



Land at Clywedog Rd North (Site 2) 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/2018/1084) for the erection of a B2/ B8 industrial unit with associated access, services, parking and landscape treatment with an ecological mitigation zone on the 4th February 2021.

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 to manage and maintain 'Ecology Areas' as identified within the UU.

The extent of the two proposed ecology areas are shown on Drawing Number 0512 in the Appendix. These comprise of an area of land immediately contiguous to the site plus a further offsite area located approximately 100m to the northwest of the site on the opposite side of Clywedog Road North

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.

¹ Kingdom Ecology (2018a)- Land at Clywedog Rd North (Site 2); Wrexham Industrial Estate; Ecological Assessment Report; 8th October 2018

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

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

Section 3 identifies conservation objectives. And proposes methods for habitat creation including the installation of discreet features for wildlife including bat and bird boxes and the creation of butterfly mounds.

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 0.8ha area of land located adjacent to Unit 50, Clywedog Road North, Wrexham Industrial Estate, LL13 9XN (National Grid Reference- SJ 374 496).

The proposed on-site mitigation area adjacent to the development site comprises of an existing 0.37ha patch of land located at the north corner of the site.

The off-site mitigation area measures approximately 1.2ha in area and is located approximately 100m to the northwest of the Development Site on the opposite side of Clywedog Road North. Erlas Lane runs along the northern boundary of the site.

2.1.1 Habitats at the Development Site

An initial desk study and an Extended Phase 1 Habitat Survey of the Site was carried out on the 19th September 2017. Further surveys comprising of botanical, butterfly and reptile surveys were completed in Spring/Summer 2018.

To summarise, the Site was found to principally comprise of regularly mown, semi-improved grassland habitat located adjacent to a large industrial unit. There are scattered, young ornamental trees and scrub within the grassland.

The short-sward grassland is relatively diverse and flower-rich. Regular mowing of the site has controlled the development of scrub and allowed the maintenance of the grassland habitats. The site has suffered some limited nutrient input through the regular mowing regime as the mown arisings are left on site as a thin layer of thatch.

There is a patch of dense thorn scrub located at the northern edge of the site. The scrub comprises principally of hawthorn with willow, oak and blackthorn.

Between the scrub and the mown grassland is a 5m wide strip of unimproved grassland. The grassland in this area is infrequently mown and consequently supports a taller, more flower-rich sward.

Grasses present include frequent crested dog's tail with occasional tufted hair-grass, timothy and red fescue. Herbs present include frequent creeping cinquefoil and common knapweed with occasional selfheal, bird's-foot trefoil, hoary ragwort, broadleaved willowherb and ox-eye daisy. Common spotted orchid, dyer's greenweed, yellow wort, common centaury and pepper saxifrage were also recorded within this grassland strip. This patch of grassland is considered to be the most valuable habitat within the proposed development site.

It is proposed that soils and turfs from this grassland area are translocated to mounds of crushed aggregate within mitigation areas elsewhere to create butterfly banks.

The grassland habitats present are considered to be of locally important biodiversity value comprising of species-rich, unimproved and semi-improved, neutral grassland.

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

Further surrounding landuses largely comprise of industrial units with associated areas of hardstanding and patches of amenity grassland.

2.1.2 Proposed Mitigation Area at Site 2

The proposed mitigation area adjacent to the Development Site comprises of an existing 0.37ha patch of land located at the north corner of the site.

The northern boundary of the area comprises of a young scrubby, broadleaved woodland. There is a patch of dense thorn scrub extending from the woodland into the site.

Habitats along the western edge of the site and extending into an adjacent area of land under different ownership comprises of regularly mown, semi-improved grassland. The grass is cut several times a year and the arisings are left in situ. The grass sward is therefore generally short throughout the year. The grassland supports a diverse range of mesotrophic grasses with sedges and herbs throughout.

Grasses present comprise of frequent red fescue, crested dog's-tail, rough meadow-grass and common bent, with occasional Yorkshire fog, perennial rye-grass and sweet vernal grass. Sedges present include occasional hairy sedge, common sedge and false-fox sedge.

