



Land at Clywedog Rd North (Site 4) Wrexham Industrial Estate

Habitat Mitigation and Management Plan

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1 Introduction

1.1 Planning Background

Wrexham County Borough Council approved First Investment Real Estate Management (FI-REM) Limited's planning application (ref: P/2018/1086) for the erection of B1 light industrial units with associated access, services, parking and landscape treatment with an ecological mitigation zone on the 18th December 2020.

The ecological effects of the proposals were assessed and mitigation measures proposed in Kingdom Ecology Reports (2018a¹ and 2018b²).

Planning Condition 3 of the Planning Permission states:-

'3. The development shall not commence until a detailed habitat mitigation and management plan has been submitted to and approved in writing by the local planning authority. The scheme shall be prepared in accordance with the principles laid out in the Outline Habitat Management Plan document ref: KE1849.01 Version 3 dated 23 November 2018 authored by Richard Roe of Kingdom Ecology Ltd. The development shall be carried out in accordance with the details as may be approved.'

In addition and as part of a Section 106 agreement for the development, and detailed within a Unilateral Undertaking (UU) signed on the 22nd December 2020, there is a requirement for the developer to submit a Habitat Management Plan to the council for approval and manage and maintain an 'Ecology Area' within Site 4 as identified within the UU.

The extent of the proposed ecology mitigation area is shown on Drawing Number 0517 in the Appendix. This comprises of an area of land located along the southern and eastern boundaries of the development site.

In order to address Planning Condition 3 and the requirements of the S106 agreement, Kingdom Ecology have produced this Habitat Mitigation and Management Plan to support the proposed development of the site.

Section 2 of the report provides background information on the habitats present at the on-site and off-site Ecology Mitigation Areas.

¹ Kingdom Ecology (2018a)- Land at Clywedog Rd North (Site 4); Wrexham Industrial Estate; Ecological Assessment Report; 21st November 2018

² Kingdom Ecology (2018b)- Land at Clywedog Rd North (Site 4); Wrexham Industrial Estate; Outline Habitat Management Report; 23rd November 2018

Section 3 identifies conservation objectives. And proposes methods for habitat creation including the installation of discreet features for wildlife including bat and bird boxes plus features to be included within a proposed Sustainable urban Drainage System (SUDS) pond.

Section 4 identifies methods for future habitat management including management of grassland, scrub and woodland habitats.

Section 5 identifies objectives for future monitoring, wardening and reporting of the mitigation sites.

2 Existing Habitats

2.1 Site Overview and Mitigation Habitats

The proposed development site is an approximate 1.86ha area of land located at the corner of Clywedog Road East and Clywedog Road North at Wrexham Industrial Estate, LL13 9XE (Ordnance Survey Grid Reference SJ 374 493).

The proposed on-site mitigation area adjacent to the development site comprises of a 1ha patch of land located along the southern and eastern boundaries of the site. This land currently comprises of broadleaved woodland along plus areas of rough grassland and bramble scrub.

2.1.1 Habitats at the Development Site

To summarise, Site 4 comprises of an area of grassland habitat that has undergone limited management over recent years.

The initial 2017 surveys recorded a range of successional habitats including areas of coarse semi-improved grassland which grades into areas of tall herb community, bramble scrub and hawthorn scrub. The site appears to be irregularly mowed/flailed during the late winter/early spring.

It was observed in May 2018, that all scrub and grassland habitats had been recently cut back with a tractor mower. However, by late summer, dense bramble scrub had returned to recolonise the previously identified areas of bramble/hawthorn scrub with the remainder of the site returning to typical tall, coarse grass and herb habitat.

There is a band of broadleaved woodland which runs along the south-eastern boundary of the site. The woodland is located either side of a watercourse.

The woodland and watercourse form part of a more-or-less unbroken corridor of semi-natural vegetation which runs from the southwestern edge of the Industrial Estate, through the estate itself, before joining Redwither Brook approximately 500m to the east of the site. Redwither Brook eventually flows into the River Clywedog at the south-eastern edge of the Industrial Estate.

The woodland and its associated watercourse is likely to function as a wildlife corridor through the industrial estate.

The scrub and grassland habitats present are of low botanical interest and are commonly occurring throughout the UK within similar neglected agricultural and industrial sites.

