good condition for the duration of this Management Plan. The trees are to comprise a mixed age structure, a heterogeneous habitat structure and species-rich shrub and ground layers. The woodland should be capable of supporting a wide range of fauna including GCN. The habitat is to be assessed on the basis of its extent/area, its composition and its structural diversity.

Butterfly Mounds

3.2.5 The objective is to create and maintain the butterfly mounds shown on the Landscape

Plan in good condition for the duration of this Management Plan. This habitat will be managed to provide a mixed open sward, rich in wildflowers and suitable to support a range of invertebrates. The butterfly mounds are to be assessed on the basis of their extent/area, species-richness and its structural condition.

Native Scrub

- 3.2.6 The objective is to maintain the area of scrub shown in the Landscape Plan in good condition for the duration of this Management Plan. The scrub habitat is to be of suitable quality to support a wide range of invertebrates, nesting birds, amphibians and small mammals. This habitat is to be assessed on the basis of its extent/area, its composition and its structural condition.

Mixed Native Hedgerow

- 3.2.7 The objective is to maintain the lengths of mixed native hedgerow shown in the Landscape Plan in good condition for the duration of this Management Plan. The hedgerows are to be of suitable quality to provide good connectivity and to offer foraging opportunities to a wide range of species including GCN, bats and terrestrial mammals. This habitat is to be assessed on the basis of its length, continuity, composition and its structure.

Hibernacula

- 3.2.8 The objective is to maintain five hibernacula in good condition for the duration of this Management Plan. The hibernacula are to be maintained to offer a place of shelter to various species of amphibian, invertebrate and small mammal throughout the year. These features are to be assessed primarily on the integrity of the structure and overall condition.

Ponds

- 3.2.9 The objective is to maintain two ponds in good condition for the duration of the Management Plan. The ponds will provide suitable breeding habitat for amphibians including GCN. These ponds are to be assessed on the basis of the Habitat Suitability Index (HSI) and the presence of GCN.

INNS

- 3.2.10 The objective is to ensure that the site, including the ponds, remain free from all INNS.

4 MANAGEMENT PRESCRIPTIONS

4.1 Amenity Grassland

Baseline Condition

- 4.1.1 The extent of the amenity grassland to be managed is as per the Landscape Masterplan (Figure 1). This shows areas of amenity grassland around public open spaces including the parking bays and entrances to industrial units. Species composition is as per the landscape specification.
- 4.1.2 It is anticipated that all of the grassland areas will have been recently seeded prior to the handover of the site for habitat management. Therefore, the ecological condition of these grassland will be fragile and sensitive to disturbance and damage.

First Year Management

- 4.1.3 All newly seeded grassland will be checked once during Year 1 to ensure successful establishment. Management and maintenance in Year 1 will involve frequent mowing during the spring and summer months.

Ongoing Management

- 4.1.4 The ongoing maintenance of amenity grassland will involve weed control, regular cutting and removal of cuttings.

4.2 Native Wildflower Grassland

Baseline Condition

- 4.2.1 It is anticipated that all of the grassland areas will have been recently seeded prior to the handover of the site for habitat management. Therefore, the ecological condition of these grassland will be fragile and sensitive to disturbance and damage.
- 4.2.2 The management of the wildflower grasslands once established is partly dependant on the environmental conditions (soil fertility, shade, water table) as well as the desired length and structure of the sward.

First Year Management

- 4.2.3 The first year of management most sown meadow wildflowers and grasses will be slow to germinate and will not usually flower in their first growing season. Instead, there may be a flush of annual weeds from the existing soil in the first growing season. Any residual or non-desirable weeds such as nettle or dock should be carefully dug out or spot treated as required.
- 4.2.4 The sward will be cut every two months to a height of 150mm and all cuttings collected and removed from the grassland, to prevent the suppression of the desired seedlings. Cuttings will be used to form grass heaps on the woodland edge or else spread as mulch beneath the planted hedgerows.

