



Ellgia Scunthorpe
Permit Variation Application
reference ELL/023

Habitats Risk Assessment

1 Introduction

1.1 Requirement For Habitats Risk Assessment

This assessment has been produced in response to the request for further information dated 6 April 2023.

1.1 Background

Arbtech Consulting Limited was commissioned by Ellgia Ltd. to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) at Winterton Road, Scunthorpe, North Lincolnshire DN15 0DH. The survey was completed on 26/02/2020. The aim of the survey was to complete an Extended Phase 1 Habitat Survey of the survey area (all land that will be impacted by the site) and to consider the value and suitability of the structures for roosting bats. The PRA is informed by the Bat Conservation Trust publication Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins, 2016).

1.2 Site Context

The site is located at National Grid Reference SE 90257 12149 and has an area of approximately 0.3ha. The site consists of bare ground, ditches, scrub with waterbodies.

1.3 Scope of the assessment

The assessor describes the baseline ecological conditions at the site; evaluates habitats within the survey area in the context of the wider environment; and describes the suitability of those habitats for notable or protected species. The PRA element of the survey the report provides a description of all features suitable for roosting bats and evaluates those features in the context of the site and wider environment. It further documents any physical evidence collected or recorded during the site survey that establishes the presence of roosting bats. It identifies any significant ecological impacts as a result of the development proposals; summarises the requirements for further surveys and mitigation measures, to inform subsequent mitigation proposals, achieve Planning or other statutory consent, and to comply with wildlife legislation.

To achieve this, the following steps were taken:

- The desk study area and field survey area (generally 50m from the site boundary/proposed footprint and including the 'zone of influence' of the scheme) have been identified
- A desk study has been carried out.
- Baseline information on the site and surrounding area has been recorded through an 'Extended Phase 1 Habitat Survey', including a Phase 1 Habitat Survey (JNCC 2010) and recording

- further details in relation to notable or protected habitats and species.
- The ecological features present within the survey area have been evaluated where possible (CIEEM, December 2017).
- Invasive plant and animal species (such as those listed on Schedule 9 of the Wildlife & Countryside Act) have been identified.
- Likely impacts on features of value, as a result of the development proposals, have been identified.
- Recommendations for further survey and assessment have been made
- Recommendations for mitigation and enhancements of the developed site have been provided based on current information.

2 Key Findings of Site Survey

The Evaluation of the survey is presented in table 1 below, the full report is attached as Appendix 1

Ecological Factor	Survey assessment conclusions (with justification)	Foreseen impacts	Recommendations	Enhancements The Local Planning Authority has a duty to ask for enhancements under the NPPF (2019)
Designated sites	The site is not subject to any designation. However, the information obtained from the local record centre shows that there are 6 local wildlife sites and 4 local geological sites within 2km of site.	None.	None.	None.
Notable habitats and plants	The magic.gov.uk database shows that there are no priority habitats on site, or within the zone of influence of the proposed works. Open mosaic habitat, broadleaved and deciduous woodland, Lowland dry acid grassland and lowland heathland is located within 2km of the site. The survey was completed during the sub-optimal survey season when ground flora is dormant. However, it is unlikely that species of note will be present on site.	None.	None.	A wildflower meadow area should be incorporated into the landscaping on the eastern site boundary.
Invasive / Non-native species	Small areas of buddleia is located on the eastern site boundary.	If buddleia is not controlled on the eastern boundary, it may spread across the site and further afield.	Buddleia should carefully be removed from site to prevent the spread in the local area.	Alternative species such as lavender and heather should be planted on the eastern site boundary.

Bats	The site boundaries will provide bats with foraging and commuting routes. The Biological Records Data (BRD) contains records of bat roosts and field records (i.e. bats in flight) in the area, increasing the likelihood of bats being present on the site.	Any lighting installed on site may impact on foraging and commuting bat routes along the site boundaries.	See enhancement table below for full bat lighting recommendations.	The installation of two Schwegler bat boxes on mature trees around the site boundaries will provide additional roosting habitat for bats e.g. 2F Schwegler Bat Box 2FN Schwegler Bat Box Bat boxes should be positioned 3-5m above ground level facing in a south/south-westerly direction with a clear flight path to and from the entrance.
Birds	No evidence of nesting birds was found during the survey, however birds could use the vegetation on site for nesting. The BRD included numerous bird records including recent records of linnet, snipe, barn owls and swifts located close to the site.	Active nests could be disturbed during the development.	If an active bird nest is found during the works, Arbtech must be contacted for advice.	Install two Schwegler bird boxes on retained trees on site e.g. Schwegler 1B nest boxes Schwegler 2H Robin Boxes Nest boxes should be positioned approximately 3m above ground level where they will be sheltered from prevailing wind, rain and strong sunlight. Small-hole boxes are best placed approximately 1-3m above ground on an area of the tree trunk where foliage will not obscure the entrance hole. A similar alternative brand can be used.
Reptiles	The site provides a small area of reptile habitat. The BRD includes records of common lizards but these are located ~0.9km from the site reducing the likelihood of reptiles being present.	None.	None.	Waste materials created during the development e.g. log piles, brash, rocks etc. Can be used to create hibernacula and refugia for common reptiles. These should be positioned on the site boundaries.

Amphibians	The site contains small areas of suitable terrestrial habitat for amphibian foraging, commuting, and refuge. There is a waterbody and ditches located within the site boundary. There is a large fishing lake located approximately 50m from site.	As the vegetation will not be impacted by the development, it is highly unlikely amphibians will be impacted.	None.	Waste materials created during the development e.g. log piles, brash, rocks etc. Can be used to create hibernacula and refugia for common reptiles. These should be positioned on the site boundaries.
Other Terrestrial Mammals	Badgers The site boundaries and eastern section of the site contains small areas of suitable foraging habitat for badgers found on site.	Badgers None.	Badgers None. However, the following recommendations are given in order to mitigate against potential harm to badgers during the development works. <ul style="list-style-type: none"> • Any trenches dug should either be covered at night or have a rough sawn plank placed in them to act as a ramp for any wildlife which may fall in. • Security lighting to be directed away from the undergrowth. • Any chemicals or pollutants used or created by the development 	Badgers None.
			should be stored and disposed of correctly according to COSHH regulations.	
	Water Vole No suitable habitat.	Water Vole None.	Water Vole Measures to avoid accidental pollution of the water course should be implements (COSHH).	Water Vole None.

<p>Otter No suitable habitat.</p>	<p>Otter None.</p>	<p>Otter Measures to avoid accidental pollution of the water course should be implements (COSHH).</p>	<p>Otter None.</p>
<p>Hedgehogs The site provides small areas of suitable habitat for hedgehogs.</p>	<p>Hedgehogs None.</p>	<p>Hedgehogs No further surveys are required. However, the following recommendations are given in order to mitigate against potential harm to hedgehogs during the development works.</p> <ul style="list-style-type: none"> • Any trenches dug should either be covered at night or have a rough sawn plank placed in them to act as a ramp for any wildlife which may fall in. • Security lighting to be directed away from the undergrowth. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. 	<p>Hedgehogs Hedgehog houses should be incorporated into the developed site positioned beneath the site boundaries.</p>

3 Conclusions In Relation to Permit Application

3.1 Context

The risk assessment carried out in 2020 concluded that the site itself was of relatively low ecological value from the point of view of habitats. It recommended various enhancements which are being implemented. It also recommended that measure to prevent pollution should be maintained but did not highlight any risks to land or habitats.

3.2 Conclusion

The permit application does not involve the addition of any processes, equipment or buildings from those described in the applications documents and shown on the various plans. Therefore the site survey is considered representative of the installation site.

Given the nature of the activities on site and the processes and measures in place to prevent pollution, including the site inspection regime and the EMS as a whole, the risk to habitats and designated sites is considered negligible.

Appendix 1

Ecological Appraisal and Roost

Assessment Survey Winterton

Road, Scunthorpe, North

Lincolnshire DN15 0DH

Ellgia Ltd

Guidelines

This assessment has been designed to meet:

- Chartered Institute of Ecology and Environmental Management 'Guidelines for preliminary ecological appraisal Second Edition, December 2017';
- Chartered Institute of Ecology and Environmental Management 'Guidelines for ecological impact assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine, September 2018'; and
- British Standard 42020 (2013) 'Biodiversity – Code of Practice for Planning and Development'.

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

This approach is enshrined in Government planning guidance, for example, paragraph 193 of the National Planning Policy Framework for England.

The desk studies and field surveys undertaken to provide a preliminary ecological appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

In consequence of the scale and intensity of the proposed development, the low impact on ecological receptors identified through both the site survey and search of local biological records, and the passive interface with the mitigation hierarchy, this plan-led report is considered adequate and proportionate. It communicates all relevant information necessary to determine a planning application, or support the recommendations for further surveys.

Executive summary

Arbtech Consulting Limited was commissioned by Ellgia Ltd. to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) at Winterton Road, Scunthorpe, North Lincolnshire DN15 0DH. The survey was completed on 26/02/2020. The aim of the survey was to complete an Extended Phase 1 Habitat Survey of the survey area (all land that will be impacted by the proposals) and to search for bats or field signs of bats and to consider the value and suitability of the structures for roosting bats. These were analysed against a desk study.

Summary of recommendations

No evidence of protected species was found on site during the survey, and there was extremely limited potential for protected species to be using the site, therefore no further surveys have been recommended. Site specific enhancements have been made in evaluation table (Table 3), to increase the potential for protected species on site in line with the Local Planning Authority's duty to seek biodiversity enhancements under the NPPF (2019).

Contents

1.0 Introduction and Context..... 5

 1.1 Background 5

 1.2 Site Context 5

 1.3 Scope of the report..... 5

 1.4 Project Description 6

2.0 Methodology 6

 2.1 Desk Study methodology 6

 2.2 Site Survey methodology 6

 2.3 Suitability Assessment 7

 2.4 Limitations – evaluation of the methodology 8

3.0 Results and Evaluation 9

 3.1 Desk Study Results..... 9

 3.2 Designated sites..... 9

 3.3 Landscape 10

 3.4 Historical records 12

 3.5 Field Survey Results 13

 3.6 Site Feature descriptions and photos 14

 3.7 Protected species evidence 18

4.0 Conclusions, Impacts and Recommendations 19

 4.1 Informative guidelines 19

 4.2 Evaluation 20

5.0 Bibliography 27

 Appendix 1a: Phase 1 Habitat Survey Map 29

 Appendix 1b: Site Enhancements 30

 Appendix 2: Proposed Site Plan 31

 Appendix 3: Desk Study Information 32

 Appendix 4: Legislation and Planning Policy 36

1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was commissioned by Ellgia Ltd. to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) at Winterton Road, Scunthorpe, North Lincolnshire DN15 0DH. The survey was completed on 26/02/2020. The aim of the survey was to complete an Extended Phase 1 Habitat Survey of the survey area (all land that will be impacted by the proposals) and to consider the value and suitability of the structures for roosting bats. The PRA is informed by the Bat Conservation Trust publication Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins, 2016).

No previous reports have been produced for this site by Arbtech Consulting Ltd.

1.2 Site Context

The site is located at National Grid Reference SE 90257 12149, and has an area of approximately 0.3ha. The site consists of bare ground, ditches, scrub with waterbodies.

1.3 Scope of the report

This report describes the baseline ecological conditions at the site; evaluates habitats within the survey area in the context of the wider environment; and describes the suitability of those habitats for notable or protected species. The PRA element of the survey the report provides a description of all features suitable for roosting bats, and evaluates those features in the context of the site and wider environment. It further documents any physical evidence collected or recorded during the site survey that establishes the presence of roosting bats. It identifies significant ecological impacts as a result of the development proposals; summarises the requirements for further surveys and mitigation measures, to inform subsequent mitigation proposals, achieve Planning or other statutory consent, and to comply with wildlife legislation.

To achieve this, the following steps were taken:

- The desk study area and field survey area (generally 50m from the site boundary/proposed footprint and including the 'zone of influence' of the scheme) have been identified
- A desk study has been carried out.
- Baseline information on the site and surrounding area has been recorded through an 'Extended Phase 1 Habitat Survey', including a Phase 1 Habitat Survey (JNCC 2010) and recording further details in relation to notable or protected habitats and species.
- The ecological features present within the survey area have been evaluated where possible (CIEEM, December 2017).
- Invasive plant and animal species (such as those listed on Schedule 9 of the Wildlife & Countryside Act) have been identified.
- Likely impacts on features of value, as a result of the development proposals, have been identified.
- Recommendations for further survey and assessment have been made
- Recommendations for mitigation and enhancements of the developed site have been provided based on current information.

A survey plan is presented in Appendix 1, proposed plans in Appendix 2 (where available), desk study results in Appendix 3 and a summary of relevant legislation is presented in Appendix 4.

1.4 Project Description

The development proposals are for the demolition of the existing building A planning application is being prepared for submission to Wirral Council.

2.0 Methodology

2.1 Desk Study methodology

The desk study included a 2km radius review of statutory and non-statutory designated sites, biodiversity action plan (BAP) priority habitats and granted EPSML records for bats held on magic.gov.uk database. An assessment of the surrounding landscape structure was also completed using aerial images from Google Earth and OS maps.