The woodland is also of considered to be of relatively low botanical interest, however owing to its function as one of the main wildlife corridors through the Industrial Estate, the woodland is considered to be a feature of locally important biodiversity value.

2.1.2 Proposed Mitigation Area at Site 2

The proposed mitigation area for Site 4 is located along the south eastern boundary of the site. Habitats present principally comprise of broadleaved woodland. Adjacent to the woodland, habitats comprise of patches of continuous scrub dominated by bramble with occasional nettle, great willowherb, broadleaved willowherb, teasel and hogweed.

The woodland habitats comprise mostly of young/semi-mature self-seeded hawthorn, sycamore, hazel, elder and ash with occasional mature white poplar which are likely to be of plantation origin.

The woodland field layer comprises principally of ivy with dog's mercury plus occasional wood avens, herb Robert, male fern, wood meadow-grass and hairy wood-rush.

There is a small watercourse that flows through the woodland and which joins Redwither Brook approximately 500m to the east of the site.

There is a further area of land within the ecology zone located along the site's eastern boundary. This area comprises of an earth bund which has likely been created when earth works were carried out for the construction of the neighbouring industrial units. The bund supports further thorny scrub habitats, some patches of coarse, neutral grassland habitats at its south face plus a band of closely mown amenity grassland located on the top of the bund and on its northern face. Much of this earth bund will be removed and levelled to re-profile the site and to allow the creation of a proposed SUDS pond.

2.1.3 Key Species

Targeted protected species surveys were completed at Site 4 during the 2018 field season to determine the likely presence/absence of and importance of the site for breeding birds, bats, reptiles and notable butterflies.

Moderate numbers of common bird species were recorded at the site, with most birds recorded within the woodland and along the woodland edge habitats.

Bat activity surveys identified the site as supporting relatively low numbers of common bat species. Bats were generally encountered individually either commuting along or foraging over the woodland habitats.

3 Habitat Mitigation Proposals

3.1 Overview

3.1.1 Development Proposals

Development proposals are to construct an industrial unit at the site with associated areas of hardstanding. This will result in the loss of approximately 1ha of semi-improved grassland habitats.

The proposed Ecology Mitigation area is situated adjacent to the development site and comprises of an approximately 1ha area of land comprising principally of woodland plus some areas of scrub and grassland habitats.

3.1.2 Mitigation Plan Aims

The habitat management plan for the on-site mitigation habitat has been designed around the following key principles and aims:-

- Where possible, retain blocks of interlinked habitat as opposed to isolated pockets of habitat;
- Maximise the biodiversity value of retained habitats at the site;
- Ensure the long-term viability of the habitat by appropriate, long-term management and long-term protection of the habitat;
- Allow for a flexible and iterative process with regards to the management of the habitats through an annual review of the habitats present and the management plan to allow biodiversity opportunities to be explored and promoted.

3.1.3 Management Plan Delivery

FI-REM will make provision to allow the appointment of an appropriate managing organisation who will be responsible for the maintenance and management of the FI-REM owned habitat compensation areas across the Wrexham Industrial Estate.

Funding for the ongoing management of the sites would need to include for the following:-

- Initial habitat preparation and creation
- Ongoing management and maintenance
- Wardening and monitoring of the sites
- Production of an annual report for the sites
- A contingency fund to allow for any modifications to the habitat management plan or ad-hoc remediation works

3.2 Initial Habitat Preparation/ Habitat Creation

3.2.1 Overview

The proposed Ecology Mitigation area is located immediately adjacent to the proposed development area. The Ecology Mitigation Area supports some habitats of value which would benefit from long term management.

Areas of grassland habitat will largely be lost to the development beneath the buildings' footprints, the SUDS pond and associated with the re-profiling of the boundary earth bund. Some small patches of grassland and scrub may be retained at the north corner of the site.

The band of woodland and scrub along the southern boundary of the site will be retained and managed to optimise its conservation value.

The proposed SUDS pond will also be designed to be of benefit to wildlife. There are further recommendations to provide a bat and bird box scheme within retained woodland habitats.

Proposed habitat management prescriptions are shown on Figures 2 in the Appendix. Proposals within the mitigation area will include:-

- Demarcation of habitats/mitigation areas
- Creation of a SUDS pond to be of benefit to wildlife
- Management of grassland, scrub and woodland habitat
- Implementation of a bat and bird box scheme

An Ecological Clerk of Works (EcOW) will be appointed to oversee and advise on sensitive stages of the initial ground works.