Ongoing Management

- 4.2.5 Wildflower grassland will require maintenance to maintain a sward height of no less than 150mm. The wildflower grassland should be managed by way of a traditional meadow regime based around a main summer hay cut (August) to 150mm. All cuttings are to be collected and removed from the grassland area and may be used elsewhere on site as previously described. No artificial fertiliser or other feed supplements are to be applied to any areas of grassland described here. Any unwanted perennial weeds (docks, thistles) may need control by hand-pulling or occasional spot treatment with a suitable herbicide.

4.3 Broadleaved Woodland and Tree Belts

Baseline Condition

- 4.3.1 The extent of broadleaved woodland and tree belts to be managed is as per the Landscape Masterplan (Figure 1). This shows woodland to the east of the site and belts of trees and woodland edge to the north and west of the site.
- 4.3.2 The current condition of the broadleaved tree belts (pre-commencement) are sub-optimal, with a homogenous row of mature poplars to the north and west site boundaries with a dense continuous understory of bramble. The condition of the broadleaved trees to the east of the site are moderate, with scattered bramble and minimal ground flora. These trees have been neglected over time and require management intervention. The initial enhancement works will remove some of the dense scrub understory and will also comprise tree works to remove damage/diseased limbs.

First Year Management

- 4.3.3 The first year of management will be to undertake remedial measures noted in the arborist report².

Ongoing Management

- 4.3.4 Ongoing management for all trees will comprise an annual inspection to identify any damaged or diseased limbs that require remedial works. These works will be carried out as required, outside of the nesting bird season.
- 4.3.5 The ground beneath the retained trees will be subject to minimal intervention, with the aim of improving the shrub-layer. Self-seeded native specimens will be identified and protected by strimming of encroaching bramble scrub, to allow them to become established. Sycamore will be hand-pulled immediately if found to be regenerating. The bramble scrub will be strimmed bi-annually, to retain the boundaries of these woodland/tree-belts as shown on Figure 1.
- 4.3.6 All woody brash arising from these woodland works will be stacked on site in the form of

² Tyler Grange (2021), *Arboricultural Impact Assessment; Bryn Lane, Wrexham*. 21st July 2021.

log/habitat piles. Subsequently, all cuttings will be used to replenish log/habitat piles, or else chipped and used as landscape mulch for pathways or hedgerow bases.

4.4 Scattered Trees

Baseline Condition

- 4.4.1 There will be 23 newly planted scattered trees which will be planted in tree pits staked and tied with irrigation root pipe and surface mulch with 50mm of coarse bark layer.

First Year Management

- 4.4.2 All planted stock will be checked twice a year for the first year to ensure successful establishment. Management and maintenance in Year 1 will involve frequent watering, feeding and twice-annual removal of undesirable species from the planted blocks by hand-pulling. Any damaged or failed stock will be replaced on a like-for-like basis
- 4.4.3 Weed control is important during Year 1 to ensure that all planted stock is healthy and establishes successfully. This can be achieved by the use of mulches including mulching sheets. Alternatively, a grass-specific herbicide may be used selectively. Weeds may also be controlled by strimming in autumn, with all cuttings removed. All tree stakes, supports and ties should be checked for fit and replaced where required.

Ongoing Management

- 4.4.4 Recently planted trees which have supports, should continue to be checked for fit and general health checks should be undertaken. Annual removal of undesirable species from around the planted specimens should continue to be undertaken.

4.5 Butterfly Grassland Mounds

Baseline Condition

- 4.5.1 It is anticipated that all of the grassland areas will have been recently seeded prior to the handover of the site for habitat management. Therefore, the ecological condition of these grassland will be fragile and sensitive to disturbance and damage.
- 4.5.2 The butterfly grassland will comprise 50% grass and 50% wildflower and will be subject a management regime dependent primarily upon the environmental conditions on site, e.g. soil fertility. The species composition is detailed in the landscape specification.

First Year Management

- 4.5.3 The Year 1 management for the butterfly bunds will require regular action to manage nutrient levels and maintain an open sward. Locations of bare patches will be identified and established by raking during Year 1. Most sown meadow wildflowers and grasses will be slow to germinate and will not usually flower in their

first growing season. Instead, there may be a flush of annual weeds from the existing soil in the first growing season. This annual growth should be controlled by topping or mowing on a frequent basis (bi-monthly) to keep the sward height to 50- 100mm. All cuttings should be collected and removed from the grassland, to prevent the suppression of the desired seedlings. Cuttings will be used to form grass heaps on the woodland edge or else spread as mulch beneath the newly planted hedgerows.