To conform to best practice guidelines biological records data (BRD) within a 2km radius of the site will need to be obtained from the local biological records centre (RECORD). The data search is confidential information that is not suitable for public release and has been analysed and summarised for presentation in this report.

2.2 Site Survey methodology

The survey was undertaken by Louise Sawrey (Natural England Protected Species Licence Numbers: Bats - 2019-43813-CLS-CLS) on 26/02/2020.

The methodology for the Phase 1 habitat survey is based on the best practice publication phase 1 habitat survey methodology (JNCC, 2010). All land parcels are described and mapped according to JNCC phase 1 habitat classification. Where appropriate, target notes provide supplementary information on habitat conditions, features too small to map to scale, species composition, structure and management.

During the survey, habitats were assessed for their suitability to support protected species, and field signs indicating their presence recorded. The assessment takes into consideration the findings of the desk study, the habitat conditions on site and in the context of the surrounding landscape, and the ecology of the protected species. The likelihood of the presence of protected species is ranked; the habitats on site are evaluated against their likelihood to provide suitable habitat for protected species.

The ecological value of the survey area has been assessed based on the Guidelines for Ecological Impact Assessment (CIEEM, 2018), and the Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring (Hill, 2005), using geographic frames of reference. The biodiversity value of any identified designated sites, habitat types and associated species assemblages has been considered. The distribution and extent of invasive species listed on Schedule 9 of the Wildlife and Countryside Act (1981 as amended 1996) were also noted throughout the survey area. The methodology for the PRA is informed by the Bat Conservation Trust publication Bat Surveys for Professional Ecologists – Good Practice Guidelines (Collins, 2016). All features that will be impacted by the project proposals were assessed for their bat roosting and/or commuting habitat. The surveyor systematically surveyed all features suitable for-bats and signs of bat activity.

For any surveyed buildings:

A non-intrusive visual appraisal from the ground using binoculars, inspecting the external features of the building(s) for potential access/egress points, and for signs of bat use. An internal inspection of the building was also made, including the living areas of derelict or abandoned buildings and the accessible roof spaces of all buildings, using an endoscope, torch and ladders. The surveyor paid particular attention to the floor and flat surfaces, window shutters and frames, lintels above doors and windows, and carried out a detailed search of numerous features within the roof space.

For any surveyed trees

A visual inspection from ground level using binoculars and where accessible an internal inspection of suitable roosting features using an endoscope, torch and ladders.

The surveyor also made note of any other ecological constraints observed during the survey, notably the likelihood of presence or signs of breeding birds, and the suitability of the site for barn owls *Tyto alba*.

2.3 Suitability Assessment

The likelihood of occurrence of protected species is ranked according to the criteria listed in Table 1. The habitats on site were evaluated as to their likelihood to provide sheltering, roosting, foraging, basking or nesting habitat.

Table 1: showing criteria considered when assessing the likelihood of occurrence of protected species

Present	Species are confirmed as present from the current survey or historical confirmed records.
High	Habitat and features of high quality for species or species assemblage. Species known to be present in wider landscape (desk study records). Good quality surrounding habitat and good connectivity.
Medium	Habitat and features of moderate quality. The site in combination with surrounding land provides all habitat or ecological conditions required by the species or assemblage. Within known national distribution of species and local records in desk study area. Limiting factors to suitability, including small area of suitable habitat, some severance or poor connectivity with wider landscape, poor to moderate habitat suitability in local area.
Low	Habitats within the survey area poor quality. Few or no records from data search. Despite above, presence cannot be discounted as within national range, all required features or conditions present on site and in surrounding landscape. Limiting factors could include isolation, poor quality landscape, or disturbance.
Negligible	Very limited poor-quality habitats and features. No local records from desk study; site on edge of, or outside, national range. Surrounding habitats considered unlikely to support species or species assemblage.

For the PRA element of the survey all affected survey features on site were categorised according to the likelihood of bats being present, in line with best practice guidelines (Collins, 2016).

The features that dictate the likelihood of roosting bats are summarised in Tables 2 and 3 below. Roost suitability is classified as high, moderate, low and negligible and dictates any further surveys required before works can proceed.

Table 2: Features of a building that are correlated with use by bats

Likelihood of bats being present	Feature of building and its context
Higher	Buildings and structures with features of particular significance for roosting bats e.g. mines, caves, tunnels, icehouses and cellars. Habitat on site and surrounding landscape of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland. Site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river and or stream valleys and hedgerows. Site is proximate to known or likely roosts (based on historical data).
Lower	A small number of possible roost sites or features used sporadically by more widespread species. Habitat suitable for foraging in close proximity, but isolated in the landscape. Or an isolated site not connected by prominent linear features. Few features suitable for roosting, minor foraging or commuting.

Table 3: Features of a tree that are correlated with use by bats

Likelihood of bats being present	Feature of tree and its context
Higher	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Lower	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.

2.4 Limitations – evaluation of the methodology

It should be noted that whilst every effort has been made to describe the baseline conditions within the survey area, and evaluate these features, this report does not provide a complete characterisation of the site. This assessment provides a preliminary view of the likelihood of protected species being present. This is based on suitability of the habitats on the site and in the wider landscape, the ecology and biology of species as currently understood, and the known distribution of species as recovered during the searches of historical biological records.

The survey was undertaken during the sub-optimal season when vegetation is more dormant. However, it is unlikely species of note will be present on site.

3.0 Results and Evaluation

3.1 Desk Study Results

A summary of desk study results are provided below; full details are included in Appendix 3.

3.2 Designated sites

Details of any statutory and non-statutory designated sites within a 1km radius of the survey site, including their reasons for notification, are provided in Table 4 below.

Table 4: Designated sites within 1km radius of the site

Designated Site Name	Distance from Site (approx.)	Reasons for Notification from Natural England
Statutory Sites		
Sawcliffe Local Nature Reserve (LNR)	1km northeast	The key species on site include Common Lizard, Grayling Butterfly, several species of orchids, and a plethora of birds and mammals.
Atkinson's Warren (LNR)	1.7km west	<p>Atkinson's Warren sits on a cover sands heathland site. The UK has about 20 per cent of the world's total area of lowland heath. Today, this heathland is a precious resource, a special type of habitat with unique flowers and birds. We now have only about 20 per cent of the heathland we had 200 years ago but we work to keep, restore and re-create heathland in the region.</p> <p>In North Lincolnshire, heathland is concentrated around Scunthorpe on land known as the 'cover sands' (an area of wind-blown sand deposits). Most of these areas around the town have been lost to development and what remains is largely fragmented and found on the edge of the town, often within areas of acid grassland.</p> <p>Atkinson's Warren is now managed as a local nature reserve with around 36 hectares of acidic grassland and mixed woodland. It's one of several warrens in Northern Lincolnshire.</p>
Risby Warren Sites of Special Scientific Interest Units	1.75km northeast	Risby Warren is the largest surviving area of a once extensive heathland developed the cover sand of the Lincolnshire Limestone escarpment. The windblown sands, local up to 10m thick on Risby Warren, were deposited extensively in north west Lincolnshire during the late Devensian cold period (about 8,000 B.C.). Few good examples of the deposits now remain and Risby Warren is exceptional in demonstrating their surface morphology and dune forms. The mosaic of plant communities includes not only one of the finest inland dune systems in Britain, but also heathland, contrasting acidic and calcareous grassland, broadleaved scrub, and areas of coniferous plantation. The characteristic vegetation is largely maintained by rabbit grazing. Airborne pollution from the nearby industrial complex at Scunthorpe, is thought to have an adverse affect upon the heath communities.
Non-statutory Sites		
None known		

3.3 Landscape

A review of the designated sites, aerial photographs (Figure 1), the magic.gov.uk database and OS maps has been undertaken. Collated together, the site's local habitat is described below:

The site is in a residential and industrial area of North Lincolnshire. The landscape is dominated by industrial sites, with residential dwellings with small gardens in the wider vicinity. There are small, scattered woodland copses and tree lines around the area, which could be used for foraging and commuting. Scattered irrigation ditches around the area will provide abundant insect foraging for several protected species. A railway line is adjacent to the site on the southern and eastern boundaries, which will provide protected species such as bats and badgers with commuting opportunities.

Priority habitats within 2km of the site are listed in Table 5.

Table 5: Priority habitat inventory within 2km (Magic.gov.uk):

Habitat	Closest distance from site
Open Mosaic Habitat	~150m southeast
Deciduous Woodland	~340m northeast
National Forest Inventory	~340m northeast
Lowland Dry Acid Grassland	~1.8km northeast

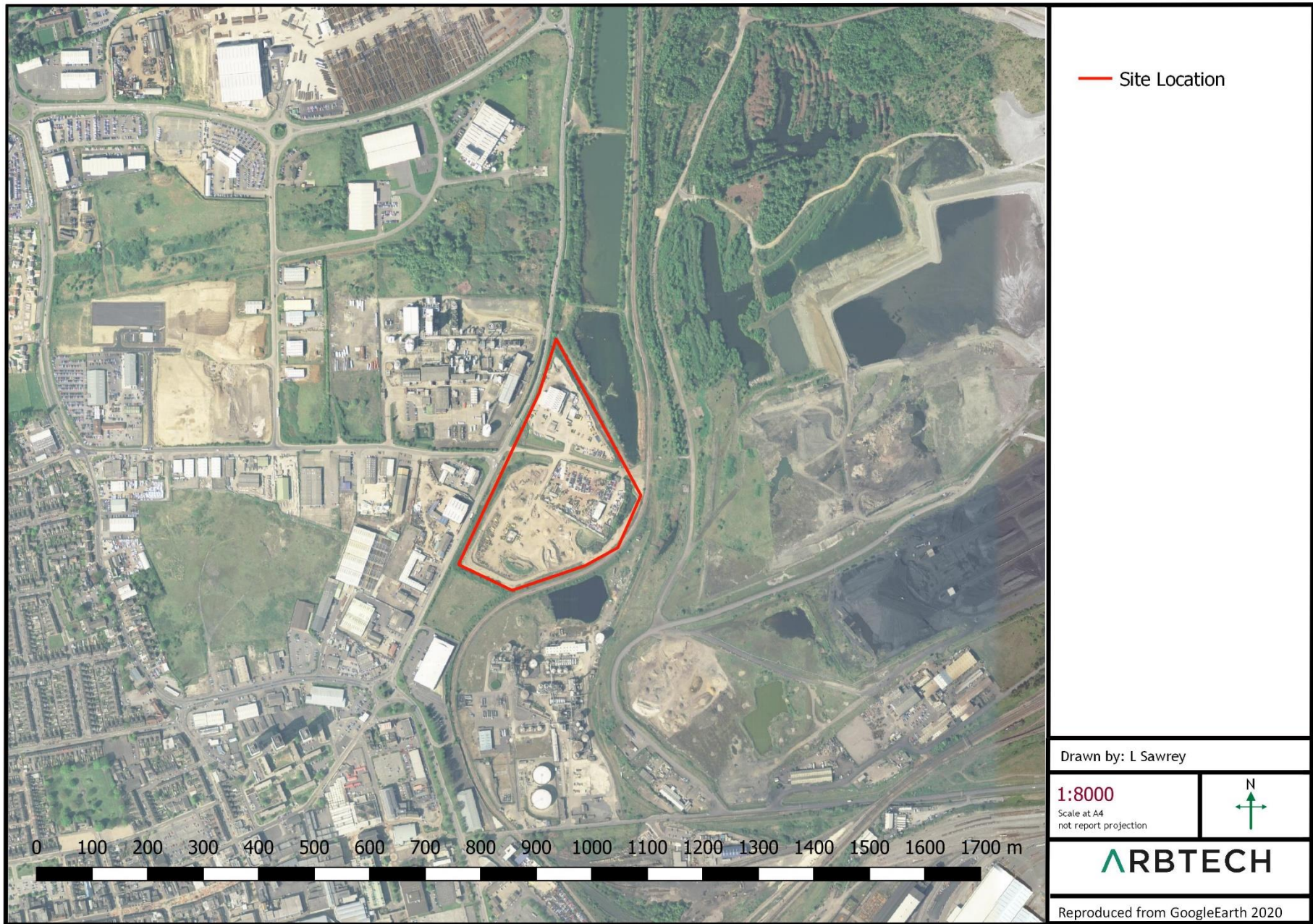


Figure 1: Aerial photo of site, showing landscape structure

3.4 Historical records

Lincolnshire Environmental Records Centre (LERC) have provided protected species records within a 2km radius of the site. The biological records show that protected species are located within the study area. The records have been analysed and incorporated into the table 6 below*.

Table 6.