3.2.2 Demarcation and Protection of Habitats

The first item of works will be to fence the boundaries of the Ecology Mitigation Area with demarcation fencing. This is to ensure that the areas are not damaged during site clearance works. The mitigation area should be fenced with Heras fencing or similar as soon as practicable.

Some parts of the Ecology Mitigation Area will be damaged during the creation of the SUDS pond and the re-profiling of the earth bund on the site's eastern boundary. The demarcation fencing can be temporarily removed for this stage of works. However, once these works have been completed and the land restored, the Heras fencing must be restored in order to ensure that this area is protected from further damage.

An initial site meeting will be undertaken between the EcOW and the construction contractors to work through this management plan.

3.2.3 Bat and Bird Boxes

A bat and bird box scheme will be implemented within woodland habitats in the Mitigation area.

It is recommended that the following models and numbers of bat and bird boxes are installed on mature trees at the site and on adjacent woodland under the same ownership and located contiguous to the site:-

- 10 x Schwegler 1B Bird boxes with 32mm entrances
- 6 x Schwegler 1B Bird boxes with 26mm entrances
- 10 x Schwegler 2F Bat boxes
- 6 Schwegler 2FN Bat boxes
- 2 x Schwegler 1FS Bat boxes

Any variation to the models of bat and bird boxes recommended (e.g. through lack of availability) should first be agreed with the EcOW.

Bat boxes should be positioned to face in a more-or-less southerly direction; should be located at a minimum height of 4m and should be located so that flight lines to the bat box are not obstructed by vegetation.

Bird boxes should be located at a minimum height of 3m and should be positioned in a sheltered location.

The exact location for the bat boxes would be determined on site by the EcOW.

3.2.4 SUDS Pond

Development proposals in the Ecology Mitigation Area will include the installation of a SUDS attenuation pond. Elements of the pond design and future management have/will be undertaken following measures to maximise the pond's biodiversity value. In drawing up these measures, the Pond Creation Toolkit as developed by the Freshwater Habitats Trust has been used.

The proposed SUDS pond will measure approximately 600m² in area. The pond will have gently sloping sides with sides at its north and east faces battered back to an angle of approximately 12° where practicable. This will allow fauna to easily move between the terrestrial and aquatic habitats and to encourage a 'draw-down' zone at the pond margin which will be seasonally wet. These marginal habitats can be of value to invertebrates and aquatic vegetation. The pond will have an irregular shape to increase the length of pond margin habitat.

The pond will reach a depth of at least 1m in some parts so the pond will be permanently wet.

The pond will not be planted up with any additional vegetation with the pond allowed to develop by natural colonisation. This is because the 'new-pond' stage is relatively short compared to the whole life of a pond and can provide a distinctive habitat type which has value in its own right and is different to the habitats offered by older ponds.

When constructing the pond the ECoW will attend site to ensure that the pond is constructed following the recommendations of this Management Plan.

3.2.5 Grassland Restoration

Areas of bare ground around the pond will be re-seeded with an appropriate wildflower mix (e.g. Emorsgate Seeds EM2- General Purpose Meadow Mix).

Ground preparation and aftercare would follow the recommendations provided by Emorsgate Seeds, with the preparation of an appropriate soil tilth, followed by sowing of the seeds ideally during the autumn or spring or at other times of the year if there is sufficient warmth and moisture. Once sown, the seeds will be firmed in with a roll, or by treading, to give good soil/seed contact.

Most sown meadow wildflower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season. There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed growth can be controlled by topping or mowing.

The newly sown grassland will be mown regularly throughout the first year of establishment to a height of 40-60mm, removing cuttings if dense. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wildflowers. Any residual perennial weeds should be spot treated or dug out.

4 Habitat Management Proposals

4.1 Management Plan Delivery and Responsibilities

The Habitat Mitigation Areas will be managed in accordance with this Habitat Management Plan for a minimum of 20 years.

First Investment Real Estate Management Ltd will be responsible for the management and maintenance costs and for arranging the required monitoring, management and maintenance activities.

Annual ecological monitoring would be undertaken at the site for a minimum of 20 years. The monitoring works will record habitats present, confirm whether management prescriptions are being completed and will make adjustments to the management plan, where required.