- 4.5.4 Any residual or non-desirable weeds such as nettle or dock should be carefully dug out or hand-pulled as required. Herbicide treatment is not suitable for the butterfly mounds.

Ongoing Management

- 4.5.5 The management of the butterfly grassland mounds once established is partly dependant on the environmental conditions (soil fertility, shade, water table. The grassland mounds will be subject to two annual cuts; an early season cut in March and a second cut in July/August, both to 50-100mm sward height. All cuttings are to be collected and removed from the grassland area and may be used elsewhere on site as previously described.
- 4.5.6 No artificial fertiliser or other feed supplements are to be applied to any of the butterfly grassland mounds. Any unwanted perennial weeds (docks, thistles) may need control by hand-pulling or digging-out. Herbicide treatment is not suitable for the butterfly mounds.

4.6 Native Scrub

Baseline Condition

- 4.6.1 The native scrub that wraps around the northwest portion of the site will have been recently planted at the point of commencement of this HMP.

First Year Management

- 4.6.2 All planted stock will be checked twice a year for the first year to ensure successful establishment. Management and maintenance in Year 1 will involve frequent watering, feeding and twice-annual removal of undesirable species by hand-pulling and digging-out. Any damaged or failed stock will be replaced on a like-for-like basis.

Ongoing Management

- 4.6.3 To create high quality habitat for GCN the north-eastern scrub will be subject to coppicing and laying, to establish good ground cover. After Year 3, ~25% of hawthorn and blackthorn stems will be selectively laid. A further 25% will be laid in Year 5 and Year 10. Similarly, ~25% of hazel stems will be coppiced in Years 3, 5 and 10.
- 4.6.4 Naturally occurring bramble scrub will be strimmed annually in January-February; before breeding birds start nesting and after the wintering birds have fed on the berry

crop. The bramble and other scrub will be trimmed along the edge of the scrub block as defined on Figure 1, to prevent encroachment onto the wildflower grassland area.

4.7 Mixed Native Hedgerow

Baseline Condition

- 4.7.1 There is an existing hedgerow to the west site boundary and a number of new hedgerows will be planted around the site. These features will be managed for both their wildlife and aesthetic/landscape value. Hedges 1 and 4 are primarily wildlife hedges, whilst Hedges 2 and 3 are aesthetic hedges.
- 4.7.2 The existing hedgerow is established, dense and in a moderate condition. The newly planted hedgerows will be young, sparse and sensitive to disturbance until they become fully established. Therefore Year 1 management actions will be crucial in determining the long-term success of these hedgerows.

First Year Management

- 4.7.3 All planted stock will be checked twice a year for the first year to ensure successful establishment. Management and maintenance in Year 1 will involve frequent watering, feeding and twice-annual removal of undesirable species from the hedges. Any damaged or failed stock will be replaced on a like-for-like basis
- 4.7.4 Weed control is important during Year 1 to ensure that healthy, bushy, continuous hedges are established. This can be achieved by use of mulches including mulching sheets or chippings/cuttings from other Year 1 management. Alternatively, a grass-specific herbicide may be used selectively during Year 1 only.

Ongoing Management

- 4.7.5 Ongoing management of all hedgerows will include the following good practise measures:
- All plants shall be watered adequately to ensure healthy growth.
 - Plants which have become loosened, lifted up or out of the ground will be set upright and re-firmed by treading.
 - All litter shall be removed from the site.
 - If tree ties and tree stakes are used, they will be checked and when necessary adjusted.
 - Tree stakes, ties and other supports and also guards, shelters, etc., will be removed by the end of the second, or third, planting season following planting if establishment is acceptable. The hole in the ground shall be back-filled with topsoil.
 - Straggling stems, over-vigorous shoots, suckers and dead, misshapen or broken branches will be removed from trees and shrubs by pruning back with a clean smooth cut to the main stem, or a sound and living outward growing lateral.
 - If any temporary fencing (e.g. rabbit/deer fencing) is used it will be checked and if necessary, repaired.

