



PRELIMINARY ECOLOGICAL APPRAISAL

OAK ROAD, WREXHAM

REC REFERENCE: 1CO106365EC1R1

REPORT PREPARED FOR: CONRAD ENERGY LIMITED

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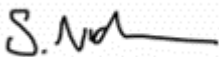
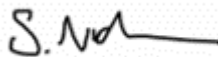


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EXECUTIVE SUMMARY

Site Address	Oak Road, Wrexham, LL13 9RG
Grid Reference	SJ38694951
Site Area	Approximately 0.3ha
Current Site Use	The site is currently unused, other than a single pylon located on site.
Adjacent Site Use	To the north and west is predominantly industrial units. Oak road runs along the southern boundary and a powerline runs along the eastern edge.
Designated Sites	No designated sites were found within 1km of the site. Three non-statutory designated sites are located within 1km of the site boundary. Two sites are within Wrexham industrial estate (WIE), one of which is 25m to the south of the site, across a main road, and the other is an area of grassland 420m north of the site. Despite the close proximity, there is no habitat connectivity between these areas. It is not anticipated that the proposed development would impact upon any statutory or non-statutory designated sites.
Habitat Features	The development will result in the loss of widespread and common habitats. The site comprises of semi-improved grassland, scrub, tall ruderal vegetation, scattered broad-leaved and coniferous trees, and a species-poor intact hedge. The western side of the site is young scrub, and tall ruderal vegetation, with a small patch of semi-improved grassland and two cypress trees, a non-native species of tree which was most likely planted. This area is of less value than the eastern portion, which has been less managed.
Conclusions and Recommendations	There are suitable habitats on site for protected species, and there are a number of protected species records within 1km of the site. However, the site has poor connectivity, it is completely enclosed by roads on three sides, and there is an industrial area to the north. Overall, it is considered that the likelihood of protected species on site is low. Recommendations for ecological mitigation have been provided which includes: ▶ Habitat retention within a designated ecological mitigation area with a long term management plan; ▶ Any vegetation removal will need to be undertaken outside of the bird breeding season; ▶ Precautionary working methodology for reptiles; ▶ Eradication of the Japanese knotweed prior to any works beginning.





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1. INTRODUCTION

1.1 Background

Resource and Environmental Consultants Ltd (REC) has been commissioned by Conrad Energy Limited, herein referred to as 'the Client', to undertake a Preliminary Ecological Appraisal of the site at Oak Road, Wrexham, LL13 9RG (grid reference: SJ38694951) to support planning permission for development of a No.6 up to 10MW containerised gas engines. The site location and proposals are shown in **Appendix 1**.

The Preliminary Ecological Appraisal was undertaken in line with methodology set out by the Chartered Institute of Ecology and Environmental Management (CIEEM). The assessment includes a desk study and an Extended Phase 1 Habitat Survey.

1.2 Objectives

The purpose of the Preliminary Ecological Appraisal was to identify:

- ▶ The major habitats present on the site and surrounding area;
- ▶ The potential for legally protected species to be present;
- ▶ Whether additional ecological surveys are likely to be required; and,
- ▶ To make suggestions for mitigation, compensation and enhancement of the natural features identified on the site.

1.3 Site Description

The site is approximately 0.3 hectares in area. At the time of the survey, the site comprised of semi improved grassland, tall ruderal vegetation, scattered trees and scrub.

Current development proposals include the creation of a flexible power plant, which includes transformers and associated units (**Appendix 1**). Pre-application advice from the Wrexham County Borough Council (council reference: ENQ/2018/0156) is considered in this report.

1.4 Confidentiality

REC has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from REC. A charge may be levied against such approval.





2. SURVEY METHODOLOGY

2.1 Data Study and Consultation

The desktop study involved conducting database searches for statutory and non-statutory designated sites, legally protected species and features of interest within, and surrounding the site within a 1km radius. The perimeter of the site was used as the border for all searches. The following resources were used:

- ▶ MAGIC (Multi-Agency Geographical Information for the Countryside) website;
- ▶ Ordnance Survey mapping (to identify potentially notable habitats);
- ▶ Aerial photography (e.g. Google mapping); and,
- ▶ UK Biodiversity Action Plan (UKBAP).

Additionally, a detailed data search was carried out by Cofnod - the Local Environmental Records Centre for North Wales within a 1km radius of the site for protected species and statutory and non-statutory designated sites.

2.2 Habitat Survey

The Extended Phase 1 Habitat Survey of the site was carried out on the 1st October by suitably qualified ecologists James Salisbury (B.Sc., (Hons)) and Sarah Nicholson (B.Sc., (Hons) M.Sc.). Weather conditions on the day were warm and clear. The field survey comprised of a walkover of the land and habitats present, with a classification of the habitats to Phase 1 Habitat Survey standard, following the 'Preliminary Ecological Appraisal' methodology as set out in the 'Guidelines for Preliminary Ecological Appraisal' (Chartered Institute of Ecology and Environmental Management [CIEEM], 2017), which is a development of the method described in the 'Handbook for Phase 1 Habitat Survey – a technique for environmental audit' (Joint Nature Conservation Committee, 2010). The Phase 1 Habitat Survey provides information on the habitats in the survey area and identifies actual or potential presence of legally protected species, or otherwise notable species/habitats in or where appropriate, adjacent to the site.

A full phase 1 habitat plan (with target notes) is available at an appropriate scale in **Appendix 2**.

2.3 Bats

During the Extended Phase 1 Habitat Survey, any features that had the potential to be used by bats for roosting were assessed. Habitats were classified into categories depending on potential roost features and habitat connectivity. These categories (adapted from Collins 2016) can be found in **Appendix 3**.

2.4 Great Crested Newts

Ponds within 500m of the site were searched for using a 1:25,000 OS map, and any suitable foraging or hibernacula habitats, suitable for newts, were assessed on site.



2.5 Other Protected Species

The potential of the site to support legally protected or national/local Biodiversity Action Plan (BAP) was assessed from field observations carried out during the site walkover and combined with the results of the desk top study. The site was inspected for indications of the presence of protected species as follows:

- ▶ The presence of nesting habitat for breeding birds, such as mature trees, dense scrub, hedgerows and buildings and/or field margins suitable for ground nesting birds, and evidence of bird nesting including bird song, old nests, faecal marks etc.;
- ▶ Evidence of badgers, including setts, runs, snuffle holes and hairs;
- ▶ Scrub/grassland mosaic and potential hibernation sites for reptiles;
- ▶ Suitable habitat for dormice, such as woodland, scrub and dense/species-rich hedgerows, particularly when connected to suitable habitats across the wider landscape; and,
- ▶ Assessment of water bodies, such as ditches and streams as to their potential to support great crested newts, water vole and/or otter.

The likelihood of occurrence of any protected and/or invasive species is ranked according to habitat suitability and an evaluation of existing data. This criterion can be found in **Table 2.1**, below.