Taxon Group	Common name	Scientific binomial	Number of records	Latest record	Closest record to site	Notes
Bats	Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	12	2015	~0.1km	Most records are field recordings. The closest known roost is located ~0.2km from site.
	Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	3	2015	~0.1km	Field observations. No known roosts within 2km.
	Brown Long-eared Bat	<i>Plecotus auritus</i>	2	2013	~0.2km	Field observations. No known roosts within 2km.
	Daubenton's Bat	<i>Myotis daubentonii</i>	1	2015	~1.5km	Field observations. No known roosts within 2km.
Birds	Barn owl	<i>Tyto alba</i>	8	2016	Site encompassing	Field observations.
	Swift	<i>Apus apus</i>			Site encompassing	
	Lapwing	<i>Vanellus vanellus</i>			Site encompassing	
						Many other bird species noted within 2km of site including grasshopper warbler, reed bunting, snipe and cuckoo.
Reptiles	Common Lizard	<i>Zootoca vivipara</i>	3	2014	~0.9km	
Amphibians	Common Frog	<i>Rana temporaria</i>	11	2014	~0.9km	
	Great Crested Newt	<i>Triturus cristatus</i>	18	2017	~1.2km	Many of the records have been recorded from the same site.
	Common Toad	<i>Bufo bufo</i>	5	2014	~0.9km	
	Smooth Newt	<i>Lissotriton vulgaris</i>	8	2014	~0.9km	
Other Terrestrial Mammals	Eurasian Badger	<i>Meles meles</i>	1	2013	~1.2km	Field observation (tracks).
	European Otter	<i>Lutra lutra</i>	1	2019	~1.1km	Field observation (dead on road).

	West European Hedgehog	<i>Erinaceus europaeus</i>	6	2018	~0.25km	Field observations (dead on road).
--	---------------------------	----------------------------	---	------	---------	------------------------------------

*Records within the last 10 years

A search of the magic.gov.uk database for granted European protected species mitigation licences (EPSMLs) within a 1km radius of the site has been completed. Displaced protected species from licenced sites <1km away from the survey site will find alternative habitat either within the mitigation measures implemented as part of the Licence, or will relocate to other suitable habitat in close proximity to the Licenced site. The EPSML records show that two bat roosts have been destroyed within 1km involving common pipistrelle.

Table 7: Granted EPSMLs within 1km of the site

Case reference of granted application	Approx. distance from site	Bat Species Effected	Licence Start Date:	Licence End Date:	Impacts allowed by licence
EPSM2010-2663	675m southwest	C-PIP	01/02/2011	31/10/2011	Destruction of a resting place
2015-16065-EPS-MIT	1650m southwest	C-PIP	30/11/2015	30/11/2020	Destruction of a resting place

3.5 Field Survey Results

The site consists of bare ground, scrub forming the site boundaries with waterbodies and is illustrated in the map in Appendix 1. The weather conditions recorded at the time of the survey are shown in Table 8.

Table 8: Weather conditions during the survey

Date: 26/02/2020	
Temperature	6°C
Relative Humidity	70%
Cloud Cover	65%
Wind	5mph
Rain	None.

3.6 Site Feature descriptions and photos

Overview of the site (facing south).

General overview of the site. The site is an active waste management centre. The majority of the site consists of bare ground, with scrub forming the site boundaries.



Western site boundary (pictured opposite).

A2 Scrub

There is a ditch which runs along the western, southern and eastern boundary of the site. Parts of the ditch are dry with dense vegetation (shown in the photo opposite). The vegetation consists primarily of brambles *Rubex*, buddleia *Buddleja* and common nettles *Urtica dioica*.



Western site boundary (pictured opposite).

J4 Bare ground

The active part of site contains bare ground (or sparsely vegetated ground), which has no intrinsic nature conservation value and provides no ecological value for protected species.



G1 Waterbody

A reservoir is located on the eastern boundary of the site. Dense brambles surround the waterbody. It is recommended to remove small sections of the brambles to allow easy access for wildlife. Wild flower mix could be planted around the waters edge.



The reservoir received a habitat suitability index score of 0.42, which is classified as poor. The waterbody is highly unlikely to support a breeding population of great crested newts.

ARGUK GCN HSI Calculator

		Pond Name	Reservoir at Ellgia Waste Management
		Grid Ref	SE 90329 12071
SI No	SI Description	SI Value	
1	Geographic location	1	
2	Pond area	0.9	
3	Pond permanence	0.9	
4	Water quality	0.01	
5	Shade	1	
6	Water fowl effect	0.67	
7	Fish presence	0.67	
8	Pond Density	0.8	
9	Terrestrial habitat	0.33	
10	Macrophyte cover	0.2	
HSI Score		0.42	
Pond suitability (see below)		Below average	

Categorisation of HSI Score by Lee Brady	
HSI Score	Pond Suitability
< 0.50	Poor
0.50 - 0.59	Below average
0.60 - 0.69	Average
0.70 - 0.79	Good
> 0.80	Excellent

Based on ARGUK advice note 5 - Great Crested Newt Habitat Suitability Index

Southeastern site boundary (pictured opposite).

J2.6 Ditch

There is a ditch with a waterbody located on the southeastern section of the site. The ditch has a steep bank leading down to the water. Litter has blown into the ditch from the site. The other side of the ditch (outside of site ownership) contains dense vegetation such as brambles. The current condition of the ditch makes it highly unlikely to support protected species.



Invasive species (pictured opposite).

Buddleia *Buddleja davidii* is present on the eastern site boundary, close by to the railway line. Buddleia is favourable for supporting butterflies, however, it is an invasive species and it is an offence to cause it to spread. It is recommended to control or eradicate buddleia on site. Other plant species, which are favourable to invertebrates can be planted on site, such as lavender and heather.

Japanese Knotweed has been found within 2km of the site. No Japanese Knotweed was found on site during the survey. However, the optimal survey period is between March and October. As the survey was carried out during the sub-optimal season, it is difficult to rule out presence or likely absence of Japanese knotweed on site.



Centre of the site, facing southeast (pictured opposite).

The proposed building A will be erected in the location of the photo opposite. This area of the site has no ecological value for protected species.



3.7 Protected species evidence

No evidence of protected species was found in site.

4.0 Conclusions, Impacts and Recommendations

4.1 Informative guidelines

Likelihood of the presence of protected species

Where physical evidence of the presence of protected species is indeterminate during the survey, the habitats on site are evaluated as to their likelihood to provide sheltering, roosting, foraging, basking or nesting habitat. The likelihood of occupancy of protected species is ranked according to the criteria listed in Table 1.

Where this report supports a planning application, the ecological interest of the study area (including the survey area) and the proposed development has also been evaluated in terms of the planning policies relating to biodiversity. It is clearly stated where a preliminary value can be given and where further information is required.

Likelihood of the presence of bats

There are three possible outcomes of the PRA element of the survey, each with specific recommendations. These are outlined below:

Confirmed bat roost

Best practice survey guidelines (Collins, 2016) recommends additional surveys for confirmed roosts. Three further surveys are required to characterise the bat roost present including species, roost type and access points to inform a European protected species mitigation licence (EPSML) application with Natural England. Surveys must be completed during the active bat season (May – September). At least two of the surveys should be completed during the optimal survey period mid-May to August, and at least one of the surveys should be a dawn re-entry survey (Collins, 2016).

Low, moderate or high likelihood of a bat roost present

Best practice survey guidelines (Collins, 2016) recommends additional surveys for features assessed as having low to high suitability for roosting bats. One, two or three further surveys are required to confirm presence/likely-absence of a bat roost, based on a low, medium or high roost likelihood evaluation. Surveys must be completed during the active bat season (May – September). If more than one survey is recommended, at least one of them should be completed during the optimal survey period mid-May to August, and at least one of the surveys should be a dawn re-entry survey (Collins, 2016). If two or one further survey is recommended these surveys must be completed during the optimal survey period (mid-May to August). For low and moderate roost likelihood evaluation the survey effort recommended at this stage is iterative and if bats roosts are confirmed in the building, a further survey will be required to provide sufficient information to inform an EPSML application to Natural England.

Negligible likelihood of a bat roost present

Buildings assessed as comprising negligible suitability for roosting bats do not normally require further surveys. However, if bats are found during any stage of the development, work should stop immediately and a suitably qualified ecologist should be contacted for further advice.

Appropriate justification for this assessment is provided in Section 2.3 of this report.

4.2 Evaluation

Taking the desk study and site survey results into account, the following conclusions for ecological factors has been reached.

Table 9: Evaluation of site

Ecological Factor	Survey assessment conclusions (with justification)	Foreseen impacts	Recommendations	Enhancements The Local Planning Authority has a duty to ask for enhancements under the NPPF (2019)
Designated sites	The site is not subject to any designation. However, the information obtained from the local record centre shows that there are 6 local wildlife sites and 4 local geological sites within 2km of site.	None.	None.	None.
Notable habitats and plants	The magic.gov.uk database shows that there are no priority habitats on site, or within the zone of influence of the proposed works. Open mosaic habitat, broadleaved and deciduous woodland, Lowland dry acid grassland and lowland heathland is located within 2km of the site. The survey was completed during the sub-optimal survey season when ground flora is dormant. However, it is unlikely that species of note will be present on site.	None.	None.	A wildflower meadow area should be incorporated into the landscaping on the eastern site boundary.
Invasive / Non-native species	Small areas of buddleia is located on the eastern site boundary.	If buddleia is not controlled on the eastern boundary, it may spread across the site and further afield.	Buddleia should carefully be removed from site to prevent the spread in the local area.	Alternative species such as lavender and heather should be planted on the eastern site boundary.
Bats	The site boundaries will provide bats with foraging and commuting routes. The Biological Records Data (BRD) contains records of bat roosts and field records (i.e. bats in flight) in the area, increasing the likelihood of bats being present on the site.	Any lighting installed on site may impact on foraging and commuting bat routes along the site boundaries.	See enhancement table below for full bat lighting recommendations.	The installation of two Schwegler bat boxes on mature trees around the site boundaries will provide additional roosting habitat for bats e.g. 2F Schwegler Bat Box 2FN Schwegler Bat Box Bat boxes should be positioned 3-5m above ground level facing in a south/south-westerly direction with a clear flight path to and from the entrance.

<p>Birds</p>	<p>No evidence of nesting birds was found during the survey, however birds could use the vegetation on site for nesting. The BRD included numerous bird records including recent records of linnet, snipe, barn owls and swifts located close to the site.</p>	<p>Active nests could be disturbed during the development.</p>	<p>If an active bird nest is found during the works, Arbtech must be contacted for advice.</p>	<p>Install two Schwegler bird boxes on retained trees on site e.g. Schwegler 1B nest boxes Schwegler 2H Robin Boxes Nest boxes should be positioned approximately 3m above ground level where they will be sheltered from prevailing wind, rain and strong sunlight. Small-hole boxes are best placed approximately 1-3m above ground on an area of the tree trunk where foliage will not obscure the entrance hole. A similar alternative brand can be used.</p>
<p>Reptiles</p>	<p>The site provides a small area of reptile habitat. The BRD includes records of common lizards but these are located ~0.9km from the site reducing the likelihood of reptiles being present.</p>	<p>None.</p>	<p>None.</p>	<p>Waste materials created during the development e.g. log piles, brash, rocks etc. Can be used to create hibernacula and refugia for common reptiles. These should be positioned on the site boundaries.</p>
<p>Amphibians</p>	<p>The site contains small areas of suitable terrestrial habitat for amphibian foraging, commuting, and refuge. There is a waterbody and ditches located within the site boundary. There is a large fishing lake located approximately 50m from site.</p>	<p>As the vegetation will not be impacted by the development, it is highly unlikely amphibians will be impacted.</p>	<p>None.</p>	<p>Waste materials created during the development e.g. log piles, brash, rocks etc. Can be used to create hibernacula and refugia for common reptiles. These should be positioned on the site boundaries.</p>
<p>Other Terrestrial Mammals</p>	<p>Badgers The site boundaries and eastern section of the site contains small areas of suitable foraging habitat for badgers found on site.</p>	<p>Badgers None.</p>	<p>Badgers None. However, the following recommendations are given in order to mitigate against potential harm to badgers during the development works.</p> <ul style="list-style-type: none"> • Any trenches dug should either be covered at night or have a rough sawn plank placed in them to act as a ramp for any wildlife which may fall in. • Security lighting to be directed away from the undergrowth. • Any chemicals or pollutants used or created by the development 	<p>Badgers None.</p>

			should be stored and disposed of correctly according to COSHH regulations.	
	Water Vole No suitable habitat.	Water Vole None.	Water Vole Measures to avoid accidental pollution of the water course should be implements (COSHH).	Water Vole None.
	Otter No suitable habitat.	Otter None.	Otter Measures to avoid accidental pollution of the water course should be implements (COSHH).	Otter None.
	Hedgehogs The site provides small areas of suitable habitat for hedgehogs.	Hedgehogs None.	Hedgehogs No further surveys are required. However, the following recommendations are given in order to mitigate against potential harm to hedgehogs during the development works. <ul style="list-style-type: none"> • Any trenches dug should either be covered at night or have a rough sawn plank placed in them to act as a ramp for any wildlife which may fall in. • Security lighting to be directed away from the undergrowth. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. 	Hedgehogs Hedgehog houses should be incorporated into the developed site positioned beneath the site boundaries.