- Any temporary fencing will be removed at the end of the maintenance period. The ground surface shall be made good and left tidy.
- Where plants are missing, have died or have failed to make satisfactory growth these shall be replaced in the first two months of the next scheduled planting season.

4.7.6 The aim of hedgerow management is to create a dense continuous hedgerow approximately 1.5m high, 1-2m wide at the base and approximately 0.5-1m wide at the crown. Hedges 1 and 4 will be trimmed once a year in January-February; before breeding birds start nesting and after the wintering birds have fed on the berry crop. Hedges 2 and 3 will be cut twice annually in September and January/February, to maintain a neat and tidy appearance. During cutting operations it will be important to avoid trimming any hedgerow standards.

4.7.7 It is likely that for the long-term management of Hedges 1 and 4 (after about 10 years of trimming) there will need to be some restoration, e.g. to fill gaps or prevent them from developing into a line of trees. This may be achieved by coppicing (cutting the stems to just above ground level) or hedge laying. As with trimming, the hedge coppicing and laying should be done on a rotational basis and take place towards the end of winter.

4.8 Hibernacula

Baseline Condition

4.8.1 The five hibernacula will have been constructed shortly before the commencement of this HMP. They will have been constructed using cuttings from mitigation works undertaken earlier on site and are designed to provide robust places of shelter for reptiles, amphibians and small mammals.

First Year Management

4.8.2 Hibernacula will be inspected during Year 1 and remedial action taken to restore them if they are found to be in a sub-optimal condition, i.e. if they do not provide a robust place of shelter.

Ongoing Management

4.8.3 Hibernacula will be checked annually and remedial action taken to restore them if they are found to be in a sub-optimal condition, i.e. if they do not provide a robust place of shelter. Additional woody material will be added to each hibernacula following management works elsewhere on site.

4.9 Ponds

Baseline Condition

4.9.1 There are two existing ponds within the site boundary. Pond 1 is located towards the northern site boundary and Pond 2 is located along the eastern site boundary.

These ponds will have been subject to initial enhancement works prior to the start of this HMP, comprising the removal of fish and the clearance of surrounding vegetation that over-shades the marginal areas.

First Year Management

- 4.9.2 Year 1 management will be minimal, requiring only an annual visit to remove litter and any other detritus within the immediate vicinity of the ponds, and to review the efficacy of the enhancement measures previously undertaken, e.g. has sufficient shade been removed?

Ongoing Management

- 4.9.3 Annual management, undertaken outside of the GCN breeding period (March to June inclusive) will comprise;
- Litter/detritus picking
 - Control and removal of marginal vegetation, aiming for ~75% marginal coverage.
 - Control and removal of emergent vegetation, aiming for ~50% of pond coverage.
 - Control and removal of over-shading vegetation, aiming for <50% of the margins to be shaded.
 - Control and removal of any INNS.

4.10 INNS

Baseline Condition

- 4.10.1 There are no INNS present on site pre-construction.

Ongoing Management

- 4.10.2 INNS will be subject to management as/when identified on site. It is anticipated that species such as Himalayan balsam may occur on site post-development. The species will be subject to hand-pulling immediately whenever found on site during any of the management or monitoring site visits.

5 MONITORING

5.1 Methods

- 5.1.1 Monitoring will take place in Years 1, 2, 3, 5 and 10, by way of a single annual visit undertaken in June. The timing of the monitoring visit is to ensure all habitats are in a suitable condition (i.e. prior to cutting and in full flower) to assist in the assessment of habitat quality.
- 5.1.2 The monitoring visit will comprise a walkover survey and assessment of all habitats and features described herein. Each habitat/feature will be assessed against the Key Performance Indicators (KPIs) described below and given in Table 5.2.1.
- 5.1.3 Monitoring of habitats/features will be undertaken by a suitably experienced ecologist with the relevant skills in botanical identification and protected species licenses where appropriate.

Amenity Grassland

- 5.1.4 The amenity grassland will be monitored for its extent/area and its aesthetic condition, based on a single annual walkover.

