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# Land at Clywedog Rd North (Site 2) Wrexham Industrial Estate

## Ecological Assessment Report

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# **1 Introduction**

## **1.1 Background**

Kingdom Ecology have carried out an ecological assessment of 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 assessment has been carried out to identify any ecological constraints which should be considered during any future development of the site.

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

Butterfly surveys were completed by Andy Whitfield (CEcol, CEnv). Andy has over 20 years' experience of undertaking butterfly surveys and assessments and is currently undertaking a part-time PhD at Lancaster University studying habitat requirements and management techniques for maintaining the high brown and pearl bordered butterfly populations in the South Lakes and Morecambe Bay limestone area

The remaining surveys were carried out by Richard Roe (BSc, MSc, MIEEM, CEnv). Richard has extensive experience of undertaking habitat and protected species surveys as a professional ecological consultant with over seventeen years' experience. Richard is also a licensed great crested newt and bat worker.

## **1.2 Purpose of Report**

This report provides and outlines the findings of a desk study and field surveys undertaken in September 2017 and May- September 2018. Field surveys comprised of habitat and botanical surveys plus further specific reptile and butterfly surveys.

The field surveys and desk study aimed to map and identify broad habitat types at the site and to identify and evaluate species and habitats which would be either of importance in terms of their conservation value or afforded statutory legal protection.

Following a description of the desk study results, survey findings and an overall evaluation of habitats at the site, the report goes on to make recommendations for further works, mitigation and ecological enhancement measures where relevant.

## **1.3 Relevant Protected Species Legislation**

### **1.3.1 Environment (Wales) Act 2016**

Section 6 of the Environment (Wales) Act 2016 places a legal obligation on public bodies in Wales to 'maintain and enhance biodiversity' whilst carrying out their functions.

Section 7 of that Act requires Welsh Ministers to publish and maintain lists of species and types of habitats in Wales that are regarded as of 'principal importance' for the purpose of maintaining and enhancing that biodiversity.

This section of the Act replaces the biodiversity duty originally outlined in Section 42 of the NERC Act 2006.

The presence at any proposed development site, of any priority habitat or priority species identified on these lists is of importance within the local authority planning process.

### **1.3.2 Birds**

All wild birds in England and Wales are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, or take, damage or destroy the nest (whilst being built or in use) or its eggs.

### **1.3.3 Reptiles**

All native reptiles are protected in the UK under the Wildlife and Countryside Act 1981 (as amended). The law makes it an offence to intentionally kill, injure, sell or advertise to sell any of the six native species.

The smooth snake and the sand lizard are afforded further protection under the 1981 Act, by making it an offence, to possess, handle, capture or disturb them.

### **1.3.4 Butterflies**

Approximately 400 invertebrate species are listed under Section 7 of the Environment (Wales) Act 2016. Section 6 of the same Act requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. The presence at any proposed development site, of any priority species identified on these lists is of importance within the local authority planning process.

Survey at the site focused on the potential presence of Dingy skipper and Grizzled skipper which have both been recorded within the wider Wrexham Industrial Estate and are both listed under Section 7 of the Environment Act.

## 1.4 Evaluation Methodology

The results of the desktop and field surveys are used to identify ecological resources that may be of relevance to the proposals. The CIEEM *Guidelines for Ecological Impact Assessment* (CIEEM, 2006) sets out the recommended approach for valuing ecological resources, and for assessing the effects of proposed activities on them. It suggests that three types of value can be attributed to ecological resources – biodiversity value, community/social value and economic value, and that these should, as far as possible, be considered separately. CIEEM (2006) also advises that legal protection should be considered separately from value, and that the value of an ecological or nature conservation resource should be determined within a defined geographical context; it recommends that the following frame of reference be used:

- International
- UK
- National
- Regional
- County or Metropolitan
- District (or Unitary Authority, City or Borough)
- Local or Parish
- Within zone of influence only (this may be the project site or a larger area)

Designated sites (e.g. SSSIs, SPAs etc.) are generally straightforward to evaluate in relation to this frame of reference. Evaluation of other habitats and species needs to take into consideration a range of criteria, such as their rarity, diversity levels, population sizes and trends, whether they are replaceable or ‘re-creatable’ (for habitats) etc. Appropriate criteria are proposed and discussed in various documents, such as in *A Nature Conservation Review* (Ratcliffe, 1977)<sup>1</sup>, *Guidelines for the selection of biological SSSIs* (JNCC, 1989)<sup>2</sup>, *Local Sites* (Defra,

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<sup>1</sup> Ratcliffe, D.A. 1977. *A Nature Conservation Review*. Cambridge University Press.