Enhancements

Work	Specification
<p>New habitats</p>	<p>Wild Flowers Planting</p> <p>It is encouraged to plant wild flowers on site. Small areas of wildflowers could be created around the main waterbody on site, which is located on the southeastern section. Another area of wild flowers could be planted amongst the hedgerows. Brambles along the ditches and waterbody should be cut back and maintained.</p> <p>EH1 – HEDGEROW MIXTURE</p> <p>EH1 contains wild flowers and grasses that are tolerant of semi-shade and is suitable for sowing beneath newly planted or established hedges.</p> <p>Sowing</p> <p>Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture.</p> <p>EP1 – POND EDGE MIXTURE</p> <p>Pond edge mixture EP1 contains wild flowers and grasses suitable for sowing at the wet margins of ponds, streams and ditches.</p> <p>Sowing</p> <p>Seed is best sown in the autumn or spring, where areas are least likely to be flooded.</p> <p>Native trees</p> <p>The site can be enhanced by creating new habitats in the developed site, which could include the planting of new trees on the site boundaries. These will be of native species from the following list to encourage invertebrates, birds and other wildlife:</p>

Plant at least 3 trees from the below list of new native species (none to be planted within 3.5m from a public sewer).

Alder *Alnus glutinosa*

Hazel *Corylus avellana*

Holly Ilex *aquifolium*

Amelanchier *Amelanchier ovalis*

Juniper *Juniperus communis*

Aspen *Populus tremula*

Osier *Salix viminalis*

Bay willow *Salix pentandra*

Pedunculate oak *Quercus robur*

Bird cherry *Prunus padus*

Silver birch *Betula pendula*

Honeysuckle *Lonicera periclymenum*

Burnet rose *Rosa pimpinelifolia*

Spindle *Euonymus europaeus*

Wayfare tree *Viburnum lantana*

Field maple *Acer campestre*

Rowan *Sorbus aucuparia*

Wild cherry *Prunus avium*

Pear *Pyrus sp.*

Field rose *Rosa arvensis*

Wild pear *Pyrus pyraster*

Guelder rose *Viburnum opulus*

Hawthorn *Crataegus monogyna*

Hedgerow

Where possible, hedgerows of mixed native species should be planted on along the site boundaries:

- Hawthorn *Crataegus*
- Blackthorn *Prunus spinosa*

Planting hedgerows along the site boundaries, will reduce the likelihood of litter blowing into the waterbodies and ditches on site. As there is litter present in the ditches on the site boundaries, it is recommended to remove as much as possible for the ditches. As the ditches are steep and contain water, it is recommended to use machinery to remove the litter as it will be the safest option in terms of health and safety of the workers. Amphibians are unlikely to be in the ditches, however, as a precaution to reduce the risk of harm to amphibians, the litter should ideally be removed when amphibians are least likely to be present (June – January).

<p>Bat Mitigation and Enhancement</p>	<p>The installation of a minimum of two Schwegler bat boxes on mature trees around the site boundaries will provide additional roosting habitat for bats e.g. 2F Schwegler Bat Box 2FN Schwegler Bat Box. Bat boxes should be positioned 3-5m above ground level facing in a south/south-westerly direction with a clear flight path to and from the entrance.</p>
<p>Bats – Lighting Strategy</p>	<p>This lighting scheme will maintain a dark corridor around site, to maintain bat commuting routes across the site boundaries, in particular on the southern boundary where building B will be erected.</p> <p>The following specifications will minimise potential disruption to commuting bats:</p> <ul style="list-style-type: none"> ➤ Research has shown that if lighting is increased by more than 1 lux (equivalent to full moonlight) this could have an adverse impact upon bat commuting routes (Stone, E.L. (ed.) [2013] <i>Bats and Lighting: Overview of Current Evidence and Mitigation. Bats and Lighting Research Project, University of Bristol</i>). Therefore, the new lighting will be strictly confined to the new buildings and existing hard standing areas, thereby leaving dark corridors of not more than +1 lux. ➤ The proposed lighting scheme will incorporate low impact lighting adopted from the guidance outlined in the Bat Conservation Trust’s ‘Bats and Lighting’ publications: <p>https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/</p> <p>The lighting on the site will:</p> <ul style="list-style-type: none"> ▪ Use narrow spectrum light sources to lower the range of species affected by lighting ▪ Use light sources that emit minimal ultra-violet light ▪ Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue short-wave length content they should be of a warm / neutral colour temperature <4,200 kelvin. ▪ The spread of light will be kept in line with or below the horizontal. ▪ Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only.

<p>Bird Mitigation and Enhancement</p>	<p>Works should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the vegetation should be undertaken immediately prior to the commencement of works. All active nests will need to be retained until the young have fledged.</p>
--	---

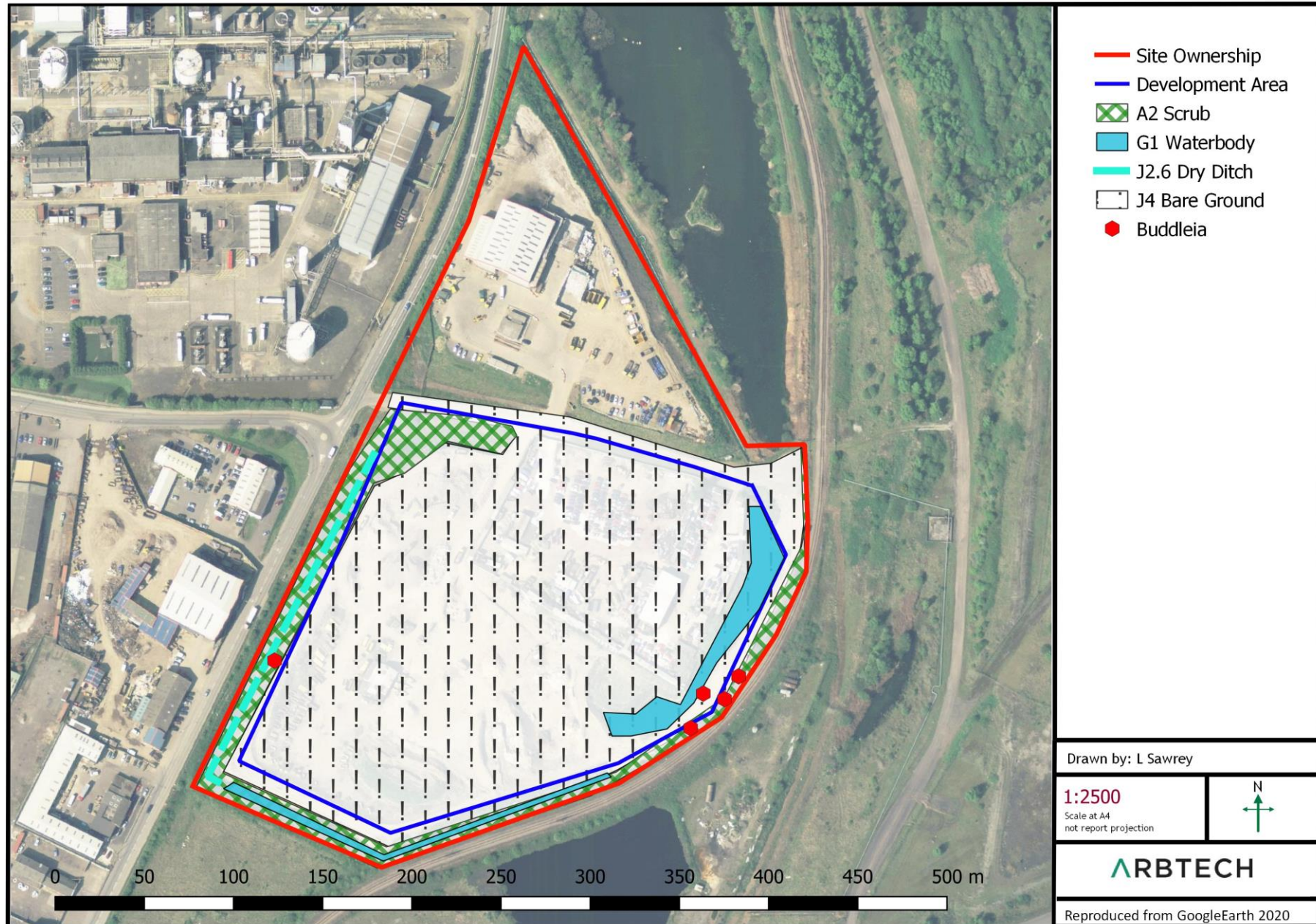
<p>Bird Enhancements</p>	<p>Bird boxes will be installed on retained trees around the site:</p> <p>Habitat Boxes:</p> <ul style="list-style-type: none"> ➤ All bird boxes will be constructed of woodcrete/woodstone. These are known to have minimal maintenance and a lifespan of 25 years plus. ➤ Install the following bird boxes: <ul style="list-style-type: none"> • Schwegler 1B nest boxes • Schwegler 2H Robin Boxes <p>Bird boxes should be erected 3-5m in height, with clear flight paths to the entrance and out of direct sunlight to avoid overheating (See Figure 6 for suggested positions).</p> <p>A similar alternative brand can be used.</p>
<p>Invertebrates</p>	<p>Remove buddleia from the site and plant native species, such as lavender and heather, to increase the ecological value for invertebrates. Insect houses can be placed along the site boundaries or nearby to the reservoir. The insect houses can be brought pre-made or can be created using recycled materials such as pallets, bricks, plant pots and vegetation.</p>
<p>General terrestrial mammal mitigation and enhancement</p>	<p>Mammal mitigation</p> <p>No badger setts are known on site, and no disturbance to any sett is foreseen. However, badgers (and other mammals such as hedgehogs) may forage within or commute across the site. The following mitigation is however recommended to avoid harm to transient mammals that may enter the site during the works.</p> <ul style="list-style-type: none"> ➤ All site personnel to be briefed before clearance and construction works begin; A member of staff should check the site at the end of each working day to ensure that these provisions to protect nocturnal species (such as hedgehog and badger) have been made. Check work areas daily to ensure no animals are trapped. ➤ Security lighting to be directed away from the vegetation corridors. ➤ Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. ➤ Cap any pipes over-night on site to avoid animals becoming trapped ➤ Cover any trenches, holes or deep pits overnight, or use secured planks to allow any animals that fall in to escape during construction.

5.0 Bibliography

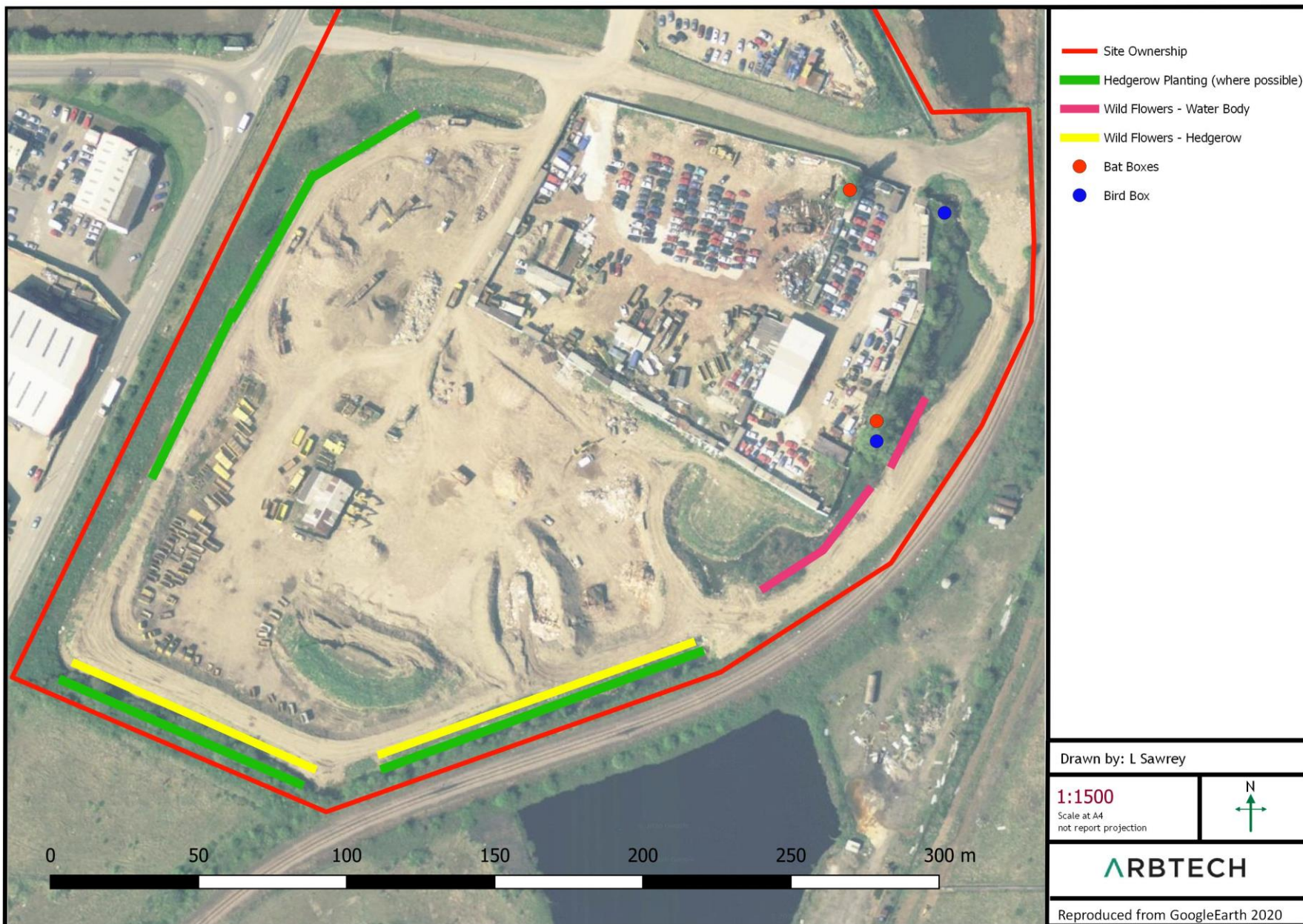
- British Trust for Ornithology (2016) www.bto.org/about-birds/nbw/putting-up-a-nest-box
- BS 42020, Biodiversity – Code of practice for planning and development (2013) <http://www.eoebiodiversity.org/pdfs/BS42020.pdf>
- BS 42020, Biodiversity – Code of practice for planning and development (2013) <http://www.bsigroup.com/LocalFiles/en-GB/biodiversity/BS-42020-Smart-Guide.pdf>
- Cheffings, C. and Farrell, L. (eds.) (2005) The Vascular Plant Red Data List for Great Britain. Joint Nature Conservation Committee, Peterborough.
- CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester. http://www.cieem.net/data/files/Publications/EcIA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf
- CIEEM (2017) Guidelines for Preliminary Ecological Appraisal Institute of Ecology https://www.cieem.net/data/files/Publications/Guidelines_for_Preliminary_Ecological_Appraisal_Jan2018_1.pdf Collins, J. (2016). Bat Surveys for Professional Ecologists —Good Practice Guidelines, 3rd edition, Bat Conservation Trust, London. <https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-3rd-edition>
- Garland & Markham (2008) Is important bat foraging and commuting habitat legally protected? <http://biodiversitybydesign.co.uk/cmsAdmin/uploads/protection-for-bat-habitat-sep-2007.pdf>
- Google Earth (2020) accessed on 28/02/2020.
- Gregory R.D., et al (2009). Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. <https://www.bto.org/sites/default/files/u12/bocc3.pdf>
- HMSO: Wildlife and Countryside Act 1981 (as amended 01.04.1996) <http://jncc.defra.gov.uk/page-1377>
- HMSO: The Protection of Badgers Act 1992 (as amended) <http://www.legislation.gov.uk/ukpga/1992/51/contents>
- HMSO: Countryside & Rights of Way Act (2000) <http://jncc.defra.gov.uk/page-1378>
- HMSO: Natural Environmental and Rural Communities Act (2006) <http://www.legislation.gov.uk/ukpga/2006/16/contents>
- HMSO: The Conservation of Habitats and Species Regulations (2017) <http://www.legislation.gov.uk/uksi/2017/1012/contents/made>
- JNCC (2004) Bat Workers Manual, 3rd Edition. <http://jncc.defra.gov.uk/page-2861>
- Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey a technique for environmental audit. http://jncc.defra.gov.uk/PDF/pub10_handbookforphase1habitatsurvey.pdf
- Magic.gov.uk database (2020) <http://www.magic.gov.uk/MagicMap.aspx> accessed on 28/02/2020.
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