Native Wildflower Grassland

- 5.1.5 The wildflower grassland will be monitored for its extent/area, its species richness and its structural diversity, based on a single annual survey in June.

Broadleaved Woodland and Tree Belts

- 5.1.6 The broadleaved woodland will be monitored for its extent/area, its composition and its structural diversity. Species composition will be assessed against the existing woodland composition and any additional planting. Structural diversity will be assessed by the % cover of shrub layer, ground flora and bare ground. Coverage will be measured against the figures/plans given herein.

Butterfly Grassland Mounds

- 5.1.7 The butterfly grasslands will be monitored for their extent/area, species-richness and its structural condition. Species-richness will be assessed against the seed mix with which each area was sown. Structural condition will be assessed by the % cover of wildflowers, grasses, woody species and bare ground. Coverage will be measured against the figures given herein.

Native Scrub

- 5.1.8 The new area of native scrub will be monitored for its extent/area, its composition and its structural condition. Composition will be assessed against the planting specification. Structural condition will be assessed by the % cover of shrub layer, ground cover and bare ground. Coverage will be measured against the figures/plans

given herein.

Mixed Native Hedgerows

- 5.1.9 The hedgerows will be monitored for their length, continuity and structure. Length will be assessed against the figures given herein, continuity will consider the % of gaps along the length and structure will cover height/width and % hedge-bottom coverage.

Hibernacula

- 5.1.10 The hibernacula will be monitored for their height, width, and integrity of structure.

Ponds

- 5.1.11 Ponds 1 and 2 will be monitored using the Habitat Suitability Index (HSI) and the presence/absence of GCN.

INNS

- 5.1.12 INNS will be monitored for their presence. The aim of monitoring is to continue an INNS free habitat.

5.2 Key Performance Indicators

- 5.2.1 The following KPIs have been identified primarily as a means of assessing the success of the management regime in achieving the aims and objectives of this Habitat Management Plan, KPIs are given on a species/feature basis in Table 5.2.1 below.

Table 5.2.1 KPIs by Habitat / Feature

	Lower Limit	Upper Limit	Target
Amenity Grassland			
Aesthetic Condition	Good	No upper limit	Good condition
Coverage	5% loss	No loss	No loss in coverage
Native Wildflower Grassland			
Species - richness	14 (9-5 wildflower to grasses)	No upper limit	A species-rich grassland
Structural Diversity	Moderate	No upper limit	Good condition
Coverage	5% loss	No upper limit	No loss in coverage
Broadleaved Woodland & Trees			
Species-richness	8	No upper limit	Species-rich woodland / trees
Structural Diversity	<50% bare ground <90% shrub layer	0% bare ground	50% shrub layer 40% ground flora 10% bare ground
Coverage	5% loss	See Figure 1	No loss in coverage
Butterfly Grassland			
Species-richness	9 (6-3 wildflower to grasses)	No upper limit	3:1 ration of wildflowers to grasses.
Structural Condition	5% woody species 5% bare ground	30% bare ground	60% wildflowers 20% grasses 20% bare ground
Coverage	5% loss	See Figure 1	No loss in coverage
Native Scrub			
Species-richness	5	No upper limit	A Diverse scrub community
Structural Condition	20% bare ground 20% ground cover	80% shrub layer	60% shrub layer 40% ground cover
Coverage	5% loss	See Figure 1	No loss in coverage
Mixed Species Native Hedgerows			
Length	1% loss	See Figure 1	No loss in length
Continuity	5% gaps	No upper limit	No gaps
Structure	1m width 25% ground cover	No upper limit	1.5m height 2m width 50% ground cover
Hibernacula			
Size	0.5m height 1m width	No upper limit	1m height 2m width
Integrity	Moderate	Good	Fully integral
Ponds			
Presence / Absence	GCN presence in 1 pond	No upper limit	GCN presence in both ponds
HSI Score	Good	No upper limit	Excellent
INNS			
Presence	-	-	Absence of NNIS

5.2.2 Monitoring will be undertaken in the following years post-completion:

- Year 1
- Year 2
- Year 3
- Year 5
- Year 10

5.2.3 A 5-year review meeting will be organised following the undertaking and reporting of the Year 5 monitoring. This meeting will take place with the ecologist, the site owner(s) and the maintenance contractor to review the performance of the habitat management measures. Further measures for habitat and/or protected species enhancements will be discussed as part of this review meeting.