<sup>2</sup> JNCC, 1989. *Guidelines for the selection of Biological SSSIs*. Nature Conservancy Council, Peterborough.

2006<sup>3</sup>; Wales Biodiversity Partnership 2008<sup>4</sup>) and also in local and national Biodiversity Plans (BAPs) including Species and Habitat Action Plans (SAPs and HAPs)(see Anon, 1995 for UK BAP)<sup>5</sup>.

Species may be evaluated by reference to their rarity and status in the national or local context. In addition to protected species, rare species, as defined in the Red Data Books/Red Lists/Scarce species lists and in the national and local Biodiversity Action Plans, are recognised to hold value.

Section 6 of the Environment (Wales) Act 2016 places a legal obligation on public bodies in Wales to 'maintain and enhance biodiversity' whilst carrying out their functions.

Section 7 of that Act requires Welsh Ministers to publish and maintain lists of species and types of habitats in Wales that are regarded as of 'principal importance' for the purpose of maintaining and enhancing that biodiversity.

The conservation status of declining British birds has been defined in the *Birds of Conservation Concern Report 2015* (Eaton et al. 2015)<sup>6</sup>; where appropriate, this assigns bird species to the Red or Amber list of birds of either high or medium conservation concern, according to a range of defined criteria.

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<sup>3</sup> DEFRA 2006. Local Sites Guidance on their Identification, Selection and Management

<sup>4</sup> Wales Biodiversity Partnership (2008) Guidelines for the Selection of Local Sites in Wales, <http://www.biodiversitywales.org.uk/>

<sup>5</sup> Anon, 1995. Biodiversity: The UK Biodiversity Steering Group Report. Vol. 2. Action Plans. HMSO.

<sup>6</sup> Eaton et al (2015) *The Population Status of Birds in the UK, Channel Islands and the Isle of Man*, British Birds

## 2 Field Survey Methods

### 2.1 Survey Aims and Objectives

The survey aim was to assess the site as to its ecological importance by assessing the value of habitats present and their suitability to support any protected or notable species. The purpose of this was to highlight any ecological constraints associated with future development proposals.

Field survey comprised of an initial Extended Phase 1 Habitat survey, this included an assessment of habitats at the site in terms of their suitability to support any other protected species.

Following on from the initial Extended Phase 1 Habitat survey, further habitat and targeted protected species surveys were completed during the 2018 field season to determine the likely presence/absence and importance of the site for reptiles and notable butterflies.

Species that are considered unlikely to be significantly affected by the proposed development, even if known to be present in the general vicinity, were 'scoped out' of the assessment.

### 2.2 Extended Phase 1 Habitat Survey

#### 2.2.1 Methods

An Extended Phase 1 Habitat Survey of the study site was initially undertaken on the 19<sup>th</sup> September 2017 with further field visits completed throughout the summer of 2018 which provided supplementary botanical records for the site. Survey was carried out following standard methodologies as described in the '*Handbook for Phase 1 Habitat Survey - a technique for environmental audit*' (JNCC, 2004<sup>7</sup>).

The aims of the Extended Phase 1 Habitat Survey were to:

- identify and map all areas of semi-natural habitat within the study area;
- provide a botanical description of the semi-natural habitats surveyed;

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<sup>7</sup> JNCC (2004) '*Handbook for Phase 1 Habitat Survey - a technique for environmental audit*'

- identify areas or habitats that are of particular ecological interest for nature conservation and which require more detailed investigation;
- provide additional information regarding incidental observations of protected species and the potential of habitats to support such species.

A habitat map was produced and lists of dominant or notable vascular plant species were recorded in each of the major habitat types where relevant.

## **2.3 Reptile Survey**

### **2.3.1 Overview**

The initial site walkover survey, carried out in September 2017, identified the site as supporting suitable habitat for reptiles with areas of scrub and grassland habitat.