- National Planning Policy Framework, 2019
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf
- Natural England (2007). Badgers and Development a Guide to Best Practice and Licensing. Natural England. Bristol. <http://www.wildlifeco.co.uk/wp-content/uploads/2014/03/badgers-and-development.pdf>
- Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000) Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155.
<https://www.thebhs.org/publications/the-herpetological-journal/volume-10-number-4-october-2000/1617-03-evaluating-the-suitability-of-habitat-for-the-great-crested-newt-triturus-cristatus/file>
- Paul Edgar, Jim Foster and John Baker (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth
<http://downloads.gigl.org.uk/website/Reptile%20Habitat%20Management%20Handbook.pdf>
- Tom Langton, Catherine Beckett and Jim Foster (2001). Great Crested Newt Conservation Handbook. Froglife. Suffolk. http://www.froglife.org/wp-content/uploads/2013/06/GCN-Conservation-Handbook_compressed.pdf

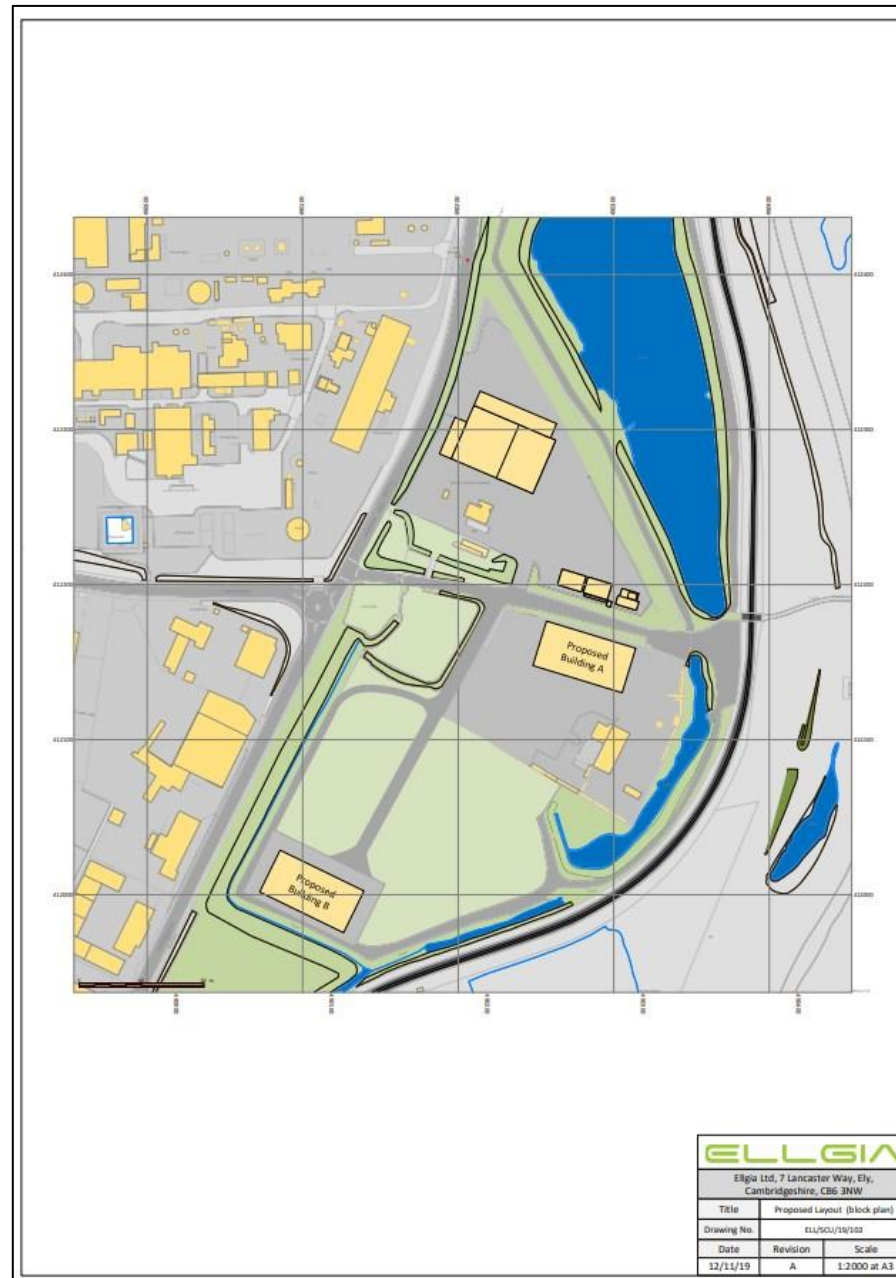
Appendix 1a: Phase 1 Habitat Survey Map



Appendix 1b: Site Enhancements



Appendix 2: Proposed Site Plan

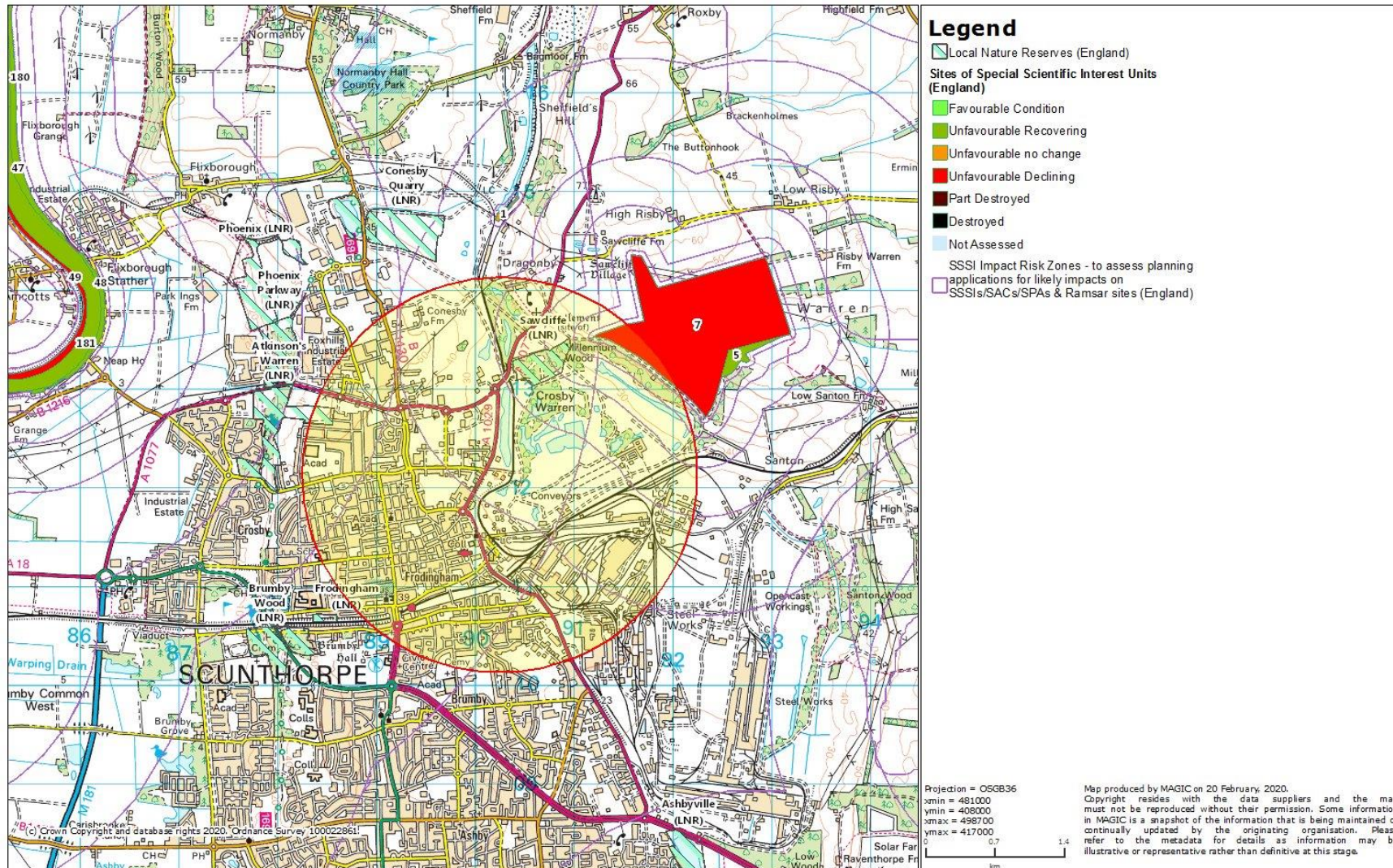


Appendix 3: Desk Study Information

Full historical records can be provided on request.