5.3 Reporting & Remedial Action

5.3.1 For each year that monitoring is undertaken, a short report will be compiled to present the findings of the monitoring and a comparison of the site condition to the KPIs detailed above. Where the lower limits are not met for any habitat or feature, these will be highlighted, and remedial action will be proposed. Remedial action may comprise an immediate management intervention or it may involve a revision to the management regime. Where further monitoring is required to check on the efficacy of the remedial action proposed, in addition to the regime noted above, this will be stated within the Monitoring Report.

5.3.2 Monitoring Reports will be kept on file and made available to Wrexham County Council, NRW or their representatives upon request, to demonstrate compliance.

6 WORKS SCHEDULE

6.1 Year 1 Works Plan

6.1.1 An indicative Year 1 works plan is provided in Table 6.1 below. The plan is set out from January to December for ease of presentation but may commence at any time of the year provided the full schedule is followed.

Table 6.1 Year 1 Works Plan

Month	Habitat / Feature	Action
January	Trees, scrub and hedgerows	Trimming of existing trees & scrub to allow grassland to establish. Creation of log/brash piles with cut material.
March	Broadleaved Woodland All Grasslands	Check plant health; feed, water, remove undesirables / INNS. Cut grassland to 50/100/150mm as appropriate. Rake bare ground within butterfly mounds.
April	Mixed Species Native Hedgerow	Check plant health; feed, water, remove undesirables / INNS.
May	All Grasslands	Removal / treatment of undesirables / NNIS. Cut grassland to 50/100/150mm as appropriate. Rake bare ground within butterfly mounds.
July	All Grasslands	Removal / treatment of undesirables / NNIS. Cut grassland to 50/100/150mm as appropriate. Rake bare ground within butterfly mounds.
	Ponds	Litter/detritus pick and review of enhancements.
August	Mixed Native Hedgerow	Check plant health; feed, water, remove undesirables / INNS
September / October	Broadleaved Woodland	Check plant health; feed, water, remove undesirables / INNS. Strim weeds <2m radius and remove cuttings. Replace any damaged/failed stock.
	Species-rich Hedgerow	Strim weeds <2m radius and remove cuttings. Replace any damaged/failed stock.
	All Grasslands	Removal / treatment of undesirables / NNIS. Cut grassland to 50/100/150mm as appropriate. Rake bare ground within butterfly mounds.

6.2 Annual Works Plan

6.2.1 An indicative annual works plan is provided in Table 6.2 below.

Table 6.2 Annual Works Plan

Month	Habitat / Feature	Action
January	Broadleaved Woodland	Maintenance as detailed in the Tree Report [WO1]. Retention of self-seeded native trees. Removal of sycamore. Bi-annual bramble strimming.
February	Mixed Species Native Hedgerow	Trim all hedgerows to 1.5m height and >1m width at base. Lay Hedges 1 & 4 after Year 10.
	Scrub	25% laying and coppicing in Years 3, 5 & 10. Strimming of scrub boundary.
	Hibernacula	Annual inspection and replenishment.
March	Butterfly Grassland Mounds	Cut to 50-100mm. Removal / treatment of undesirables / INNS.
August	Native Wildflower Grassland	Cut to 150mm. Removal / treatment of undesirables / NNIS.
	Butterfly Grassland Mounds Ponds	Cut to 50-100mm. Removal / treatment of undesirables / INNS.
	Ponds	Litter / detritus pick. Vegetation control. HSI assessment.

7 ROLES & RESPONSIBILITIES

7.1 Site Owner(s)

- 7.1.1 The site owner(s) (or their appointed contractor) will be responsible for the creation of the habitats and ecological features details herein and the implementation of this Habitat Management Plan. The site owner(s) will also be responsible for appointing a suitably experienced ecologist to undertake the monitoring as specified within this Management Plan.