Creeping cinquefoil, ox-eye daisy and creeping buttercup were found to be frequent throughout the sward with occasional red clover, white clover, selfheal, ribwort plantain, meadow vetchling, common knapweed, black meddick and dandelion.

2.1.3 Proposed Off Site Mitigation Area

The off-site Mitigation Area measures approximately 0.5ha in area and is located approximately 100m to the northwest of Site 2 on the opposite side of Clywedog Road North. Erlas Lane runs along the northern boundary of the site.

This site supports unmanaged, semi-improved grassland habitats plus areas of broadleaved woodland and areas of dense scrub.

The woodland habitats support some mature oak trees which would have historically represented standard trees along agricultural hedges. The surrounding woodland is partly of plantation origin and includes sycamore, Scots pine, ash, hawthorn, holly, elm, silver birch and rowan.

The woodland has an understorey of ivy with occasional lords and ladies, male fern and bramble.

A band of scrubby woodland continues along Erlas Lane. This woodland comprises of ash, sycamore and alder with hazel, elm, elder, hawthorn and blackthorn scrub. Dense blackthorn scrub extends from this band of woodland into the grassland habitats.

Grassland habitats comprise of frequent cock's-foot, tufted hair-grass, common bent, meadow-foxtail, false oat-grass, common couch, Yorkshire fog and red fescue with forbs comprising of occasional ox-eye daisy, broad-leaved dock, common knapweed, cow parsley, hedge parsley, hoary ragwort, yarrow, cowslip and creeping cinquefoil.

Common knapweed, ox-eye daisy and creeping cinquefoil are species that occur in less intensively managed grassland with soils that are not overly nutrient rich.

The presence of these species indicates that the botanical value of the grassland can be improved by sensitive management practices that will aim to further reduce soil nutrient levels, to help to control the vigour of coarse grasses and to promote a greater density of herbs within the grassland sward.

2.1.4 Key Species

The Wrexham Industrial Estate is acknowledged as maintaining important populations of the dingy and grizzled skipper butterfly. Both of these butterflies are 'Species of Principal Importance' as listed under Section 7 of the Environment (Wales) Act 2016.

A review of existing data and site surveys did not record the presence of either of these butterflies at the proposed development site. In addition, the habitat assessments of these sites did not indicate that they were potentially viable for the presence of these species.

Although neither species was recorded within the study site, the adoption of habitat creation and management within and outside of the site has the potential to provide additional resources and contribute to the maintenance and enhancement of the butterfly and other invertebrate populations within the Wrexham Industrial Estate.

Other wildlife that could use the site include small mammals, common bat species plus farmland and woodland bird assemblages.

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 0.9ha of scrub, semi-improved and unimproved grassland habitats.

The proposed on-site mitigation area adjacent to the development site comprises of an existing 0.37ha patch of land located at the north corner of the site.

The off-site mitigation area measures approximately 1.2ha in area and is located approximately 100m to the northwest of the Development Site on the opposite side of Clywedog Road North. Erlas Lane runs along the northern boundary of the site.

3.1.2 Mitigation Plan Aims

The habitat management plan for the on-site and off-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;
- Promote botanical interest within grassland habitats;
- Where possible include suitable habitat for notable invertebrate species;
- Ensure the long-term viability of the proposed ecology sites by appropriate, long-term management and long-term protection of the sites;
- 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

There are two proposed mitigation areas one is located immediately adjacent to the proposed development site and the other is located approximately 100m to the northwest of the site. Both areas support habitats of value which would benefit from long term management.

Habitats management proposals for the two areas will aim to maintain areas of species-rich grassland including flower-rich neutral grassland and south facing calcareous grassland on proposed butterfly banks and mounds. There are further proposals to manage woodland and scrub habitats to optimise their conservation value.

There are further recommendations to provide a bat and bird box scheme within woodland habitats.