An Ecological Compliance Audit will be completed during the construction phase and for the first three years post construction to ensure that the Habitat Management Plan is being appropriately followed.

First Investment Real Estate Management Ltd will appoint an appropriately qualified ecologist to undertake monitoring works and to complete the Ecological Compliance Audit.

4.2 Habitat Management

4.2.1 Grassland Management

Habitat management at the Ecology Mitigation Sites should seek to encourage a diverse range of habitats. In this instance proposals will seek to retain areas of grassland, varying ages of scrub habitat and woodland habitats. The management proposals will also aim to prevent overshadowing of the proposed SUDS pond.

A small area of grassland will be retained along the northeastern boundary of the site, around the proposed SUDS pond.

As this area of land will largely be damaged and restored during construction works, this grassland will be of artificial origin and achieved through appropriate reseeding of the ground (see Section 3.2.5).

Once established, the grassland will be managed as hay meadow habitat, with the grasslands to go uncut between April and late August. This will allow a hay meadow type habitat with associated wildflowers to come through during the summer. After flowering in August, a 'hay cut' of the meadow will be taken using a power scythe or petrol strimmer. The grassland will be cut back to a height of approximately 50mm.

The 'hay' will be left to dry and shed seed for 1-7 days and then will be removed from site. Failure to remove the 'hay' will result in a build-up of litter forming a dense mat which can impact upon plant diversity. No fertiliser would be applied to these areas.

4.2.2 Management of Woodland and Scrub Habitats

Small areas of thorny scrub will be retained and permitted to develop at the site.

The locations of this thorn habitat is shown on Figure 2 and is located adjacent to the woodland belt and at the northern and southwestern corner of the site (Scrub 1 and Scrub 2 on Figure 2). Scrub habitats at the site have already been recently cut back and so they will be left to establish over the next 5 and 10 years.

Dense blackthorn and hawthorn scrub at the Mitigation Area should be cut back on a 10-year rotation. With half the scrub cleared in years 5 and 15 the other half in years 10 and 20. Hawthorn and blackthorn scrub can be rich in insects and birds in the early and middle stages of growth. This cycle of cutting will retain early-stage scrub habitats.

The development of scrub along the woodland belt will also allow a more natural eco-tone to develop along the woodland edge.

To increase the value of woodland habitats it is recommended that it is thinned out and that any higher value trees are encouraged to come through. This can be achieved through 'haloing' (haloing involves the felling and pruning back of surrounding low-value trees and scrub so that they do not shade out and stunt the development of the more valuable adjoining trees). The thinning out of the woodland should allow more light through to the field layer potentially enhancing conditions for woodland ground flora.

The woodland includes some dense stands of thorn and poplar scrub. It is recommended that these are thinned out and also recommended that some of the denser areas of scrub within the woodland are periodically cleared to create small glade-type habitats within the woodland interior. This clearance should comprise of approximately 5m x5m areas where young scrub/trees which should be cleared. The exact locations for these clearings should be determined by the project ecologist. It is recommended that 4 of these clearings should be created in year 1. Further thinning of the woodland should be completed once every 10 years with the extent and locations to be determined by the ecologist.

Some log piles and areas of dead wood should be retained within the woodland to provide additional habitat for invertebrates.

Works to the woodland and scrub should be undertaken outside of the nesting bird season (March-August inclusive).

4.2.3 Pond Management

Intermittent management and control of vegetation within the SUDS pond may be required on a 3-5 year basis. The pond should be managed to retain at least 30% open water. Where vegetation is to be removed, this should be carried out over the Autumn/Winter to have the least impact upon any wildlife present.

Any invasive aquatic plant species should be monitored and treated as appropriate to prevent colonisation of the pond.

If water levels within the deepest part of the pond fall regularly below 500mm, de-silting of the pond should be carried out by a long-armed excavator. Where possible this should be carried out from one entry point to limit disturbance to the pond and adjacent habitats. These works would ideally be carried out over the winter months.

Annual monitoring of the site will be undertaken to assess the success of the management regimes. The ecologist will also determine whether any pond and scrub maintenance is required.

Management of habitats should be carried out for at least 20 years, following the completion of construction.

A summary of Management proposals along with frequency and time of year is provided in Table 1 below.