Table 2.1: Habitat evaluation criteria

Rank	Evaluation
Negligible	While presence cannot be absolutely discounted, the site includes very limited or poor-quality habitat for a particular species or species group. There may be no local returns from a data search and the surrounding habitats are considered unlikely to support wider populations of a species/species group. The site may also be outside or peripheral to the known natural range for a species/species group.
Low	Habitats within the site are of poor to moderate quality for a given species/species group. There are few or no returns from the data search, but presence cannot be discounted on the basis of national distribution, the nature of surrounding habitats, habitat fragmentation or recent on-site disturbance, etc.
Medium	Habitats within the site are of moderate quality providing opportunities for a given species/species group. Desk study reveals local occurrence or site is within the national distribution and with suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat isolation, and/or disturbance.
High	Habitats within the site are of high quality for a given species/species group. Desk-top study provides evidence of local occurrence. The site is within/peripheral to a national or regional stronghold and/or has good quality surrounding habitat and good connectivity.
Confirmed Presence	Presence confirmed from the current survey or by recent, confirmed records.





The CIEEM EcIA guidelines (2018) recommend that the value or potential value of an ecological resource or feature should be determined within a defined geographical context. They recommend that the following frame of reference be used (or adapted to meet local circumstances):

- ▶ International and European;
- ▶ National;
- ▶ Regional;
- ▶ County (or Metropolitan); or
- ▶ Local.

The purpose of this assessment is to identify whether sufficient information is available to accurately assess the nature conservation value of a site for a given protected species or whether more comprehensive surveys for protected species are necessary.

2.6 Limitations

Ecological surveys are limited by a variety of factors which affect the presence of flora and fauna (e.g. climatic variation, season and species behaviour). A lack of evidence of a protected species during a survey does not mean that the species is absent; hence the survey also records and assesses the ability of habitats to support such species. The time frame in which the survey is implemented provides a snapshot of activity within the survey area and cannot necessarily detect all evidence of use by a species. The survey was completed in October 2018. The timings of the habitat surveys did not present any issues when classifying habitats in this circumstance. The surveyor undertaking the habitat surveys was suitably skilled at classifying habitats and identifying plants outside of the core flowering season.

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation of the natural environment. The Extended Phase 1 habitat survey does not constitute a full botanical survey. Plant species may have been under-recorded, unidentifiable or not visible due to a number of factors including the time of year the survey was carried out.

The protected species assessment provides a preliminary view of the likelihood of protected species occurring on the site. This is based on the suitability of the habitat, known distribution of the species in the local area and any direct evidence within the survey area. It should not be taken as providing a full and definitive survey of any protected species group. It is only representative of the time the survey was carried out. Additional surveys may be recommended if, on the basis of the preliminary assessment or during subsequent surveys, it is considered reasonably likely that protected species may be present. Desk study data is not likely to be exhaustive and it is therefore possible that protected species not identified during the data search do in fact occur within the vicinity of the site.





3. Data Search & Consultation

3.1 Aerial Photography and OS Maps

Aerial photography shows that the site is located within an industrial area of Wrexham. The site is adjacent to Oak road to the south. To the north and west is predominantly industrial units, with a powerline running along the eastern boundary. To the south, past Oak Road, is a large area of scrub and grassland.

3.2 Statutory and Non-Statutory Designated Sites

There are no statutory protected sites within 1km of the site boundary. Three non-statutory sites were identified within 1km of the site boundary, they can be seen in **Table 3.1**. Data search results, including a location of the designated sites in relation to the site boundary, can be found in **Appendix 4**.

3.3 Biodiversity Action Plans (BAP)

Consultation with 'Magic Map' website identified several areas of UKBAP habitats within 1km of the site boundary, all broadleaved woodland:

- ▶ The closest of which is approximately 11.32ha, located 220m to the south of the site. Neighbouring another area of 0.64ha, located 597m south of the site;
- ▶ Three areas located 292m, 618m and 922m north of the site of areas 1.13ha, 1.89 ha and 2.62ha respectively;
- ▶ One area 882m north east of the site of area 0.7ha;
- ▶ Two areas 633m and 817m north west of the site of areas 0.97ha and 5.37ha respectively; and,
- ▶ Two areas 502m and 587m west of the site of areas 0.73ha and 0.91 respectively.

3.4 Protected Species

The data search returned records for a number of protected species within 1km of the site boundary, these are summarised in **Table 3.1**. Further species records can be seen in **Appendix 4**.





Table 3.1: Data Search

Site/Species	Designation	Year	Distance from the site	Details
Wrexham Industrial Estate	WS	-	25m	Formerly a developed site. Complex mosaic of scrub, grassland and tall herb. Species-rich grassland occurs where there is rabbit grazing. The site is approximately 22ha in area.
Wrexham Industrial Estate	WS	-	420m	Species-rich grassland, approximately 1.8ha.
Restored Ancient Woodland Site	RAWS	-	840m	Erlas Black Wood, mature oak woodland
Great Crested Newt (<i>Triturus cristatus</i>)	EPS	2005	153m	-
Great Crested Newt (<i>Triturus cristatus</i>)	EPS	1992	302m	-
Great Crested Newt (<i>Triturus cristatus</i>)	EPS	2010	411m	-
Common Pipistrelle bat (<i>Pipistrellus pipistrellus</i>)	EPS	2016	105m	-
Noctule bat (<i>Nyctalus noctula</i>)	EPS	2016	105m	-
Myotis bat species (<i>Myotis</i> sp.)	EPS	2016	820m	-
Adder (<i>Vipera berus</i>)	WCA Sch5(9)	1992	147m	
Badger (<i>Meles meles</i>)	PBA	2007	147m	Badger sett.
Otter (<i>Lutra lutra</i>)	EPS	2018	530m	Associated with Redwither Brook.
Peregrine Falcon (<i>Falco peregrinus</i>)	WCA Sch1	2016	772m	-
Japanese Knotweed (<i>Fallopia japonica</i>)	WCA Sch9	2015	723m	-
Summary of data search results within 1km of the site boundary for protected species records. WS – Wildlife Sites. RAWS - Restored Ancient Woodland Site. EPS – European Protected Species. WCA Sch1 – Wildlife and Countryside Act 1981 (as amended) Schedule 1 species. WCA Sch5(9) – Wildlife and Countryside Act 1981 (as amended) Schedule 5 section 9 species. Protection of Badgers Act 1992 (PBA). WCA Sch9 – Wildlife and Countryside Act 1981 (as amended) Schedule 9 species.				



4. Habitats on Site

The main habitats within each parcel are described below. Photographs of the site can be seen in **Appendix 5**. The location of each habitat is shown on the Extended Phase 1 Habitat Plan (**Appendix 2**) with accompanying target notes (TN). The habitats present at the survey were:

- ▶ Poor semi-improved grassland;
- ▶ Dense/continuous scattered scrub;
- ▶ Tall ruderal vegetation;
- ▶ Scattered broad-leaved trees;
- ▶ Scattered coniferous trees;
- ▶ Species-poor intact hedge; and,
- ▶ Fence.

4.1.1 Poor Semi-improved grassland

There is a an area of semi-improved grassland (**Appendix 5; Plate 1**) with two mature cypress trees in the north east end of the site (TN 1), with patchy bare ground. There is also a small pile of old cypress branches located here. Species included dominant cock's foot (*Dactylis glomerata*) and occasional oxeye daisy (*Leucanthemum vulgare*).