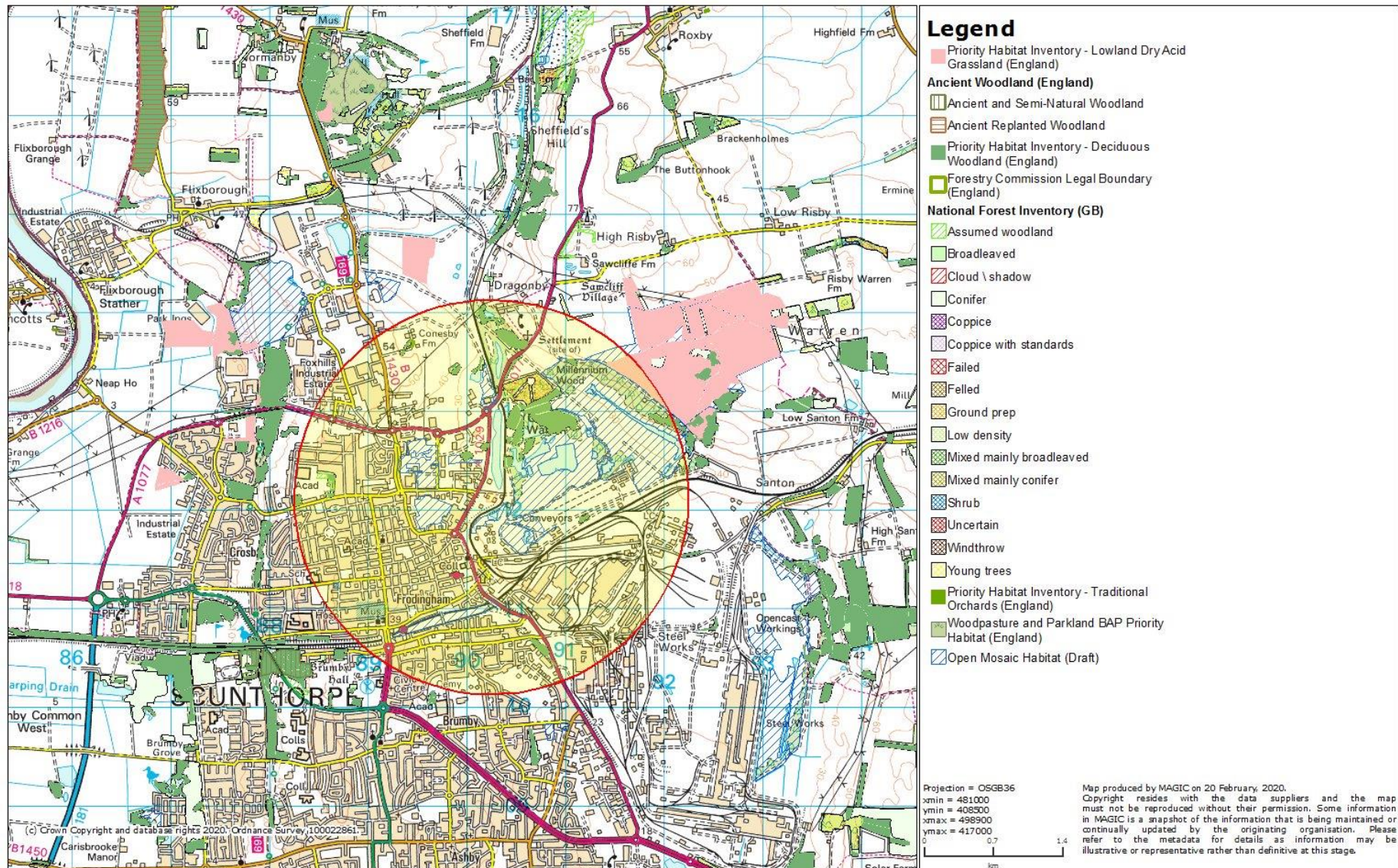
MAGiC

Designations within 2km



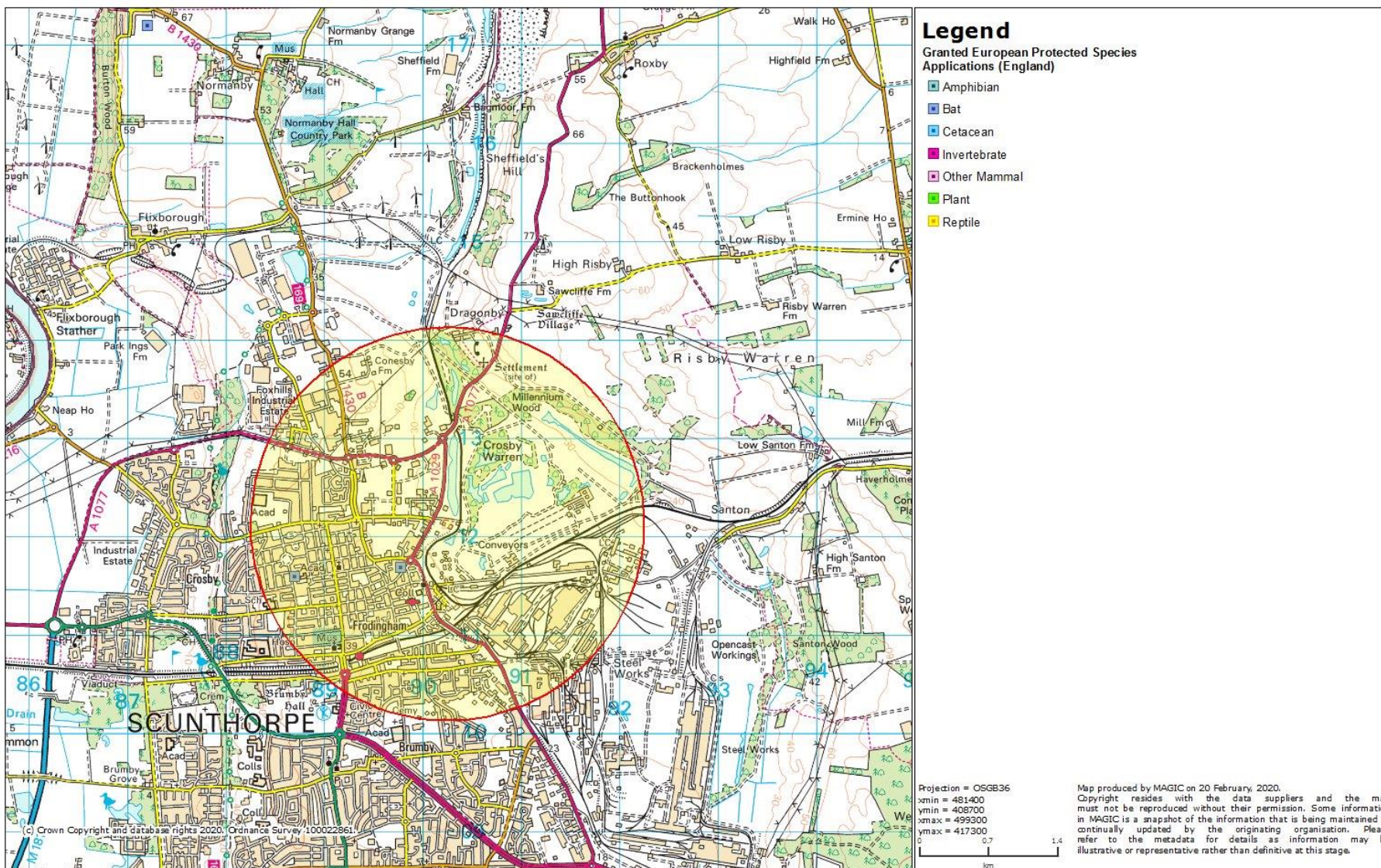


Habitats within 2km of site



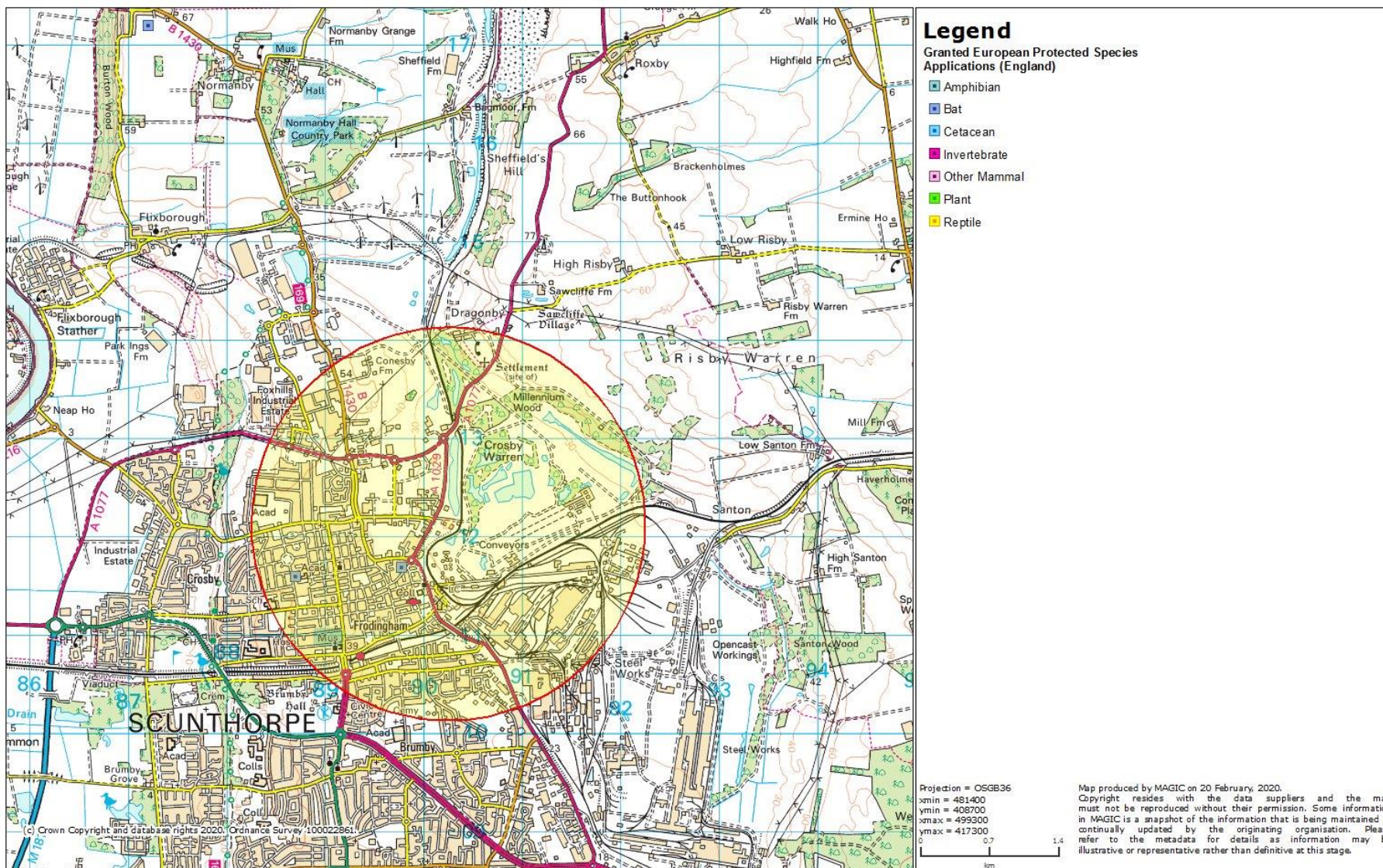


EPSMLs within 2km



MAGIC

EPSMLs within 2km



Appendix 4: Legislation and Planning Policy

LEGAL PROTECTION

National and European Legislation Afforded to Habitats

International Statutory Designations

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are sites of European importance and are designated under the EC Habitats Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and the EC Birds Directive 2009/147/EC on the conservation of wild birds respectively. Both form part of the wider Natura 2000 network across Europe.

Under the Habitats Directive Article 3 requires the establishment of a network of important conservation sites (SACs) across Europe. Over 1,000 animal and plant species, as well as 200 habitat types, listed in the directive's annexes are protected in various ways:

Annex II species (about 900): core areas of their habitat are designated as sites of Community importance (SCIs) and included in the Natura 2000 network. These sites must be managed in accordance with the ecological needs of the species.

Annex IV species (over 400, including many annex II species): a strict protection regime must be applied across their entire natural range within the EU, both within and outside Natura 2000 sites.

Annex V species (over 90): Member States must ensure that their exploitation and taking in the wild is compatible with maintaining them in a favourable conservation status.

SPAs are classified under Article 2 of the Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds both for rare bird species (as listed on Annex I) and for important migratory species.

SACs and SPAs up to 12 nautical miles from the coast (i.e. 'territorial waters') are afforded protection in the UK under the Conservation of Habitats and Species Regulations 2017 which consolidate all amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994.

The Conservation of Offshore Marine Habitats and Species Regulations 2017 consolidate and update the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007. The 2017 Regulations introduce amendments which transfer responsibility for European nature conservation in the Welsh offshore region to Welsh Ministers. This gives Welsh Ministers similar powers in Welsh offshore waters to those currently exercised by Scottish Ministers in Scottish offshore waters. These regulations transpose into national law Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive), and elements of Council Directive 2009/147/EC on the conservation of wild birds (Wild Birds Directive) in the UK offshore area. They came into force on 30th November 2017. These regulations apply to the UK's offshore marine area which covers waters beyond 12 nautical miles, within British Fishery Limits and the seabed within the UK Continental Shelf Designated Area. The Conservation of Habitats and Species Regulations 2017 form the legal basis for the implementation of the Habitats and Birds Directives in terrestrial areas and territorial waters out to 12nm in England and Wales (including the inshore marine area) and to a limited extent in Scotland and Northern Ireland.

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention covers all aspects of wetland conservation and recognises the importance of wetland ecosystems in relation to global biodiversity conservation. The Convention refers to wetlands as "*areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres*".

However, they may also include riparian and coastal zones. Ramsar sites are statutorily protected under the Wildlife & Countryside Act 1981 (as amended 01.04.1996) with further protection provided by the Countryside and Rights of Way (CROW) Act 2000. Policy statements have been issued by the Government in England and Wales highlighting the special status of Ramsar sites. The Government in England and Wales has issued policy statements which ensure that Ramsar sites are afforded the same protection as areas designated under the EC Birds and Habitats Directives as part of the Natura 2000 network (e.g. SACs & SPAs). Further provisions for the protection and management of SSSIs have been introduced by the Nature Conservation (Scotland) Act 2004.