Further reptile surveys were carried out during the 2018 field season comprising of artificial refugia searches and visual surveys. Surveys were carried out following methods described in the Herpetofauna Workers' Manual (JNCC, 2003) and Froglife Advice Sheet 10, 'Reptile Surveys' (Froglife 1999).

### **2.3.2 Artificial Refugia Survey**

Reptiles must bask in the morning and evening before becoming active. Artificial refugia surveys take advantage of this need by providing artificial basking and sheltering habitat. The artificial refugia used for this survey comprised of black corrugated roofing sheets measuring 0.5m x 0.5m.

20 artificial refugia were deployed on the 13<sup>th</sup> June 2018 in suitable locations and habitats at the northern half of the site. Refugia deployment focused on areas of grassland located adjacent to scrub habitats at the north of the site.

The refugia were allowed to bed down for 1 week before being checked for the presence of reptiles. The refugia survey was carried out between 08:00-11:00 and 16:00-20:00. Survey was carried out throughout the summer 2019.

Survey took place during periods of sunshine with temperatures recorded between 14 and 21°C. Survey avoided taking place during wet or windy weather conditions. Weather conditions for each survey date are shown in Table 1 below.

### 2.3.3 Visual Survey

Visual surveys were undertaken in conjunction with and in addition to the artificial refugia checks. These surveys involved slowly walking across the study area during suitable weather conditions and watching for basking reptiles and searching beneath other refugia such as logs, stones, discarded corrugated sheeting etc for sheltering reptiles.

*Table 1- Reptile Survey Weather Conditions*

| Date     | Temperature °C | Weather                            |
|----------|----------------|------------------------------------|
| 20/06/18 | 17             | Hazy sunshine, light breeze        |
| 03/07/18 | 18             | Clear, light breeze                |
| 30/07/18 | 19             | Intermittent sun after rain, calm. |
| 04/08/18 | 21             | Sunny, calm                        |
| 15/08/18 | 17             | Calm, clear, sunny                 |
| 23/08/18 | 13             | Calm, clear, sunny                 |
| 29/08/18 | 18             | Sunny spells, light breeze         |

## 2.4 Butterfly Survey

### 2.4.1 Methods

Survey at the site focused on the potential presence of dingy skipper and grizzled skipper which have both been recorded within the wider Wrexham Industrial Estate and are both listed under Section 7 of the Environment Act.

The site was visited on five occasions throughout the flight period of the two butterflies (May – June) and when other populations in the area were known to be on the wing. All visits were undertaken in accordance with the United Kingdom Butterfly Monitoring Scheme (UKBMS), Fixed-route Transects climatic protocols (<http://www.ukbms.org/methods.aspx>) and were walked between 11.00 and 16.00 during periods with temperatures above 14°C, low winds and at least 60% sunshine.

The site was walked such that all suitable areas of potential habitat for butterfly ovipositing and nectaring were recorded and surveyed from at least a 2m vantage point.

#### **2.4.2 Survey timing**

The site was visited on five optimal dates:

- 08/05/2018- light wind, sunny, 19°C
- 14/05/18 - light wind, sunny, 17°C
- 19/05/18 - light wind, sunny, 22°C
- 23/05/18 - light wind, sunny, 21°C
- 13/06/18 - light wind, sunny, 21°C

## 3 Desktop Study

### 3.1 Sources of Information

Ecological information on habitats, species and designated nature conservation sites has been sought from COFNOD who are the local biological records centre for the North Wales Region.

### 3.2 COFNOD Data

#### 3.2.1 Species

COFNOD holds several records of protected species within 2km of the site including the following:

- Barn owl
- Goshawk
- Common pipistrelle
- Whiskered bat
- Polecat
- Badger
- Otter
- Great crested newt
- Adder
- Slow-worm

COFNOD hold no records of any protected species within the study site itself.

Dingy skipper, small heath and grizzled skipper butterflies have been recorded within habitats immediately adjacent to the site.

No other protected species within 250m of the study site.

#### 3.2.2 Designated Sites

No statutory designated sites are located within 1km of the study area itself.

Three Local Wildlife Sites (LWS) are located within 2km of the study site comprising of the Wrexham Industrial Estate LWS (comprising of Bryn Road Grassland, Erlas Black Wood and the Oaks), Peter's Dingle LWS and Cefn Park LWS.