4.1.2 Tall Ruderal Vegetation

The western and southern section of the site is predominantly tall ruderal vegetation (**Appendix 5; Plate 2**), with another area around the pylon located on site (**TN 6; Appendix 5; Plate 1**). Dominant species included stinging nettle (*Urtica dioica*) and creeping thistle (*Cirsium arvense*), with abundant rosebay willow herb (*Chamaenerion angustifolium*) and occasional ragwort (*Jacobaea vulgaris*).

4.1.3 Dense/continuous Scattered Scrub

The central and western side the site is dominated by scrub (**Appendix 5; Plate 3**), getting denser and more mature towards to the west end of the site. The scrub present on site in the east and the middle is young, with most scrub plants less than 2m in height, suggesting that the eastern and central portion of the site has previously been managed. Species included grey willow (*Salix atrocinerea*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), oak (*Quercus robur*), white poplar (*Populus alba*), bramble (*Rubus fruticosus*) and red-osier dogwood (*Cornus sericea*). Invasive Japanese Knotweed (*Fallopia japonica*) (**Appendix 5; Plate 7**) is located within the scrub (TN 5) against the northern fence line.



4.1.4 Scattered trees

Two large cypress trees are located in the north east corner of the site (**Appendix 5; Plate 6**) within the semi-improved grassland area (TN 1). Three semi-mature silver birch trees (*Betula pendula*) (**Appendix 5; Plate 9**) are located on the northern boundary (TN 4). A large white poplar and three cypress trees are located in the north east corner of the site (TN 7; **Appendix 5; Plate 8**). The south east corner of the site has a small oak tree and an apple tree (*Malnus sp.*).

4.1.5 Species-poor intact hedge

The eastern boundary has a species-poor intact hedge (**Appendix 5; Plate 5**). The hedge is dominated by hawthorn with occasional blackthorn.

4.1.6 Fence

There is a metal fence along the northern boundary of the site, the fence is of chain-link construction before changing to steel palisade fencing in the eastern half of the northern boundary. The western and southern side of the site is bordered by a simple wooden fence (**Appendix 5; Plate 10**).





5. Protected Species Results

5.1.1 Overview

The legislation that relates to the protected species referred to in this section is included in **Appendix 6**. Additional species groups have been considered as part of this report; however, only those that occur within the same geographical range and where suitable habitats are present within or adjacent to the site are included below.

5.1.2 Bats

The data search returned a number of bat records. The closest records were for bat species approximately 105m to the north of the site for common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Noctule (*Nyctalus noctula*).

The habitats on site offer potential foraging areas for bats. No potential roosting features were seen on any of the trees on site. There were no other structures on site that had potential to support roosting bats. The likelihood of bats being present on site is considered **negligible**.

5.1.3 Great Crested Newts

The data search returned a number of great crested newt (GCN) records within 1km of the site. The closest record for GCN was 153m north of the site, from 2005, associated with an area of land which is separated from the site by industrial units, amenity grassland, roads, and tarmac. There are a number of ponds within 500m of the site according to the 1:25,000 OS map, all of which are located over 250m from the site. Ponds within 500m of the site can be seen in **Appendix 7**.

There is suitable habitat on site for great crested newts during the terrestrial stage of their life cycle, for example dense/continuous scrub, hedgerow and semi-improved grassland. Despite suitable habitat for great crested newts identified on site, the lack of linking habitat, distance from nearest pond, and significant anthropogenic barriers means it is unlikely that great crested newts are present on site. The likelihood of the site supporting GCN is considered to be **negligible**.

5.1.4 Birds

The data search returned a large number of bird species. These included Schedule 1 species such as barn owl, peregrine falcon, Cetti's warbler and Goshawk, which are unlikely to be using the site due to lack of suitable habitat.

Birds recorded using the site during the survey included wood pigeon (*Columba palumbus*) and goldfinch (*Carduelis carduelis*). The scattered trees, scrub and hedgerow have a **high** potential to support breeding birds.



5.1.5 Reptiles

The only reptile records returned from the data search were for Adder. Two records from 1999, 147m west of the site. And another record 754m to the south of the site with a non-specific date - 'before 2009'.

There are suitable habitats on site for reptiles, including scrub and tall ruderal vegetation. However, due to the isolation of the site, and lack of reptile records in the surrounding area, the site is considered to have **low** to **negligible** potential to support reptiles.

5.1.6 Badger

The data search returned two badger records within 1km of the site. One record 147m east of the site, with the latest record in 2007 and one 963m north of the site from 2018. Whilst there is suitable habitat in the form of hedgerow on the eastern boundary of the site, no evidence of the species was recorded during the site visit. The site is also surrounded by roads on three sides, and an industrial site to the north. Therefore, the potential for badger to be present on site is considered to be a **negligible**.

5.1.7 Otter

The data search returned two records for otter, approximately 530m west of the site, from 2018, associated with the Redwither brook. There are no suitable habitats on site, or adjacent, to support otter, therefore the potential for otter to be present on site is considered **negligible** and they will not be considered further for this report.

5.1.8 Invasive species

Invasive Japanese Knotweed (**Appendix 5; Plate 7**) is located within the scrub (TN 5) against the northern fence line. Japanese Knotweed is listed under Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offense *"if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9"*.

From the <https://www.gov.uk> website: *"You do not have to remove Japanese knotweed from your land, but you could be prosecuted or given a community protection notice for causing a nuisance if you allow it to spread onto anyone else's property."*

5.1.9 Plants

No notable assemblages of flora or invertebrates were identified within the site. The site is considered to be of **negligible** potential to support notable floral assemblages, however the site may be considered to have important plant communities at the domestic level for invertebrates (see next section).



5.1.10 Invertebrates

A number of butterfly and moth records were returned, such as cinnabar moth and figure of eight moth (*Diloba caeruleocephala*), both UKBAP species.

No notable assemblages of invertebrates were identified within the site. The site is considered to be of **negligible** potential to support notable invertebrate assemblages. However, at the domestic level there are plants on site which have the potential to support UK BAP priority species, such as ragwort, larval food plant of the cinnabar moth, and hawthorn, apple tree and blackthorn, which are the larval food plant for the figure of eight moth.





6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Development Proposals

Current development proposals include the creation of a flexible power plant, which includes transformers and associated units (**Appendix 1**). The proposed development will result in the loss of semi-improved grassland, tall ruderal vegetation, scrub and scattered trees.

The Wrexham industrial estate (WIE), in which the site is located, is an important site at the European level, for great crested newts, and at the domestic level. As such, the WIE is the subject of specific policy requirements laid out in LPG 29 (LPG 29 – Employment Development and Nature Conservation). These require mitigation measures to be imposed with development proposals.

6.2 Statutory/Non-Statutory Designated Sites

There are no statutory sites within 1km of the site boundary. Three non-statutory sites are located within 1km of the site boundary. Two sites are within Wrexham industrial estate (WIE), one of which is 25m to the south of the site, across a main road, and the other is an area of grassland 420m north of the site, despite the close proximity there is no linking habitat between these areas and the site. The third non-statutory site is an area of Restored Ancient Woodland Site 840m to the west.