National Statutory Designations

Sites of Special Scientific Interest (SSSI) are designated by nature conservation agencies in order to conserve key flora, fauna, geological or physio-geographical features within the UK. The original designations were under the National Parks and Access to the Countryside Act 1949 but SSSIs were then re-designated under the Wildlife & Countryside Act 1981 (as amended). As well as reinforcing other national designations (including National Nature Reserves), the system also provides statutory protection for terrestrial and coastal sites which are important within the European Natura 2000 network and globally.

Local Statutory Designations

Local authorities in consultation with the relevant nature conservation agency can declare Local Nature Reserves (LNRs) under the National Parks and Access to the Countryside Act 1949. LNRs are designated for flora, fauna or geological interest and are managed locally to retain these features and provide research, education and recreational opportunities.

Non- Statutory Designations

All non-statutorily designated sites are referred to as Local Wildlife Sites (LWS) and can be designated by the local authority for supporting local conservation interest. Combined with statutory designation, these sites are considered within Local Development Frameworks under the Town and Country Planning system and are a material consideration during the determination of planning applications. The protection afforded to these sites varies depending on the local authority involved.

Regionally Important Geological Sites (RIGs) are the most important geological and geomorphological areas outside of statutory designations. These sites are also a material consideration during the determination of planning applications.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 are designed to protect 'important' countryside hedgerows. Importance is defined by whether the hedgerow (a) has existed for 30 years or more; or (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

Under the Regulations, it is against the law to remove or destroy hedgerows on or adjacent to common land, village greens, SSSIs (including all terrestrial SACs, NNRs and SPAs), LNRs, land used for agriculture or forestry and land used for the keeping or breeding of horses, ponies or donkeys without the permission of the local authority. Hedgerows 'within or marking the boundary of the curtilage of a dwelling-house' are excluded.

National and European Legislation Afforded to Species

The Habitats Directive

The EC Habitats Directive aims to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those species of European importance. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2017 (the Conservation Regulations) and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended). The following notes are relevant for all species protected under the EC Habitats Directive:

In the Directive, the term 'deliberate' is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.

The Habitats Regulations do not define the act of 'migration' and, therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.

In order to obtain a European Protected Species Mitigation (EPSM) licence, the application must demonstrate that it meets all of the following three 'tests':

- The action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment;
- There is no satisfactory alternative; and
- The action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

The Wildlife and Countryside Act (WCA) 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1979, implemented 1982) and implements the species protection requirements of EC Birds Directive 2009/147/EC on the conservation of wild birds in Great Britain (the birds Directive). The WCA 1981 has been subject to a number of amendments, the most important of which are through the Countryside and Rights of Way (CRoW) Act (2000) and Nature Conservation (Scotland) Act 2004.

Other legislative Acts affording protection to wildlife and their habitats include:

- Deer Act 1991
- Natural Environment & Rural Communities (NERC) Act 2006
- Protection of Badgers Act 1992
- Wild Mammals (Protection) Act 1996

Badgers

Badgers *Meles meles* are protected under The Protection of Badgers Act 1992 which makes it an offence to:

- Wilfully kill, injure, take, or attempt to kill, injure or take a badger
- Cruelly ill-treat a badger, including use of tongs and digging
- Possess or control a dead badger or any part thereof
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett or any part thereof
- Intentionally or recklessly disturb a badger when it is occupying a badger sett
- Intentionally or recklessly cause a dog to enter a badger sett

- Sell or offers for sale, possesses or has under his control, a live badger

Effects on development works:

A development licence will be required from the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) for any development works likely to affect an active badger sett, or to disturb badgers whilst they occupy a sett. Guidance has been issued by the countryside agency's to define what would constitute a licensable activity. It is no possible to obtain a licence to translocate badgers.

Birds

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the WCA. Among other things, this makes it an offence to:

- Intentionally (or recklessly in Scotland) kill, injure or take any wild bird
- Intentionally (or recklessly in Scotland) take, damage or destroy (or, in Scotland, otherwise interfere with) the nest of any wild bird while it is in use or being built
- Intentionally take or destroy an egg of any wild bird
- Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.
- Intentionally or recklessly obstruct or prevent any wild bird from using its nest (Scotland only)

Certain species of bird, for example the barn owl, bittern and kingfisher receive additional protection under Schedule 1 of the WCA and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC) and are commonly referred to as "Schedule 1" birds.

This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young
- Intentional or reckless disturbance of dependent young of such a bird
- In Scotland only, intentional or reckless disturbance whilst lekking
- In Scotland only, intentional or reckless harassment

Effects on development works:

Works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Schedule 1 birds are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

Reptiles (Amphibians and reptiles)

The sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, natterjack toad *Epidalea calamita*, pool frog *Pelophylax lessonae* and great crested newt *Triturus cristatus* receive full protection under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Deliberate disturbance of species in such a way as:
- To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
- To impair their ability to hibernate or migrate
- To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

With the exception of the pool frog, these species are also listed on Schedule 5 of the WCA and they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Other native species of reptiles are protected solely under Schedule 5, Section 9(1) & (5) of the WCA, i.e. the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis*. It is prohibited to:

- Intentionally or recklessly kill or injure these species.

Effects on development works:

A European Protected Species Mitigation (EPSM) Licence issued by the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) will be required for works likely to affect the breeding sites or resting places amphibian and reptile species protected under Habitats Regulations. A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation, but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Although not licensable, appropriate mitigation measures may also be required to prevent the intentional killing or injury of adder, grass snake, common lizard and slow worm, thus avoiding contravention of the WCA.

Water voles

The water vole *Arvicola terrestris* is fully protected under Schedule 5 of the WCA. This makes it an offence to:

- Intentionally kill, injure or take (capture) water voles
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection
- Intentionally or recklessly disturb water voles while they are occupying a structure or place used for shelter or protection

Effects on development works:

If development works are likely to affect habitats known to support water voles, the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) must be consulted. It must be shown that means by which the proposal can be re-designed to avoid contravening the legislation have been fully explored e.g. the use of alternative sites, appropriate timing of works to avoid times of the year in which water voles are most vulnerable, and measures to ensure minimal habitat loss. Conservation licences for the capture and translocation of water voles may be issued by the relevant countryside agency for the purpose of development activities if it can be shown that the activity has been properly planned and executed and thereby contributes to the conservation of the population. The licence will then only be granted to a suitably experienced person if it can be shown that adequate surveys have been undertaken to inform appropriate mitigation measures. Identification and preparation of a suitable receptor site will be necessary prior to the commencement of works.

Otters

Otters *Lutra lutra* are fully protected under the Conservation Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Deliberate disturbance of species in such a way as:
 - To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
 - To impair their ability to hibernate or migrate
 - To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Otters are also currently protected under the WCA through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

Effects on development works:

An EPSM Licence issued by the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) will be required for works likely to affect otter breeding or resting places (often referred to as holts, couches or dens) or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, and rear young). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored

Bats

All species are fully protected by Habitats Regulations 2010 as they are listed on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. All bats)
- Deliberate disturbance of bat species in such a way as:
 - To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
 - To impair their ability to hibernate or migrate
 - To affect significantly the local distribution or abundance of the species

- Damage or destruction of a breeding site or resting place

Bats are afforded the following additional protection through the WCA as they are included on Schedule 5:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

Effects on development works:

An EPSM Licence issued by the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) will be required for works are likely to affect a bat roost or an operation which are likely to result in an illegal level of disturbance to the species will require an EPSM licence. The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

Dormice

Hazel Dormice *Muscardinus avellanarius* are fully protected under Habitats Regulations through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species
- Deliberate disturbance of species in such a way as:
 - To impair their ability to survive, breed, or reproduce, or to rear or nurture young;
 - To impair their ability to hibernate or migrate
 - To affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Dormice are also protected under the WCA through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection

Effects on development works:

Works which are liable to affect a dormice habitat or an operation which are likely to result in an illegal level of disturbance to the species will require an EPSM licence issued by the relevant countryside agency (i.e. Natural England, Natural Resources Wales (NB: Hazel Dormouse are entirely absent from Scotland)). The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

White clawed crayfish

There is a considerable amount of legislation in place in an attempt to protect the White-clawed crayfish *Austropotamobius pallipes*. This species is listed under the European Union's (EU) Habitat and Species Directive and is listed under Schedule 5 of the Wildlife and Countryside Act (1981). This makes it an offence to:

- Protected against intentional or reckless taking
- Protected against selling, offering or advertising for sale, possessing or transporting for the purpose of sale

It is also classified as Endangered in the IUCN Red List of Endangered Species. As a result of this and other relevant crayfish legislation such as the Prohibition of Keeping of Live Fish (Crayfish) Order 1996, a series of licences are needed for working with White-clawed and non-native crayfish. These are:

- A licence to handle crayfish (therefore survey work) in England
- A licence for the keeping of crayfish in England and Wales with an exemption for Signal crayfish (England).
- People in the post-code areas listed with crayfish present prior to 1996 do not need to apply for consent for crayfish already established. It does not, however, allow any new stocking of non-native crayfish into waterbodies. Consent for trapping of non-native crayfish for control or consumption is most likely to be granted in Thames and Anglian regions in the areas with "go area" postcodes.
- Harvesting of crayfish is prohibited in much of England and in any part of Scotland and Wales.

Effects on development works:

The relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) will need to be consulted about development which could impact on a watercourse or wetland known to support white clawed crayfish. Conservation licences for the capture and translocation of crayfish can be issued if it can be shown that the activity has been properly planned and executed and thereby contributes to the conservation of the population. The licence will only be granted to a suitably experienced person if it can be shown that adequate surveys have been undertaken to inform appropriate mitigation measures. Identification and preparation of a suitable receptor site will be necessary prior to the commencement of the works.

Wild Mammals (Protection Act) 1996

All wild mammals are protected against intentional acts of cruelty under the above legislation. This makes it an offence to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

To avoid possible contravention, due care and attention should be taken when carrying out works (for example operations near burrows or nests) with the potential to affect any wild mammal in this way, regardless of whether they are legally protected through other conservation legislation or not.

Legislation afforded to Plants

With certain exceptions, all wild plants are protected under the WCA. This makes it an offence for an 'unauthorised' person to intentionally (or recklessly in Scotland) uproot wild plants. An authorised person can be the owner of the land on which the action is taken, or anybody authorised by them.

Certain rare species of plant, for example some species of orchid, are also fully protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). This prohibits any person from:

- Intentionally (or recklessly in Scotland) picking, uprooting or destruction of any wild Schedule 8 species (or seed or spore attached to any such wild plant in Scotland only)
- Selling, offering or exposing for sale, or possessing or transporting for the purpose of sale, any wild live or dead Schedule 8 plant species or part thereof
- In addition to the UK legislation outlined above, several plant species are fully protected under Schedule 5 of The Conservation of Habitats and Species Regulations 2010. These are species of European importance. Regulation 45 makes it an offence to:
 - Deliberately pick, collect, cut, uproot or destroy a wild Schedule 5 species
 - Be in possession of, or control, transport, sell or exchange, or offer for sale or exchange any wild live or dead Schedule 5 species or anything derived from such a plant.

Effects on development works:

An EPSM licence will be required from the relevant countryside agency (i.e. Natural England, Natural Resources Wales, Scottish Natural Heritage) for works which are likely to affect species of plants listed on Schedule 5 of the Conservation of Habitats and Species Regulations 2010. The licence is to allow derogation from the legislation through the application of appropriate mitigation measures and monitoring.

Invasive Species

Part II of Schedule 9 of the WCA lists non-native invasive plant species for which it is a criminal offence in England and Wales to plant or cause to grow in the wild due to their impact on native wildlife. Species included (but not limited to):

- Japanese knotweed *Fallopia japonica*
- Giant hogweed *Heracleum mantegazzianum*
- Himalayan balsam *Impatiens glandulifera*

Effects on development works:

It is not an offence for plants listed in Part II of Schedule 9 of the WCA 1981 to be present on the development site, however, it is an offence to cause them to spread. Therefore, if any of the species are present on site and construction activities may result in further spread (e.g. earthworks, vehicle movements) then it will be necessary to design and implement appropriate mitigation prior to construction commencing.

Injurious weeds

Under the Weeds Act 1959 any land owner or occupier may be required prevent the spread of certain 'injurious weeds' including (but not limited to):

- Spear thistle *Cirsium vulgare*
- Creeping thistle *Cirsium arvense*
- Curled dock *Rumex crispus*
- Broad-leaved dock *Rumex obtusifolius*
- Common ragwort *Senecio jacobaea*

It is a criminal offence to fail to comply with a notice requiring such action to be taken. The Ragwort Control Act 2003 establishes a ragwort control code of practice as common ragwort is poisonous to horses and other livestock. This code provides best practice guidelines and is not legally binding.

National Planning Policy Framework (England)

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act, 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity.' This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

Scottish Planning Policy (Published: 23 Jun 2014)

The SPP sits alongside the Scottish Government planning policy documents. The National Planning Framework (NPF) provides a statutory framework for Scotland's long-term spatial development. The NPF sets out the Scottish Government's spatial development priorities for the next 20 to 30 years.