Land at Clywedog Road North (Site 4)
Habitat Mitigation & Management Plan



Table 1- Habitat Management Summary

Habitat	Frequency of Management	Time of Year	Management Proposal
Grassland Management	Annual management of established grassland starting in year 1 of construction. Patches of grassland trimmed annually. Frequency/extent may be increased/decreased pending findings of monitoring surveys.	Works to be undertaken August/September to allow plants to flower and set seed.	Established Grasslands will be managed as hay meadow habitat, with area undergoing an annual cut. Frequent cuts of newly seeded grassland required in first year to control weed growth. All cuttings/ arisings to be removed. No fertiliser to be applied.
Woodland management	Year 1 or 2 and then every 10 years on rotation.	Avoid nesting bird season (March-August inclusive)	Woodland to be thinned out around higher value trees and within dense stands of scrub. Glades to be created. Log piles and areas of dead wood to be retained within the woodland
Scrub management	To be cut on a 10 year rotation with 50% cut in Year 5 and 50% in year 10.	Avoid nesting bird season (March-August inclusive)	All arisings to be removed.
Pond Management	Intermittent management and control of vegetation within the SUDS pond may be required on a 3-5 year.	Vegetation clearance to be carried out Autumn/Winter, if required	Management proposals to be determined based upon annual ecological monitoring surveys. May require vegetation or silt removal.
Ecological Monitoring Survey	To be completed annually	To be completed during the summer	Ecological site visit to be conducted annually with findings and recommendations for management presented before late summer habitat management works

5 Wardening, Monitoring and Reporting

5.1 Wardening

Land at Wrexham Industrial Estate can suffer some anti-social behaviour including fly tipping, unauthorised use of off-road vehicles and use of land by unauthorised gypsy and traveller encampments.

The Ecology Mitigation Area is largely set back from the road and behind the proposed industrial units. Consequently, vehicular access is restricted and the risk of the described undesirable activities are considered to be low.

Nevertheless, some infrequent wardening of the site should be carried out at least once every three months.

Where identified during wardening visits, remediation works should be promptly carried out at each site. This could include repair of fencing, clearance of fly-tipped debris, litter picking etc.

5.2 Monitoring

Monitoring of the site should be carried out annually during the summer to assess the success of the habitat management plan, to allow for any refinement of management practices and to check on the integrity of bat and bird boxes. The monitoring works should be completed by an appropriately qualified ecologist.

Monitoring should comprise of an assessment of the botanical value of the site and also an assessment of the ecological value of the SUDS pond.

The ecologist will determine whether any additional works to the standard mowing regimes are required and whether the SUDS pond requires any remediation works. An assessment of woodland and scrub habitats would also be undertaken in years 5, 10, 15 and 20 in order to inform management prescriptions for woodland and scrub habitats.

An annual monitoring report with management recommendations (where relevant) would be produced and submitted to the council.

5.3 Ecological Compliance Audit

A biodiversity compliance audit will also be undertaken by the appointed ecologist to confirm that the site recommendations have been undertaken and appropriately completed.

The compliance audit would last for the duration of construction works and for the first three years of the ongoing habitat management works. After this period, monitoring and reporting of the site will continue for the 20 year habitat management period with the follow-on report available to the Council, NRW or any other interested bodies.

The appointed Ecological Consultant will submit the annual Compliance Audit to Wrexham CBC.

The Compliance Audit will require that the following Key Performance indicators are completed/undertaken.

1. A suitably experienced ecologist will be appointed for the project duration and for monitoring of the future habitat management works.
2. Prior to the start of any works, the ecologist will confirm that appropriate fencing has been installed to protect the Ecology Mitigation Areas.
3. Prior to the completion of construction, confirmation that the bat and bird boxes have been installed.
4. During construction, confirmation that the SUDS pond has been appropriately installed including recommended features for wildlife.
5. Confirmation that the proposed Ecology Mitigation Area has been suitably retained and protected during construction works.
6. Implementation of post development habitat/site management and maintenance and, annual habitat monitoring as described above.
7. Successful implementation of the management plan to achieve habitat goals including a mosaic of woodland, wildflower grassland, scrub and pond habitats.

6 Figures

**Figure 2- On Site Ecology Area
(Site 4)**

-  Development area
-  Ecology Zone (with proposed management)
-  Proposed SUDS pond