It is not anticipated that the proposed development would impact upon any statutory or non-statutory sites as described above due to the distance they are from the site and the presence of natural and/or anthropogenic barriers (e.g. existing roads and built up areas surrounding the site).

6.3 Habitats

The habitats on site are common and widespread. The western side of the site is young scrub, and tall ruderal vegetation, with a small patch of semi-improved grassland and two cypress trees, a non-native species of tree which was most likely planted. This area is of less value than the eastern portion, which is a mosaic of habitats, including tall ruderal, scrub, hedgerow and scattered broad leaved and coniferous trees.

6.4 Protected Species

Planning Policy Wales (PPW) requires that developments should ensure *“that all reasonable steps are taken to safeguard or enhance the environment”* Thus, where appropriate, recommendations have been made to enhance the site’s biodiversity to achieve net gains. The legislation that relates to the species mentioned can be seen in **Appendix 6**.

6.4.1 Bats

In line with new lighting recommendations from the Institute of Lighting Professionals and the Bat Conservation Trust, it is recommended that:



- ▶ Exterior lighting is not facing toward retained habitat;
- ▶ Lights should always be mounted on the horizontal, i.e. no upward tilt;
- ▶ Any external security lighting should be set on motion-sensors and short (1min) timers; and,
- ▶ As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

6.4.2 Great Crested Newts

It is unlikely that great crested newts will be found on site for the reasons mentioned in section 5.1.3. The majority of adult great crested newts stay within around 250m of the breeding pond, and the density of individuals gradually decreases away from the pond (Langton *et al* 2001). Due to the low likelihood of great crested newts being found on site, it is recommended that the vegetation clearance methods outlined below in section 6.4.4 provides suitable mitigation for great crested newts.

6.4.3 Birds

The trees on site provide potential nesting opportunities for birds. It is recommended that the following mitigation measures are implemented:

- ▶ Tree and shrub removal works are to be undertaken outside of the breeding bird season (generally considered to be March to September inclusive). Any active nests are to be retained in situ until the young have fledged and are fully independent. Should these works be required within the breeding bird season, then an Ecological Clerk of Works (ECOW) will be required to supervise and check vegetation for active nests prior to works.

6.4.4 Reptiles

There were a small number of historic records for adder within 1km of the site boundary. Habitats on site are lacking in open basking areas, making it relatively unsuitable for adder.

The site is also isolated by anthropogenic barriers and therefore, not linked to areas of suitable reptile habitat. Because of these reasons it is considered that a full reptile survey would not be proportional and therefore, a precautionary mitigation strategy should be implemented. The following precautionary working methods are recommended:

- ▶ The proposed development area is searched beforehand by a suitably qualified ecologist to search and remove any suitable features such as logs or rubble piles;
- ▶ Any encountered reptiles are captured, and moved into the retained habitats by an ecologist;
- ▶ The vegetation on the development site is removed with hand tools (including chainsaws and brush cutters, for example) under the supervision of a suitably qualified ecologist, in a linear fashion (to around 150mm) towards the retained habitats;
- ▶ Upon completion of the strimming, the site should be further searched by an ecologist, to ensure that the area is clear of any reptiles; and,





- ▶ Once the development area has been cleared of the sparse vegetation and any suitable features, the development can proceed.

6.4.5 Badger

Badger have been recorded within 1km of the site, however the likelihood of encountering badgers on site remains low due to the location of the site. As badgers are highly mobile species, it is recommended that if evidence of badgers are encountered on site, work is to cease, and an ecologist informed.

6.4.6 Invasive Species

Japanese knotweed (*Fallopia japonica*) is present on site (**Appendix 5, Plate 7**; TN5). It is recommended that Japanese knotweed removal or management is undertaken prior to any works being undertaken on site within a 10m buffer zone of the current known area of growth, as it would be highly likely that any groundworks would cause the spread of this species elsewhere. Suitable advice should be acquired from a Japanese knotweed specialist. Guidance on this can be found on the UK government website <https://www.gov.uk>.

6.5 Ecological Mitigation Area & Ecological Enhancements

6.5.1 Overview

Pre-application advice from Wrexham County Borough Council (council reference: ENQ/2018/0156) requested that habitat is retained on site to provide adequate mitigation in line with the policy requirements as laid out within LPG29. Taking into consideration the surrounding connectivity and habitat on site, approximately 950m² of habitat will be retained and improved. For the location and further details, please refer to **Appendix 8**. As the site is already vegetated with semi improved grassland, it not considered that further planting is required and the site would benefit from a long term management plan to increase species diversity and structure. It is considered that the provision of approximately 950m² (33% of the site) of retained habitat including the provision of ecological enhancements and long term management will provide sufficient mitigation measures on site.

The following enhancement measures will be implemented within the retained area to ensure that adequate mitigation is provided:

- ▶ The site currently contains habitat with varying structure suitable for reptiles and amphibians, however lacks suitable hibernation areas. Therefore, three hibernacula will be constructed within the ecological mitigation area (**Appendix 8**) to provide adequate overwintering spaces (**Figure 1**); and,
- ▶ A management plan will be implemented to retain the ecological value of the site long term focusing on reptiles/amphibians and breeding birds (see below);



6.5.2 Management Plan

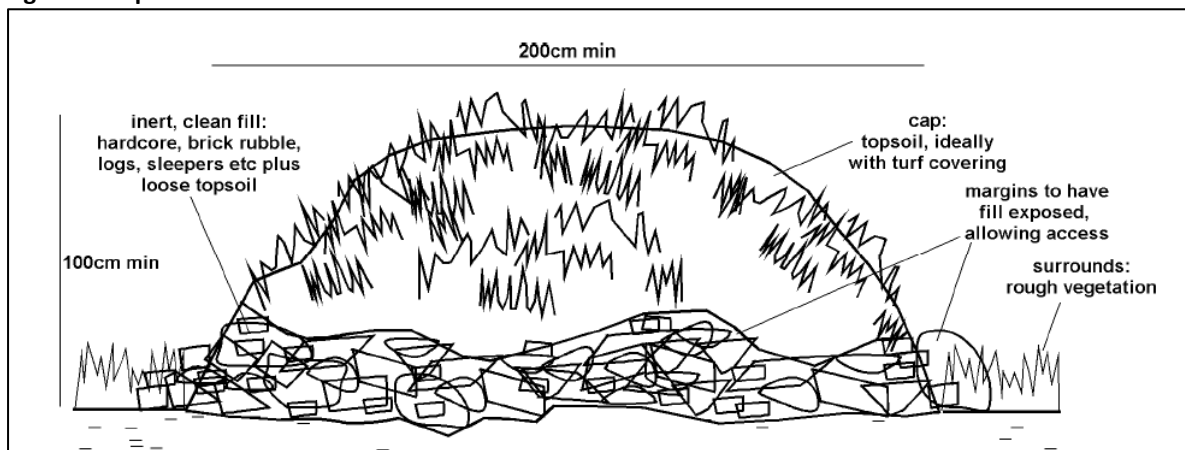
Amphibians and reptiles occupy dynamic, successional habitats and their requirements may be met only in certain stages. Reptile habitats do not stay suitable without natural succession being interrupted in some way as habitats will become scrubbed up, and lose their openness which is generally favoured by reptiles. In the absence of natural factors, intervention in the form of management is necessary to maintain all successional stages of a habitat and the specialised wildlife that each supports. Therefore, a management schedule will be implemented that will include the following measures:

- ▶ To maintain the diverse vegetation structure preferred by amphibians/reptiles it will be necessary to control the growth of scrub, bramble, and other dominant plants on site. A cutting regime that does not harm key features of the site (i.e. hibernation/basking areas) will be implemented that avoids simultaneous removal of all vegetation cover, or substantial areas of it. This will be achieved through a strategic selection of areas to be cut (for example targeting areas where scrub encroachment is most severe) and through a programmed, phased cutting of the site divided into management plots;
- ▶ Cutting will be undertaken when reptiles/amphibians are least likely to be harmed generally between November-February. Winter cutting or mowing will avoid creating large areas of very short sward vegetation around hibernation sites, where reptiles/amphibians need some cover on emergence in the spring; and,
- ▶ To maintain a diverse tussocky structure on rough grassland and prevent succession to scrub, plots will be cut on a rotation of no shorter than three years (i.e. one third of the plots are cut each year);

6.5.3 Hibernacula Details

The minimum dimensions of the hibernacula should be 2m wide by 1m tall. The hibernacula will be placed in a suitably sunny location within the ecological mitigation area (as outlined within **Appendix 8**), within existing vegetation so that there is immediate cover for reptiles when emerging. For further information, please refer to **Figure 1**.

Figure 1: Reptile Hibernacula





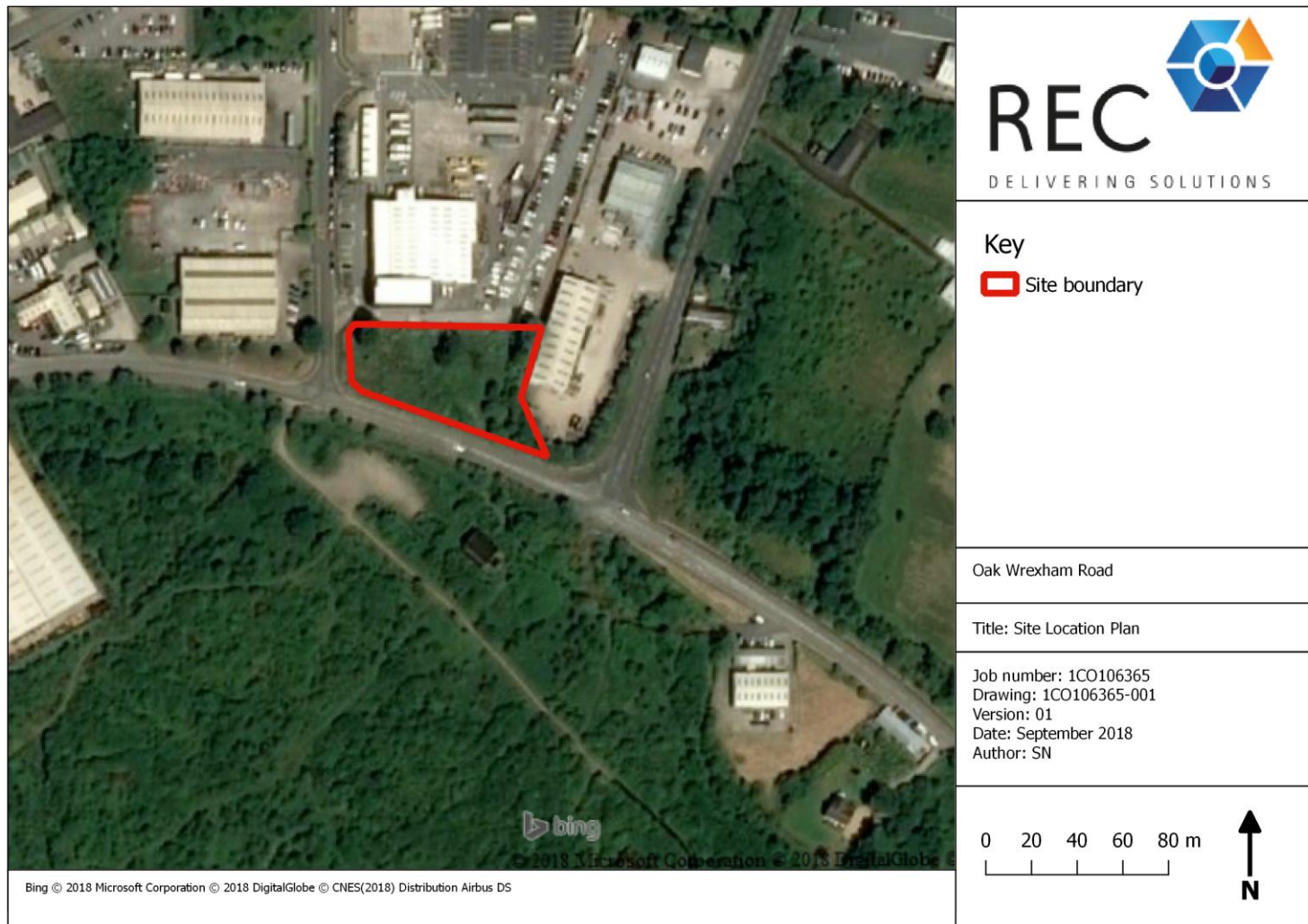
7. REFERENCES AND FURTHER READING

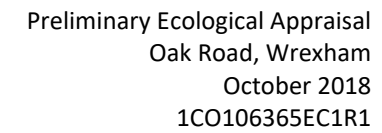
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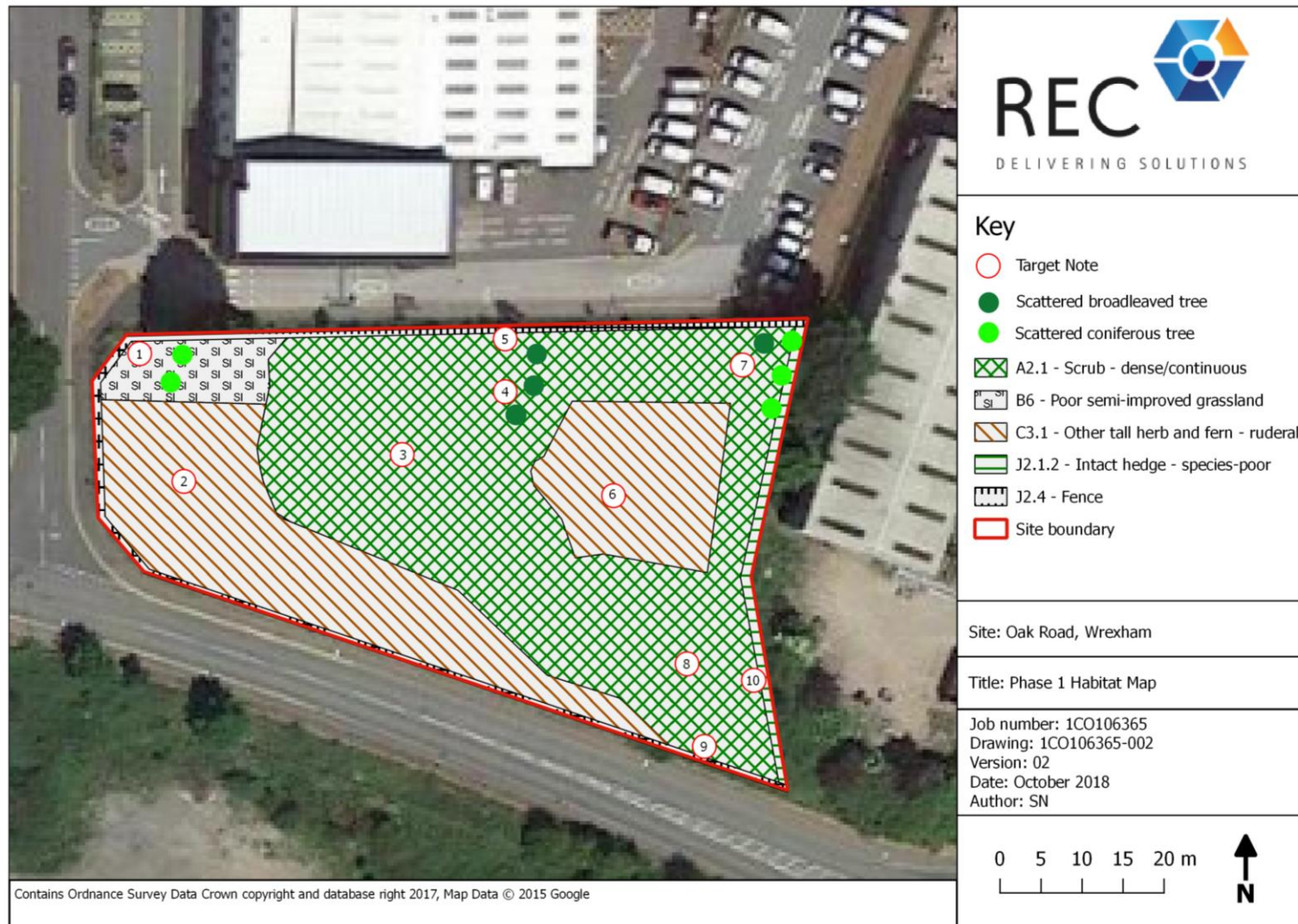
Appendix 1 – Site Location Plan & Proposals



[illegible]



Appendix 2 – Habitat Map & Target Notes





Target Notes

TN	Feature	Description of feature
1	Semi-improved Grassland	Areas of semi-improved grassland with two mature cypress trees. There is a small brash pile, of old cypress branches located here.
2	Tall Ruderal	An area of tall ruderal vegetation is found to the east and west of the site, with occasional shrub.
3	Dense/continuous scrub	An area of relatively young scrub comprised of a variety of tree and shrub species such as, grey willow, blackthorn, hawthorn, oak and white poplar. This becomes denser towards the western boundary of the site.
4	Scattered Broad-leaved Trees	Three semi-mature silver birch trees.
5	Japanese knotweed	A tall stand of the invasive Japanese knotweed, approximately 2x5m in diameter.
6	Pylon	A pylon in the middle of a patch of tall ruderal vegetation.
7	Scattered Trees	A large and leaning white willow tree and three large cypress trees, in the middle of a stand of scrub comprised of young white willow trees.