## 4 Survey Results

### 4.1 Site Description

The study site comprises of an approximate 0.8ha area of land located on Clywedog Road North. It principally comprises 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.

A band of young scrubby, broadleaved woodland runs along the northern boundary of the site. There is a patch of dense thorn scrub extending from the woodland into the site.

There is a small electricity substation at the southern end of the site.

The eastern boundary of the site is marked by weld mesh security fencing.

Surrounding habitats comprise principally of industrial units, hardstanding car parks plus areas of mown, amenity grassland.

Development proposals are to construct within the area of grassland habitat. The area of broadleaved woodland along the site's northern boundary lies outside of the proposed development area.

The site location is shown on Figure 1 in the Appendix.

A habitat map of the site is shown on Figure 2 in the Appendix. Photographs showing typical habitat at the site are also given in the Appendix.

### 4.2 Habitats

As described above, the site principally comprises of an area of regularly mown grassland (Target Note 1 on Figure 2) with a band of woodland along the northern boundary of the site and an area of thorn scrub which is beginning to colonise the adjacent grassland areas.

The grassland has developed on soils that have suffered limited nutrient enrichment with the site unlikely to have been farmed since the 1930's. Consequently, 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 suffers some limited nutrient input through the regular mowing regime as the mown arisings are left on site as a thin layer of thatch across the grassland.

There is a 5m wide band of infrequently mown, unimproved grassland located at the northern end of the site (Target Note 2), adjacent to the area of thorn scrub.

This grassland is more diverse and supports a taller sward with more flowering plants compared to the grassland at Target Note 1.

There is a small, brick-built, electricity substation located at the site.

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

The scrub and woodland habitats present are of low botanical interest and are commonly occurring throughout the UK within similar neglected agricultural and industrial sites. However these habitats are likely to offer foraging and refuge habitat for a variety of local wildlife.

Habitats encountered are Target Noted on Figure 2 and described further within Table 2 below.

*Table 2- Habitat Descriptions*

| Target Note | Habitat                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1           | Mown semi-improved grassland | <p>The majority of the site 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.</p> <p>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.</p> <p>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.</p> <p>There are scattered, young ornamental alder trees at the southern end of the site close to Clywedog Road and some scattered willow, apple and blackthorn scrub within the interior of the site. The trees present do not offer suitable roosting habitat for bats.</p> |

| Target Note | Habitat               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2           | Unimproved grassland  | <p>This comprises of an approximately 5m wide strip of unimproved grassland located at the northern edge of the site, immediately adjacent to the scrub habitats present. The grassland in this area is infrequently mown and consequently supports a taller, more flower-rich sward than that at Target Note 1 with some encroaching scrub.</p> <p>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.</p> <p>There are patches of scattered oak and hawthorn scrub within the grassland.</p> |
| 3           | Dense scrub           | <p>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, apple and blackthorn. This scrub has developed over approximately the last 10 years.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4           | Broadleaved woodland  | <p>There is a band of young broadleaved woodland running along the northern boundary of the site. Trees present comprise of ash and sycamore with blackthorn and hawthorn.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 5           | Building (Substation) | <p>This a small, brick-built, electricity substation. The building is a single store structure with a flat roof. The building measures approximately 5m x 4m x 2.5m tall. The building is tightly sealed and so unsuitable for nesting birds or roosting bats.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 4.3 Protected Species Surveys

### 4.3.1 Overview

The Extended Phase 1 Habitat Survey completed in 2017 considered the site's suitability to support protected species. Following on from the 2017 survey, further targeted surveys were completed during the 2018 field season to determine the likely presence/absence of and importance of the site for reptiles and notable butterflies.

## **4.4 Reptile Survey**

### **4.4.1 Overview**

The study site supports some low value reptile foraging habitat in areas of grassland and scrub. The site offers suitable basking habitat within short grassland and shelter within areas of taller grassland and scrub.

Common reptile species are known to be present within other suitable habitats at the Industrial Estate albeit, in relatively low numbers (small numbers of adder, slow-worm and grass snake were recorded at the nearby HMP Berwyn Prison Site during pre-construction site clearance).