Proposed habitat management prescriptions are shown on Figures 2 and 3 in the Appendix. Proposals within the two mitigation area will include:-

- Demarcation of habitats/mitigation areas
- Creation of south facing butterfly banks/mounds
- Management of existing areas of grasslands
- Management of areas of scrub and woodland habitat

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

It is advised that the mitigation areas are prepared in advance of the wider site clearance as this will allow opportunities to identify and translocate flower-rich grassland turves into the mitigation areas from the proposed development area. The strip of unimproved grassland located at the northern end of Site 2 supports such high value, flower-rich turves.

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 and to identify and demarcate the areas of grassland and soils to be translocated from the development area to the Ecology Mitigation areas. This is to ensure that the areas are not damaged during site clearance works. The mitigation area and the areas of key grassland habitat should be fenced with Heras fencing or similar as soon as practicable.

An initial site meeting will be undertaken between the EcOW and the construction contractors prior to the start of site clearance to work through this management plan and to mark out any areas of grassland to be protected for translocation.

3.2.3 Creation of Butterfly Bank/Mounds

It is recommended that south facing butterfly banks and butterfly mounds are constructed within each of the mitigation areas.

It is recommended that 3 x 5m long butterfly mounds are created at the on-site Ecology Area and 4 x 6m long butterfly mounds are created within the offsite Ecology Area.

Each mound will be approximately 1-1.5m in width and 50-70cm in height. Each mound will either comprise completely of coarse aggregate rubble or will comprise of a mound of subsoil or topsoil from elsewhere at the development sites but with a depth of at least 10cm of stone chippings/ aggregate.

The banks and mounds should be constructed from a medium-coarse aggregate material with a limestone or other high pH material preferable as it facilitates the development and maintenance of an open, species-rich sward. Crushed brick or clean builder rubble is also a suitable stone aggregate, though any rubbish will need to be removed first.

Once the mounds are in place, topsoil and cut turfs from the protected areas of grassland habitat at either Development Site 2 or Site 3 will be translocated across to the mounds. Species-rich turfs will be cut to a depth of approximately 15cm, with topsoil also gathered from the top 10cm of the soil horizon. It is envisaged that the seedbank of the gathered topsoil will also support target plant species desired for the butterfly mounds.

Ideally, grassland turves should be moved when soils are warm and moist and immediately prior to rainfall. Turves will be transported immediately to the donor site. Turves must be planted immediately after harvesting and cannot be stored. If no rainfall is forthcoming then turves will require supplementary watering.

The mounds will be partially vegetated with turf and part with a fine scattered of the gathered topsoil (approximately 5cm depth). The target for the south facing slope and crest of the bank will be to provide a 30% covering of turf, a 50% covering of topsoil and 20% of the banks left bare.

The north face of the bank can be laid with further grass turfs or gathered topsoil. As this face of the bank will likely be in heavy shade, it is likely to be of a lesser conservation importance compared with the south face.

These works should be overseen by the EcOW who will ensure that turves are correctly cut, transported and planted.

The proposed locations for Butterfly Mounds are shown on Figures 2 and 3 in the Appendix.

3.2.4 Bat and Bird Boxes

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

It is recommended that the following models and numbers of bat and bird boxes are installed on mature trees at the site:-

- 4 x Schwegler 1B Bird boxes with 32mm entrances
- 2 x Schwegler 1B Bird boxes with 26mm entrances
- 4 x Schwegler 1FS Bat boxes
- 2 Schwegler 2FN Bat boxes
- 1 x Schwegler 2FN 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.

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.

This will be achieved within grassland habitats through the maintenance of low nutrient soils, through the control of scrub encroachment and by careful timing of cuts to allow grasses and herbs to flower and set seed. No fertiliser should be applied to the mitigation grasslands.

Mowing regimes should aim to provide a variety of grassland habitat types with an uneven sward in order to provide suitable habitats for dingy and grizzled skipper as well as to promote their botanical diversity.

Habitat management should be carried out once a year in August/September and should comprise of strimming of some areas whilst others would be left to provide a patchwork of grassland habitats with retained scrub and tall herb habitats. Approximately 50% of grassland habitats should be strimmed each year. Approximately 50% of grassland habitats should be strimmed each year.