8	Oak Tree	A small oak tree amongst scrub.
9	Crab apple tree	A semi-mature crab apple tree on the southern boundary of the site.
10	Hedgerow	An unmanaged hedgerow comprised largely of hawthorn and blackthorn.





Plant species list

Family	Common Name	Latin	Species Occurrence on Site
<u>Adoxaceae</u>	Elder	<i>Sambucus nigra</i>	Occasional
<u>Asteraceae</u>	Creeping thistle	<i>Cirsium arvense</i>	Occasional
	Oxeye daisy	<i>Leucanthemum vulgare</i>	Rare
	Yarrow	<i>Achillea millefolium</i>	Occasional
<u>Apiaceae</u>	Cow parsley	<i>Anthriscus sylvestris</i>	Occasional
<u>Araliaceae</u>	Ivy	<i>Hedera helix</i>	Frequent
<u>Cupressaceae</u>	Cypress	<i>Cupressus × leylandii</i>	Rare
<u>Cornaceae</u>	Red-osier dogwood	<i>Cornus sericea</i>	Occasional
<u>Fabaceae</u>	Gorse	<i>Ulex gallii</i>	Rare
<u>Fagaceae</u>	Oak	<i>Quercus robur</i>	Rare
<u>Oleaceae</u>	Ash	<i>Fraxinus excelsior</i>	Rare
<u>Plantaginaceae</u>	Ribwort plantain	<i>Plantago lanceolata</i>	Occasional
<u>Polygonaceae</u>	Broad-leaved dock	<i>Rumex obtusifolius</i>	Rare
	Common sorrel	<i>Rumex acetosa</i>	Rare
	Japanese knotweed	<i>Fallopia japonica</i>	Rare
<u>Poaceae</u>	False oat-grass	<i>Arrhenatherum elatius</i>	Occasional
	Cock's foot	<i>Dactylis glomerata</i>	Occasional
<u>Rosaceae</u>	Bramble	<i>Rubus fruticosus</i>	Frequent
	Blackthorn	<i>Prunus spinosa</i>	Frequent
	Hawthorn	<i>Crataegus monogyna</i>	Dominant
	Dog rose	<i>Rosa canina</i>	Rare
	Crab Apple	<i>Malus sylvestris</i>	Rare
	Rowan	<i>Sorbus aucuparia</i>	Rare
<u>Salicaceae</u>	Grey Willow	<i>Salix cinerea</i>	Occasional
	White poplar	<i>Populus alba</i>	Occasional
<u>Urticaceae</u>	Stinging Nettle	<i>Urtica dioica</i>	Dominant





Appendix 3 – Bat Roosting Features

Roost Type	Features for summer roost
Confirmed Roost	Presence of bats or evidence of bats identified. For example through droppings, sightings, or previously undertaken surveys (dependant on time elapsed). Confirmed roosts may require additional surveys.
High	Building/Structure or tree with multiple opportunities for one or more species of roosting bat. Likely to be used as a maternity roost. Optimal orientation. Good connectivity to optimal foraging habitats including waterbodies, woodlands, or grasslands.
Medium	Building/Structure for tree with some opportunities for roosting bats. Preferable orientation. Connectivity to moderate to high quality foraging habitat available.
Low	Building/Structure or tree with limited opportunities for roosting bats. Poor connectivity to foraging habitat (may be located within an urban setting). No potential for high numbers of bats, or a maternity roost.
Negligible	Building/Structure or tree with no or very limited opportunities for roosting bats. Little to no connectivity to foraging habitat.