7.2 Appointed Ecologist

- 7.2.1 A suitably experienced ecologist will be appointed to undertake the monitoring detailed herein. The appointed ecologist will then be responsible for undertaking the monitoring in full accordance with the methods described in this Management Plan and following all relevant legal/licensing requirements. The appointed ecologist will also be responsible for accurately assessing and reporting the monitoring findings to the site owner(s), with appropriate recommendations relating to ongoing management.

8 OWNERSHIP & FUNDING

8.1 Ownership

- 8.1.1 Post-development, the site will remain in the ownership of the applicant and there is no intention to the land to any other party. The industrial units are to be leased. Management will therefore remain the responsibility of the site owner(s) for the foreseeable future. Any change in ownership or ownership status will be reported as part of the monitoring process.

8.2 Funding

- 8.2.1 The implementation of this Habitat Management Plan will be funded by the site owner(s). The management of the site will be funded through the lease agreement paid by the occupiers of the industrial units. These funds will be used to employ a suitably experienced contractor to undertake the maintenance described herein.

Appendix A - Figure 1

Landscape Masterplan

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BRYN LANE Planting AND SEEDING Schedule										
HEDGES			HEDGE 1 (192m)	HEDGE 2 (20 m2)	HEDGE 3 (36 m2)	HEDGE 4 (94 m2)	HEDGE 5 (34 m2)			
Area m ²										
HEDGE SPECIES		SPACING per m ²								
Crataegus monogyna		Hedges See Note 1 below	650	65	240	300	100			
Prunus spinosa			250	40	100	50	50			
Cornus avellana		2	200	10	100	100	25			
Ilex aquifolium			100	20	50	50	25			
Lonicera periclymenum			50	5	25	10	10			
Rosa canina			50	5	25	15	15			
Total plants			1300	135	625	625	225			
NATIVE SCRUB PLANTING		N/ 45/60mm @ 1m spacing	BED 1 (1500m2)							
Crataegus monogyna			750							
Cornus avellana			250							
Malus sylvestris			250							
Pyrus communis			250							
TREE SPECIES		extra heavy 60/80mm standard	TREE Nos.							
Pinus sylvestris			T17,T21,T22,T23							
Sorbus torminalis			T2,T6,T7,T15,T18							
Acer campestre			T10,T11,T13,T14							
Carpinus betulus			T3,T12,T4,T5,T8,T9,T12,T16,T19,T20							
BUTTERFLY GRASSLAND			BED 2 (306m2)	BED 3(246 m2)	BED 4 (127 m2)					
(See note 3 below)										
Notes										
1. Hedges: Plant 6 x r plants in prepared, cultivated ground at a double row hedge, 300mm between plants and 300mm between rows. Plant hole in 2.0l pots. Lay a 50mm thick layer of coarse bark mulch following planting			2. Trees: Plant trees in pits, staked and tied with irrigation root pipe and surface mulch with 50mm coarse bark layer. NB All tree planting and establishment should comply with BS5845:2014. Trees from Nursery to Independence within the Landscape.			3. Butterfly grassland: Sow the following mix at 4gms/m ² consisting 50% grass and 50% wildflower seed. Seed to be obtained from Emorsgate seeds. Grasses: Festuca rubra, briza media, cynodon dactylon. Wildflowers: Anemone nemorosa, alga reptans, leucanthemum vulgare, potentilla reptans, achillea millefolium and pteridium aquilifolia. Mix to be sown on a gentle mound 300mm high max. on a cultivated mix of 50% topsoil and 50% subsoil.			4. Meadow grassland Sow Emorsgate EMI basic general purpose meadow mix on cultivated soil at 4gms/m ² . Do not cultivate any land within existing retained trees 10m.	
									5.Amenity grassland Sow Geminal A4 amenity grass seed at 10gms/m ² to establish low closely mown sward	

Do not scale from this drawing.

Verify all dimensions on site before commencing work. Any discrepancies should be reported without delay to Chris Burnett Associates.

Date	Details	Revision

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Landscape Proposals

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Hatrack Properties

Project
Bryn Lane

Scale 1:500 @ A1

Date 12.11.21	Drawn HB	Checked CB
Dwg No. BL21.01	Revision	