The grassland habitats would be managed to provide a mosaic of long (10-50cm) and short (<10cm) grassland with an abundance of spring nectar sources, butterfly larval food plants in short or bare ground, seed heads from the previous years as roosting sites for adult butterflies and scrub patches/edge for shelter.

Grassland management therefore needs to be piecemeal and rotational with bare areas (minimum size 2mx2m) created periodically to provide suitable butterfly breeding habitat. It is recommended that three such patches of bare ground are created each spring within the off-site mitigation grassland.

If parts of the grassland are becoming too lush, it may be necessary to introduce an additional early spring cut of vegetation within some parts of the site to encourage areas of short sward grassland. Any recommendation for alterations to the mowing regimes would be determined during the annual monitoring surveys.

Grassland mowing should be carried out on a rotation so that there are always uncut areas on-site, allowing plants to flower and set seed and insects to nectar and overwinter in uncut areas.

Management of grassland/herb habitats should be undertaken using a strimmer to allow patches of short sward habitat to be created rather than large blocks uniform habitat. Approximately 50% of the grassland habitats should be cut each year in small patches of approximately 5m x 5m throughout the grassland habitats.

After each cut, the mown material should always be removed from the sward. Failure to do so will result in a build-up of litter forming a dense mat which can impact upon plant diversity.

It may not be necessary to frequently cut the vegetation from the butterfly banks. The banks should be monitored by an appropriate ecologist in the summer and they will determine whether parts of the bank will require strimming during the autumn.

4.2.2 Management of Woodland and Scrub Habitats

The biodiversity value of the woodland and scrub habitats at the offsite Mitigation Areas should be enhanced. No management works are proposed to the band of young woodland and scrub along the northern boundary of the development site (Woodland 1 on Figure 2). This area will be left to naturally succeed to a mature woodland. However, this area is currently strewn with litter and so this should be removed as part of the site clearance works.

To increase the value of the offsite woodland (Woodland/Scrub 2 on Figure 3) 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. Thinning of the woodland should be completed once every 10 years.

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

Dense blackthorn and hawthorn scrub at the offsite Mitigation Area should be cut back on a 10-year rotation. With half the scrub cleared in years 1 and 10 the other half in years 5 and 15. 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.

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

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
Habitat Mitigation & Management Plan



Table 1- Habitat Management Summary

Habitat	Frequency of Management	Time of Year	Management Proposal
Grassland Management	Annual management starting in year 1 of construction. Patches of grassland strimmed 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.	Approximately 50% of grassland to be cut each year in small patches of approximately 4 x 5m. All cuttings/ arisings to be removed. No fertiliser to be applied.
Bare ground	Annually, unless determined otherwise by previous summer's monitoring survey	Any time of year	3 x Bare areas (2m x 2m) created each year to provide suitable butterfly breeding habitat.
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. Log piles and areas of dead wood to be retained within the woodland
Scrub management adjacent to woodland	To be cut on a 10 year rotation with 50% cut in Year 1 and 50% in year 5.	Avoid nesting bird season (March-August inclusive)	All arisings to be removed.
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 area adjacent to the development site is set back from the road and behind the proposed industrial unit. 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.

The offsite Ecology Area is in a more vulnerable location. Fencing around the site should be maintained and monthly wardening should be carried out.

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 suitability of habitats for dingy and grizzled skipper butterflies.

The ecologist will determine whether any additional works to the standard mowing regime are required in the following Summer/Autumn including any strimming of the butterfly bank and whether any patches of earth should be scraped back to provide areas of bare ground habitat.

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 including any grassland habitats to be used for habitat creation works.
3. Prior to the start of site clearance, confirmation that the butterfly mounds have been created, installed and seeded with turf and appropriate topsoil.
4. Prior to the completion of construction, confirmation that the bat and bird boxes installed
5. Confirmation that the proposed Ecology Mitigation Areas have 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, short grassland, tall grassland, scrub and bare ground habitats.