Appendix 4 – Data Search



Figure 1: Sites within 1km of the site boundary
MAGIC Magic Map

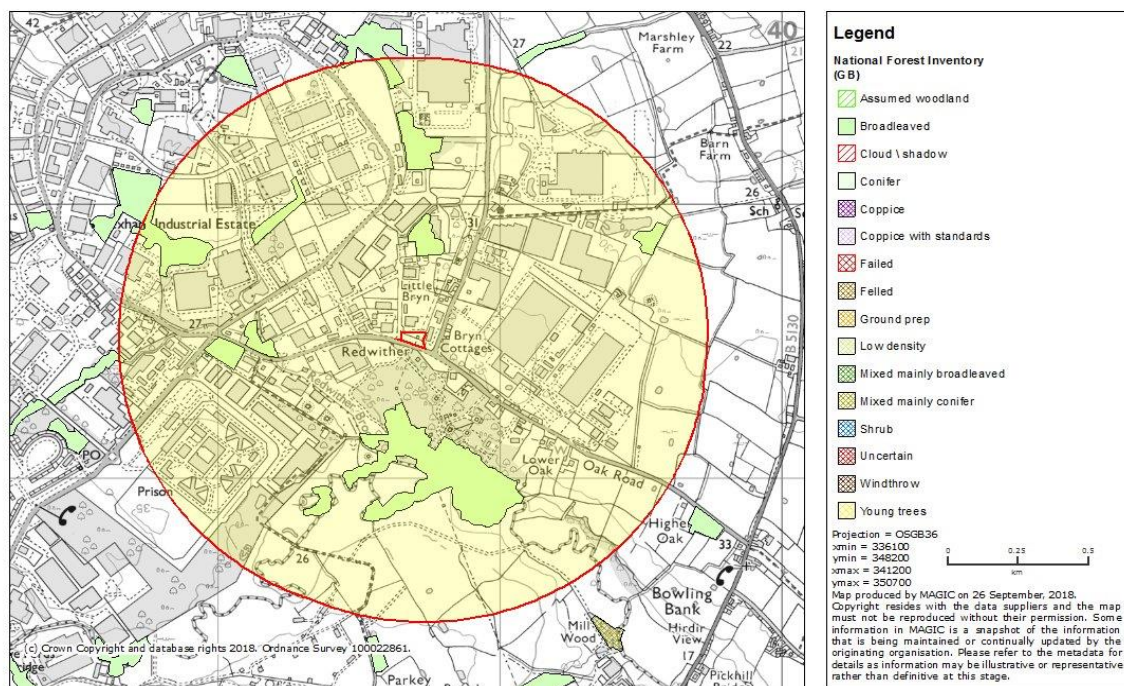


Figure 2: UK BAP habitats within 1km of the site boundary



Summary of Data Search

Site/Species	Designation (highest)	Year of latest record	Approx. distance from the site to grid reference
Starling (<i>Sturnus vulgaris</i>)	UKBAP	2016	688m
Bullfinch (<i>Pyrrhula pyrrhula</i>)	UKBAP	2016	562
Herring Gull (<i>Larus argentatus</i>)	UKBAP	2016	688m
Song Thrush (<i>Turdus philomelos</i>)	UKBAP	2016	892
Dunnock (<i>Prunella modularis</i>)	UKBAP	2008	966m
Peregrine falcon (<i>Falco peregrinus</i>)	WCA1.1	2016	772m
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	EPS	2016	105m
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	EPS	2016	105m
Noctule Bat (<i>Nyctalus noctula</i>)	EPS	2016	105m
Whiskered Bat (<i>Myotis mystacinus</i>)	EPS	1999	142m
Great Crested Newt (<i>Triturus cristatus</i>)	EPS	2018	153m
Myotis Bat Species (<i>Myotis sp.</i>)	EPS	2016	526m
Common Toad (<i>Bufo bufo</i>)	Bern	2016	29m
Slow Worm (<i>Anguis fragilis</i>)	Bern	1999	147m
Adder (<i>Vipera berus</i>)	Bern	1999	147m
Kestrel (<i>Falco tinnunculus</i>)	CITES	2009	147m
Swallow (<i>Hirundo rustica</i>)	Bern	2010	147m
Smooth Newt (<i>Lissotriton vulgaris</i>)	EPS	2005	411m
Common Frog (<i>Rana temporaria</i>)	Bern	2015	463m
Otter (<i>Lutra lutra</i>)	EPS	2018	530m
Green Woodpecker (<i>Picus viridis</i>)	Bern	2016	619m
House Martin (<i>Delichon urbicum</i>)	Bern	2016	653m
Linnet (<i>Linaria cannabina</i>)	Bern	2016	688m
Stoat (<i>Mustela erminea</i>)	Bern	2016	702m
Palmate newt (<i>Lissotriton helveticus</i>)	Bern	2018	747m
Woodcock (<i>Scolopax rusticola</i>)	BDir2.1	2018	946m
Canada Goose (<i>Branta canadensis</i>)	BDir2.1	2008	966m
Skylark (<i>Alauda arvensis</i>)	BDir2.1	2012	836m
Mute Swan (<i>Cygnus olor</i>)	BDir2.1	2006	966m
Barn Owl (<i>Tyto alba</i>)	CITES	2007	966m
Cetti's Warbler (<i>Cettia cetti</i>)	WCA1.1	2017	327m
Goshawk (<i>Accipiter gentilis</i>)	WCA1.1	2015	705m
Cinnabar moth (<i>Tyria jacobaeae</i>)	UKBAP	2009	687m
Figure of eight moth (<i>Diloba caeruleocephala</i>)	UKBAP	1999	872m
Little Ringer Plover (<i>Charadrius dubius</i>)	WCA1.1	2016	976m
Pennyroyal (<i>Mentha pulegium</i>)	WCA8	2014	714m
Giant Hogweed (<i>Heracleum mantegassianum</i>)	WCA9	2011	700m
Japanese Knotweed (<i>Fallopia japonica</i>)	WCA9	2015	705m
Mandarin Duck (<i>Aix galericulata</i>)	WCA9	2016	757m



Appendix 5 – Site Photographs



Plate 1: Semi improved grassland (foreground) Scrub (top right), with perimeter fence (left). Chain-link fence present in background.



Plate 2: Tall ruderal vegetation.



Plate 3: Dense Scrub



Plate 4: Pylon located within tall ruderal, with silver birch trees (top left) and white poplar and cypress trees (top right)



Plate 5: Overgrown species-poor hedge eastern boundary.



Plate 6: Cypress trees.





Plate 7: Invasive Japanese Knotweed. Steel palisade fence visible in back ground.



Plate 8: Scattered broad-leaved and coniferous trees.



Plate 9: Silver birch trees.



Plate 10. Wooden fence on western boundary.