### **4.4.2 Results**

Artificial refugia checks were completed on the 20<sup>th</sup> June, the 3<sup>rd</sup> and 30<sup>th</sup> July, and the 4<sup>th</sup>, 5<sup>th</sup>, 23<sup>rd</sup> and 29<sup>th</sup> August 2018. Twenty refugia were deployed along the grassland/scrub interface at the northern boundary of the site.

Survey was carried out in warm, dry and calm conditions with the surveys conducted on days with sunshine.

No reptiles were recorded at the site whatsoever during refugia and visual surveys or incidentally during other field surveys undertaken at the site.

It is considered to be unlikely that the site supports any significant reptile population.

## **4.5 Butterflies**

### **4.5.1 Overview**

The study site comprises of a large area of mown, semi-improved grassland. There are occasional bare patches in an approximately 5cm tall sward. Occasional foodplants for larva and adult grizzled and dingy skipper butterflies were found to present at the site.

COFNOD holds records of small heath, dingy and grizzled skipper butterfly within habitats immediately adjacent to the site.

### **4.5.2 Survey Results**

Survey at the site focused on the potential presence of dingy skipper and grizzled skipper which have both been recorded within the wider Wrexham Industrial Estate including within habitats immediately adjacent to the site.

The study site was visited on five occasions throughout the flight period of the two butterflies (May – June). Other populations of dingy skipper and grizzled skipper in the local area were known to be on the wing

during this period. Neither species was recorded at the site during survey.

Foodplants were found to be present at the site. Although larval foodplants are present, the habitats are considered to be of marginal value for both dingy and grizzled skipper owing to the intensive mowing regime at the site and owing to an absence of open, non-vegetated areas.

The presence of larval foodplants on the site and the presence of nectaring resources means that the site may be visited by these butterflies but the habitats are considered suboptimal for the maintenance of dingy and grizzled skipper butterfly populations.

The results of the surveys showing butterfly species recorded are presented in the Table 3 below.

*Table 3- Butterfly Survey Results*

| <b>Date</b> | <b>Results</b>     |
|-------------|--------------------|
| 08/05/18    | Orange tip         |
| 14/05/18    | -                  |
| 19/05/18    | Green veined white |
| 23/05/18    | -                  |
| 13/06/18    | -                  |

## **4.6 Other Protected Species**

Tree and scrub habitats at the site could be used by nesting birds during the breeding bird season.

The scattered ornamental trees at the southern edge of the site are not considered to support any suitable features for roosting bats.

There is a small, brick-built, electricity substation located at Target Note 5. The building is a single store structure with a flat roof. The building does not support any suitable features for nesting birds or roosting bats.

No other protected species are considered likely to be present at the site.

## 5 Evaluation

### 5.1 Habitats

The site comprises of an area of regularly mown, semi-improved grassland habitat with a band of woodland along the northern boundary of the site and an area of thorn scrub which is beginning to colonise the adjacent grassland areas. There is an approximate 5m wide strip of unimproved, neutral grassland at the interface between the scrub and grassland habitats.

The grassland habitats present are considered to be of locally important biodiversity value comprising of species-rich, unimproved and semi-improved, neutral grassland. Species of conservation interest identified within the sward include yellow wort, dyer's greenweed and pepper-saxifrage. No plant species listed under Section 7 of the Environment (Wales) Act 2016 were identified at the site.

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

There is a band of young, broadleaved woodland which runs along the northern boundary of the site.

Mixed broadleaved woodland is listed under Section 7 of the Environment (Wales) Act 2016 as a habitat of 'principal importance' in Wales.

If left unmanaged, it is likely that the site would develop into continuous bramble scrub, followed by dense thorn scrub and ultimately further broadleaved woodland.

### 5.2 Protected Species

Targeted surveys were completed during the 2018 field season to determine the likely presence/absence of and importance of the site for reptiles and notable butterflies.

The findings of these surveys are summarised and evaluated below.

#### 5.2.1 Reptiles

No reptiles were recorded at the site whatsoever during targeted reptile refugia and visual surveys or incidentally during other field surveys undertaken at the site.

It is considered to be unlikely that the site supports any significant reptile population.

### **5.2.2 Butterflies**

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.

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.