6 Figures

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



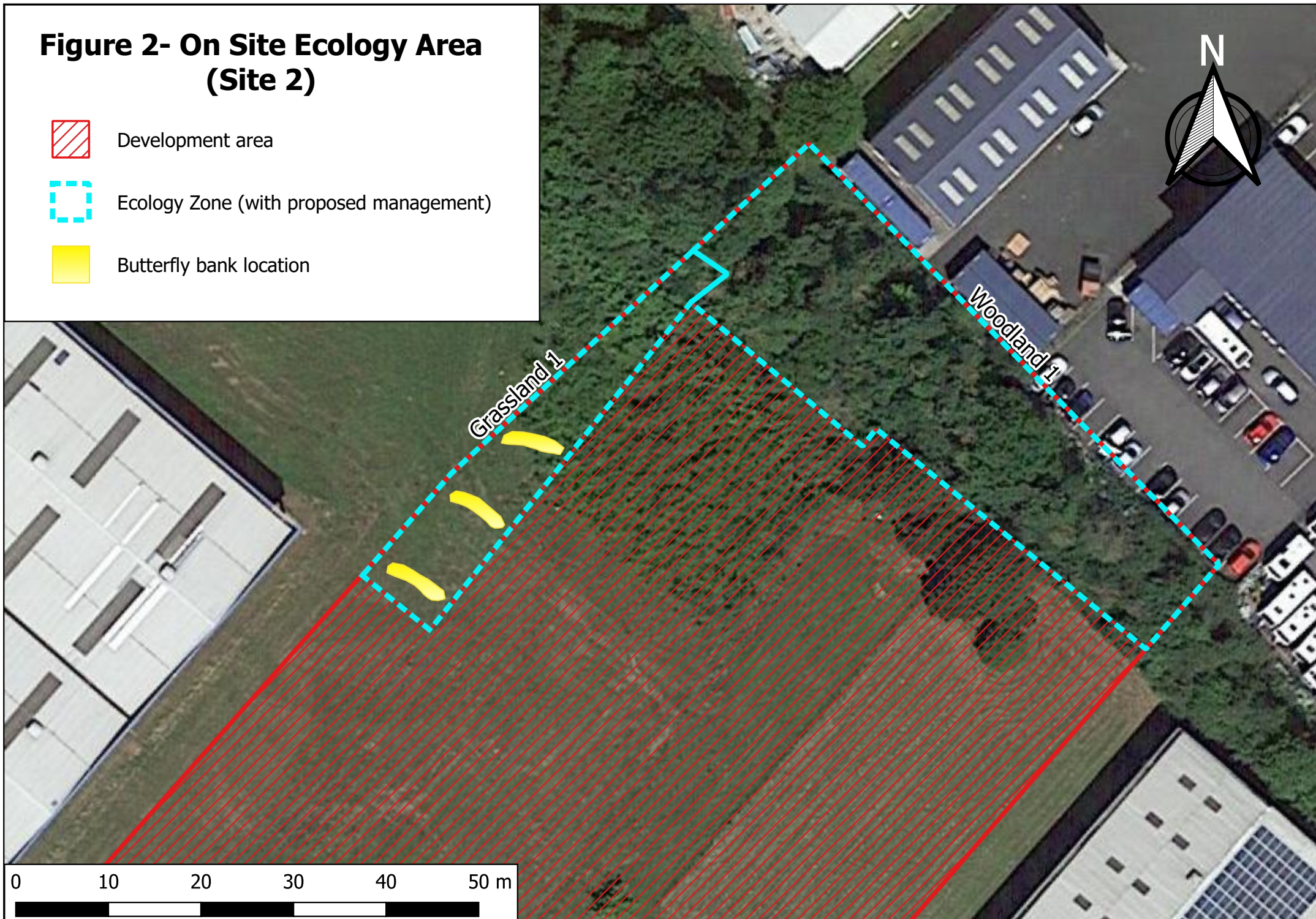
Development area



Ecology Zone (with proposed management)



Butterfly bank location



0 10 20 30 40 50 m

**Figure 3- Off Site Ecology Area
(Site 2)**

-  Off Site Ecology Zone Boundary
-  Ecology Zone (with proposed management)
-  Butterfly bank location