Appendix 6 – Protected Species Legislation

Legislation (England & Wales)	Relevant Species	Offence
European Protected Species (EPS): Protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). Schedule 5: Protected under the Wildlife and Countryside Act 1981 (as amended) in respect to section 9(4)(b) and (c) and (5) only.	▶ Bats, all species (<i>Rhinolophidae</i> & <i>Vespertilionidae</i> species) ▶ Great crested newt (<i>Triturus cristatus</i>) ▶ Smooth snake (<i>Coronella austriaca</i>) ▶ Sand lizard (<i>Lacerta agilis</i>) ▶ Dormouse (<i>Muscardinus avellanarius</i>) ▶ Otter (<i>Lutra lutra</i>)	▶ deliberately captures, injures or kills any wild animal of an EPS, ▶ deliberately disturbs wild animals of any such species (in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.), ▶ deliberately takes or destroys the eggs of such an animal, or ▶ damages or destroys a breeding site or resting place of such an animal, ▶ possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a EPS, or any part of, or anything derived from a EPS, ▶ intentionally or recklessly disturb a EPS while it is occupying a structure or place which it uses for shelter or protection; or ▶ intentionally or recklessly obstruct access to any structure or place which any EPS uses for shelter or protection.
Protection of Badgers Act (1991)	▶ Badger (<i>Meles meles</i>)	It is an offence to: wilfully kill or injure a badger, or attempt to do so and to intentionally or recklessly interfere with a badger sett. This includes: ▶ Damaging or destroying an active sett; ▶ Obstructing access to a sett; and ▶ Disturbing a Badger while it is occupying a sett.
Schedule 5: Protected under section 9(5) of the Wildlife and Countryside Act 1981 (as amended).	▶ Adder (<i>Vipera berus</i>) ▶ Slow-worm (<i>Anguis Fragilis</i>) ▶ Grass snake (<i>Natrix helvetica helvetica</i>)	▶ Intentionally kill or injure; ▶ Sell, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5, or any part of, or anything derived from, such an animal; or ▶ Publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.



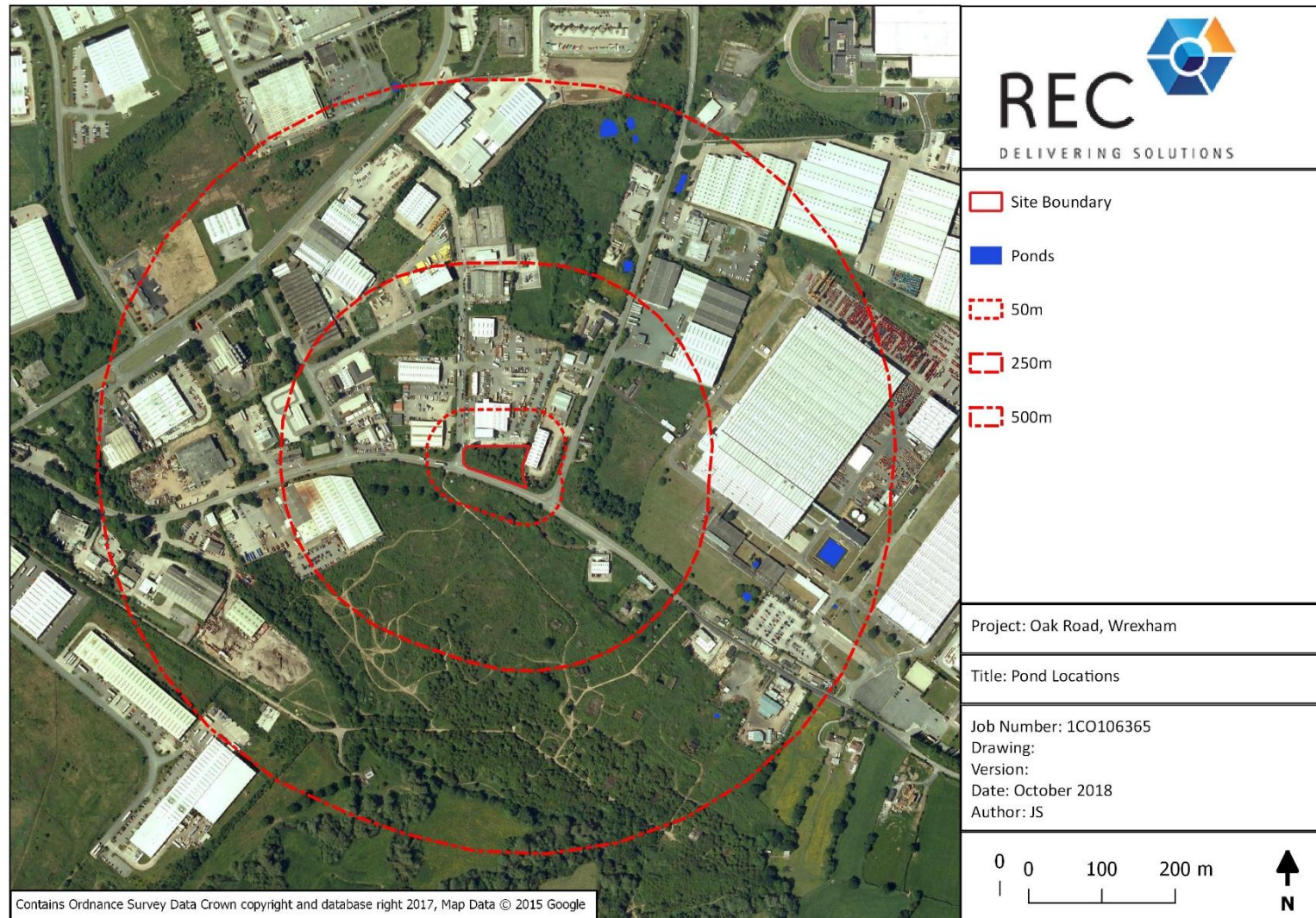
Legislation (England & Wales)	Relevant Species	Offence
Wildlife and Countryside Act 1981 (as amended)	▶ All wild birds	▶ Kill, injure or take any wild bird; ▶ Take, damage or destroy the nest of any wild bird while it is being built or in use; ▶ Take or destroy the eggs of any wild bird; and, ▶ Possess or control any wild bird or egg unless obtained legally.
Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)	▶ Barn Owl (<i>Tyto alba</i>)	▶ Disturb any wild bird listed on Schedule 1 whilst it is building a nest or is in, on, or near a nest containing eggs or young; or ▶ Disturb the dependent young of any wild bird listed on Schedule 1.
Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)	▶ Water Vole (<i>Arvicola amphibius</i>)	▶ Intentionally kill, injure or take water voles; ▶ Possess or control live or dead water voles or derivatives; ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; or ▶ Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.
Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)	▶ Japanese Knotweed (<i>Fallopia japonica</i>) ▶ Himalayan Balsam (<i>Impatiens glandulifera</i>)	Invasive plants are listed on Schedule 9 (part 2, section 14) of the Wildlife and Countryside Act 1981 (as amended). This legislation makes it an offence to 'plant or otherwise cause such species to grow' in the wild. This includes spreading of the species or transferring polluted ground material from one area to another.

Note. Information presented in this table is only a summary of the relevant legislation.





Appendix 7 – Pond Locations





Appendix 8 – Mitigation Area