### **5.2.3 Breeding Birds**

Tree and scrub habitats at the site could be used by nesting birds during the breeding bird season.

## 6 Recommendations

### 6.1 Habitats

#### 6.1.1 Habitat Management and Creation

It is recommended that any future development of the site avoids negative impacts upon the band of woodland along the site's northern boundary.

Where possible an appropriate buffer area should be retained between the edge of the developed area and this woodland feature.

Landscaping in this area should comprise of native broadleaved trees and shrubs including oak, silver birch, alder, willow, hawthorn, blackthorn, hazel and holly.

The proposed development will result in the loss of some unimproved and semi-improved, species-rich grassland. This habitat is considered to be of conservation value.

A habitat management plan should be developed for the site and these habitats should be managed for their biodiversity value.

Where loss of grassland habitats is unavoidable, consideration should be given to the translocation of species-rich turves from within the grassland to other parts of the development site or to mitigation areas elsewhere on the Industrial Estate. An appropriate Method Statement and Management Plan for the grassland translocation would need to be produced by an appropriately qualified ecologist.

Should it prove practical, areas within the development sites should be created for invertebrate conservation in general, and dingy and grizzled skipper butterflies in particular.

The establishment of features such as bunds, mounds and other areas should be created using nutrient poor soils. Medium-coarse aggregate material should be used for such features with a limestone or other high pH material preferable as it facilitates the development and maintenance of an open, species-rich sward.

Bare ground areas should be orientated, where possible, such that they are exposed to the full sun during much of the day, i.e. south facing.

The banks should be sown with an appropriate wildflower mix (e.g. Emorsgate Seeds EM6F) and/or a translocation of species from within the development site such as common birds-foot trefoil, creeping cinquefoil, wild strawberry and agrimony.

Other areas should be created/managed that maintain species-rich grassland flowers for nectaring butterflies.

Other opportunities to enhance the biodiversity of the site should be taken such as the creation of wildlife ponds and areas of managed wildflower meadows within any amenity areas.

It is recommended that such areas to be retained and managed for their biodiversity value are sited alongside the retained block of woodland at the site's northern boundary. This would provide a larger continuous block of valuable habitat as opposed to creating less valuable, small fragments of habitat scattered about the proposed development.

It is recommended that any loss of grassland habitats at the site is compensated through off-site habitat management and/or habitat creation where possible.

Off-site, habitat creation and management should include similar grassland/scrub mosaics to that already present at the site and should also include habitats of value to dingy and grizzled skipper butterflies—such as the development and maintenance of areas of open ground and early successional grassland.

This will require many of the techniques outlined above as general principles but will require the adoption of ongoing management comprising rotational disturbance on certain areas to prevent succession to grassland and scrub. It should however, be noted that any management plan will also need to acknowledge the importance of later successional stages for these butterflies and other invertebrates.

### **6.1.2 Bat and Bird Mitigation**

New bird nesting and bat roosting habitat can be provided through the implementation of a bat and bird box scheme. Bat and bird boxes can be built into proposed new buildings at the site.

Lighting proposals will need to ensure that additional light spill on to the woodland area on the northern boundary is kept to a minimum.

A lighting designer would likely be appointed during the detailed design stage of the project. The lighting designer should consult the 'Bats and Lighting Research Project' (Stone 2013) which provides recommendations for limiting the negative effects of lighting on bats.

Where possible the use of artificial lighting should be avoided. Lighting should be directed away from the site's southern boundary and should be designed to avoid light trespass into surrounding areas by the fitting of hoods and cowls.

Lighting sources should be 'bat friendly' using LEDs or low wattage lamps.

All wild birds in England and Wales are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, or take, damage or destroy the nest (whilst being built or in use) or its eggs.

The scrub and trees present could be used by nesting birds during the breeding bird season. Where possible, any future vegetation clearance of the site should be timed to avoid impacting upon suitable nesting habitat during the breeding season (March-August inclusive).

## **6.2 Further Enhancements**

It is recommended that the overall ecological value of the wider Industrial Estate is enhanced where possible either through the implementation of a bat and bird box scheme or by taking opportunities to offer off-site habitat management and/or habitat creation.

## 7 Appendix

**FIGURE 1- Site Location**



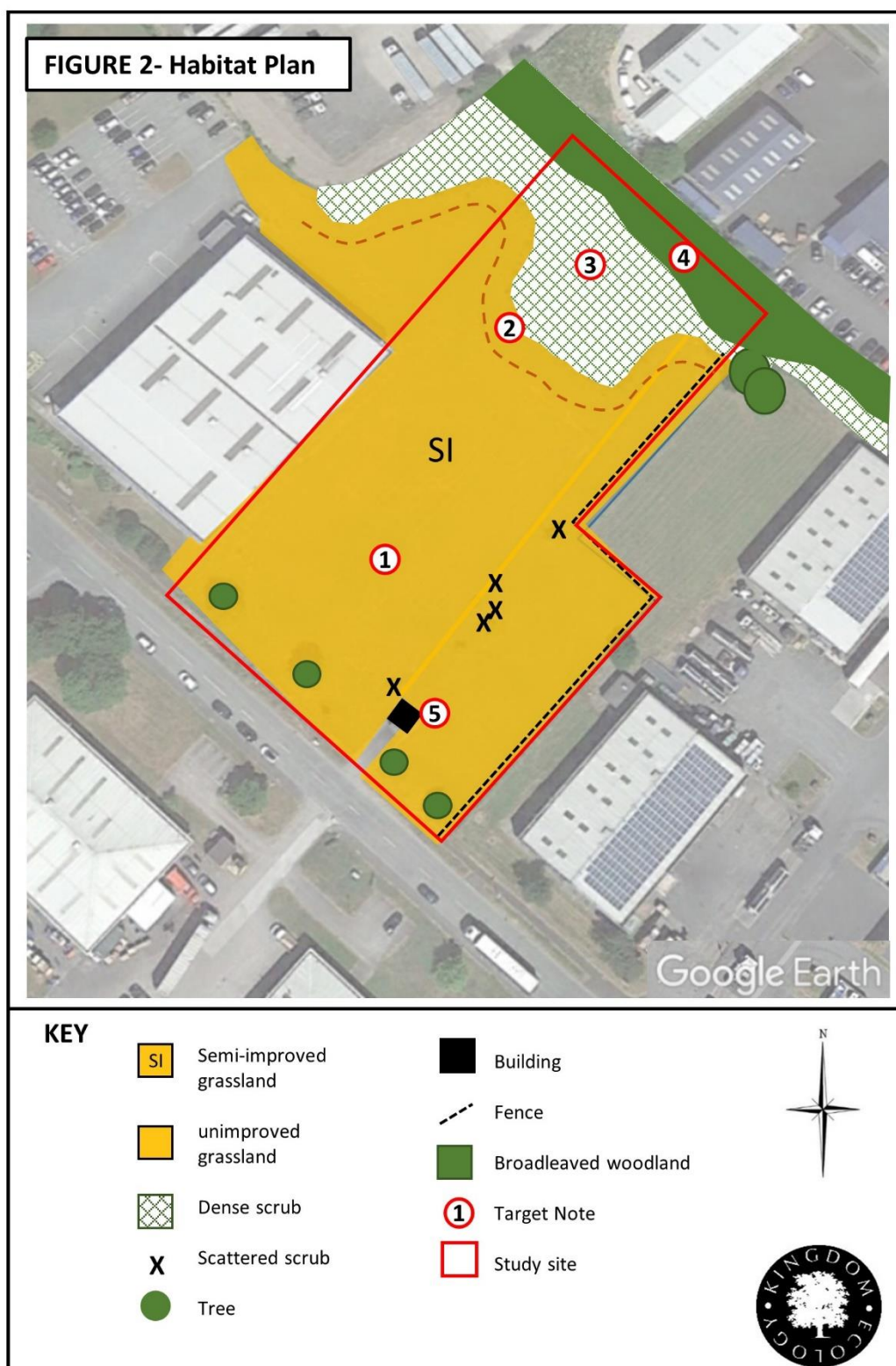
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Ordnance Survey 100054686



Study Area





***PHOTOGRAPHS***

*Photograph 1- Grassland habitats at Target Note 1*



*Photograph 2- Grassland habitat at Target Note 2*



*Photograph 3- Scrub and woodland at Target Notes 3 and 4*



*Photograph 4- Substation at Target Note 5*