A Natural, Resilient Place - Valuing the Natural Environment (National Planning Framework Context) Paragraph 193. The natural environment forms the foundation of the spatial strategy set out in NPF3. The environment is a valued national asset offering a wide range of opportunities for enjoyment, recreation and sustainable economic activity. Planning plays an important role in protecting, enhancing and promoting access to our key environmental resources, whilst supporting their sustainable use.

Policy Principles: Paragraph 194. The planning system should:

- Facilitate positive change while maintaining and enhancing distinctive landscape character;
- **Conserve and enhance protected sites and species, taking account of the need to maintain healthy ecosystems and work with the natural processes which provide important services to communities;**
- Promote protection and improvement of the water environment, including rivers, lochs, estuaries, wetlands, coastal waters and groundwater, in a sustainable and co-ordinated way;
- Seek to protect soils from damage such as erosion or compaction;

- Protect and enhance ancient semi-natural woodland as an important and irreplaceable resource, together with other native or long-established woods, hedgerows and individual trees with high nature conservation or landscape value;
- Seek benefits for biodiversity from new development where possible, including the restoration of degraded habitats and the avoidance of further fragmentation or isolation of habitats; and
- Support opportunities for enjoying and learning about the natural environment.

Planning Policy Wales (Draft 2018)

Paragraph 5.42 of the document refers to Biodiversity and Ecological Networks and states:

The planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Addressing the consequences of climate change should be a central part of any measures to conserve biodiversity and the resilience of ecosystems. Information contained in The State of Natural Resources Report (SoNaRR) (published by Natural Resources Wales and Area Statements should be taken into account. Development plan strategies, policies and individual development proposals must take into account the need to:

- Promote the conservation of biodiversity, in particular the conservation of wildlife and habitats;
- Ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;
- Ensure statutorily designated sites are properly protected and managed;
- Safeguard protected species; and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil; and
- Seek enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

Environment (Wales) Act 2016 and the Biodiversity Duty

The Environment (Wales) Act introduces a new biodiversity duty, which highlights biodiversity as an essential component of ecosystem resilience. This new duty replaces the biodiversity duty in the Natural Environment and Rural Communities Act 2006 (referred to as the NERC Act). Part 1 of the Act deals with Sustainable management of natural resources including Biodiversity and Resilience of Ecosystems Duty. The Environment Act enhances the current NERC Act duty to require all public authorities, when carrying out their functions in Wales, to seek to “maintain and enhance biodiversity” where it is within the proper exercise of their functions. In doing so, public authorities must also seek to “promote the resilience of ecosystems”. As under the NERC Act the new duty will apply to a range of public authorities such as the Welsh Ministers, local authorities, public bodies and statutory undertakers. This ensures that biodiversity is an integral part of the decisions that public authorities take in relation to Wales. It also links biodiversity with the long term health and functioning of our ecosystems, therefore helping to align the biodiversity duty with the framework for sustainable natural resource management provided in the Act.

Biodiversity and Resilience of Ecosystems Duty (Section 6 Duty)

- 5.44 Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. Planning authorities must also take account of and promote the resilience of ecosystems, in particular the following aspects:
- a) Diversity between and within ecosystems;
 - b) The connections between and within ecosystems;
 - c) The scale of ecosystems;
 - d) The condition of ecosystems (including their structure and functioning); and
 - e) The adaptability of ecosystems.
- 5.45 In fulfilling this duty, planning authorities must have regard to:
- a) The list of habitats of principal importance for Wales, published under Section 7 of the Environment (Wales) Act 2016;
 - b) The State of Natural Resources Report (SoNaRR), published by NRW; and
 - c) Any Area Statement that covers all or part of the area in which the authority exercises its functions.
- 5.46 A proactive approach towards facilitating the delivery of biodiversity and resilience outcomes should be taken by all those participating in the planning process. In particular, planning authorities should demonstrate that they have sought to fulfil the duties and requirements of Section 6 of the Environment Act by taking all reasonable steps to maintain and enhance biodiversity in the exercise of their functions. The broad framework for implementing the duty and building resilience through the planning system includes addressing:
- Diversity: to ensure mechanisms are in place to minimise further loss and that circumstances allow for species' populations to expand and recolonise their natural range (former range) or adapt to future change. This means development should provide a net benefit for biodiversity, and at the very least, with no significant loss of habitats or populations of species, locally or nationally;
 - Extent: to ensure mechanisms allow for the maintenance of existing assets and networks and promote the restoration of damaged, modified or potential habitat and the creation of new habitat. This means that planning choices should incorporate measures which seek the creation and restoration of green networks and linkages between habitats and maintaining and
 - enhancing other green infrastructure features and networks;
 - Condition: this is more complex to address, not least because of the interactions of various factors which underpin habitats. At the very least planning approaches should not compromise the condition of ecosystems. By taking an integrated approach to development, for example, which considers both direct and wider impacts and benefits it should be possible to make a positive contribution through the planning system; and
 - Connectivity: to take opportunities to develop functional habitat and ecological networks across landscapes, building on existing connectivity and quality and encouraging habitat creation and restoration. The opportunities could include enlarging habitat areas, developing buffers around designated sites or other biodiversity assets or corridors (including transport and river corridors) and the creation of 'stepping stones' which will strengthen the ability of habitats and ecological networks to adapt to change, including climate change.

Appendix 2

LERC Search Summary Report to support ecological and habitats assessment



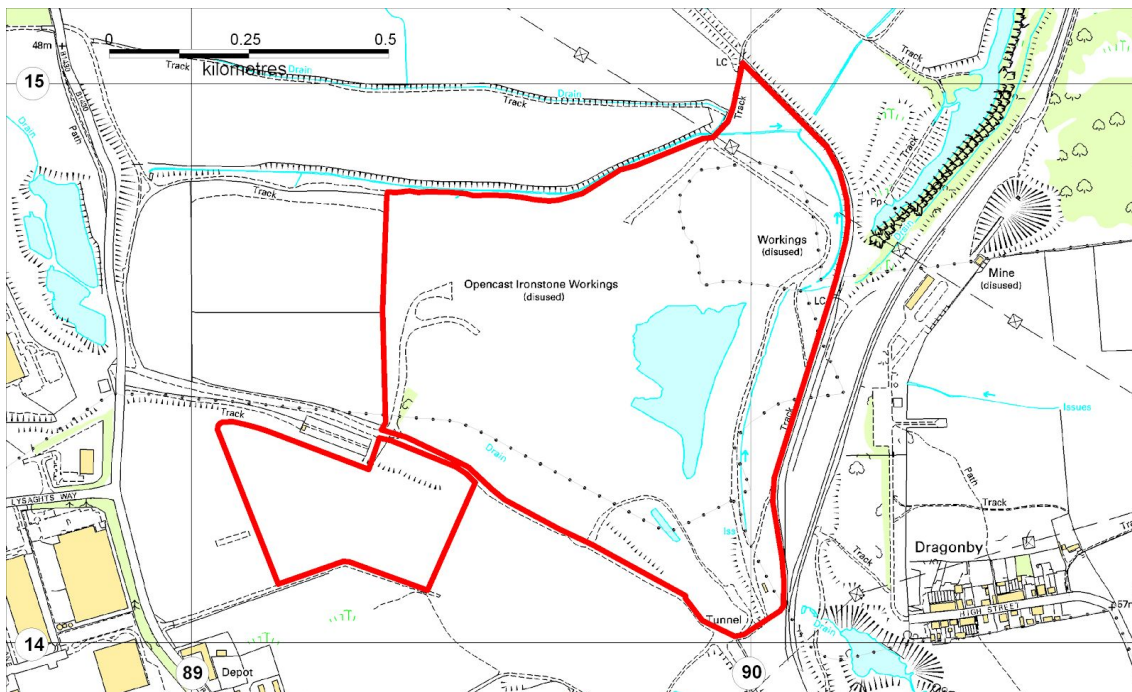
LERC Search Summary Report - Citation Sheets

Grid Reference: SE 90196 12088
Buffer: 2km

Date of publication: 27/02/2020
Expires: 27/02/2021

Achieving more for nature

Conesby Quarry



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: SE895145 **Survey:** 11 September, 18 September 2009
Area: 60.1 ha **Surveyor:** J.Fraser

Main habitat: Scrub, Semi-improved neutral grassland, Ruderal, Unimproved acid grassland
Additional habitat: Unimproved calcareous grassland, Semi-improved acid grassland, Damp grassland, Running water, Standing water, Reedbed
Additional features: Bare ground/rock outcrops, Steep slopes, Anthills

This is most of a very large ironstone quarry, the western and central parts of which have already been in-filled, leaving a deep depression in the east that is currently being infilled. The diverse flora and fauna is associated with the following main habitats: sparsely vegetated spoil and rock outcrops; dry and damp grassland swards; gorse scrub; invading young grey willow, developing birch woodland; and standing and running water. No habitat management takes place, other than that caused by a large population of rabbits

Sparsely vegetated ironstone rock faces and some gentler slopes in the eastern depression support large populations of a wide range of Coversands plants, such as bird's-foot, carline thistle, field mouse-ear, viper's-bugloss, common stork's-bill, wood sage, ploughman's-spikenard, mouse-ear-hawkweed, fern-grass and silver hair-grass. Other plants typically associated with sandy grassland occur more widely, including where patches of sandy infill were created specifically with the flora and fauna in mind. Such species include sweet vernal-grass, perforate St John's-wort, cat's-ear, sheep's sorrel, yellow-wort, procumbent pearlwort, hare's-foot clover, broom and sand sedge. Short, rabbit-grazed areas with red fescue are assumed to be the main breeding sites for the large and locally very important population of grayling butterfly in the quarry, although the much less common sheep's fescue may also be of significance. Burnet moths and their larval foodplant common bird's-foot-trefoil occur in high numbers.

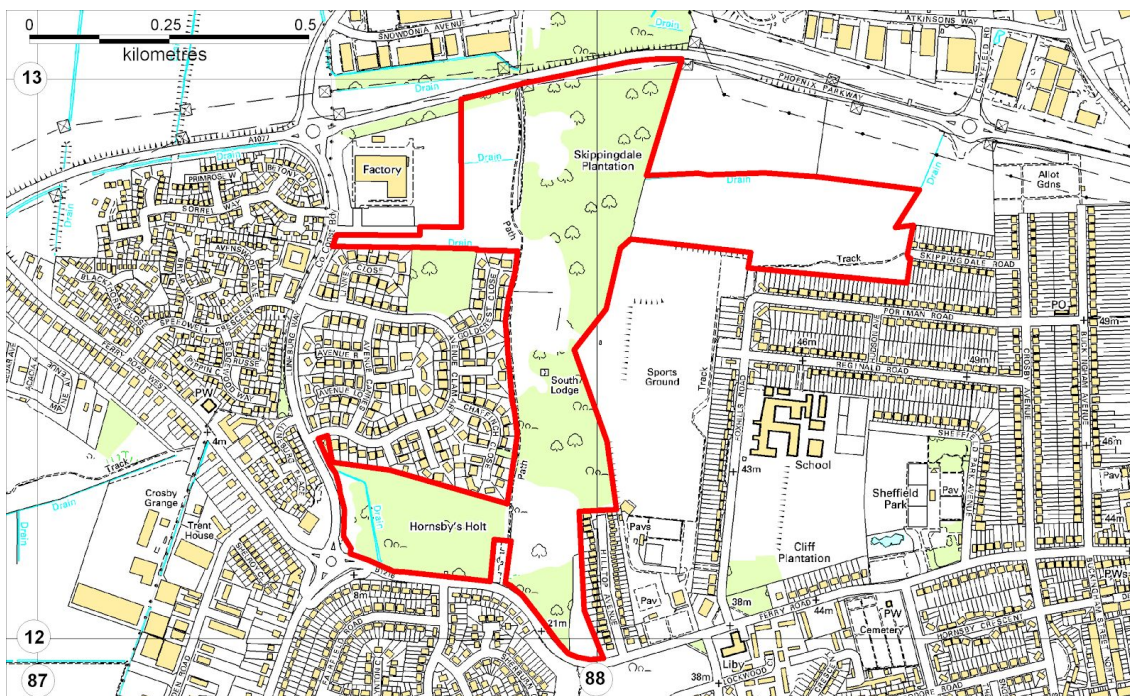
Wetland vegetation is richest in the eastern part of the site. Here there are several ponds and a stream, supporting species such as common reed, bulrush, water-cress, fool's-water-cress, blue water-speedwell, common spike-rush, celery-leaved buttercup, spiked water-milfoil and water-crowfoot. Other plants characteristic of damp areas occur nearby and elsewhere on the site, including water figwort, southern marsh-orchid, amphibious bistort, common fleabane, compact and jointed rush, and false fox-sedge.

Amongst the many waste ground species present are teasel, great mullein, mugwort, wormwood, red valerian, nodding thistle, Japanese knotweed and purple toadflax.

At the moment the quarry provides an excellent mixture of soil types, hydrology, landforms and vegetation structure. The resulting rich flora and fauna is, however, seriously threatened by infilling of the eastern depression and a lack of habitat management.

Criteria passed: CG1, HE2, Mos1 (NG1, CG1, HE2, AP1, Sta2, Sw2), Mos2
Recommended as a Local Wildlife Site: 24 March 2010

Atkinson's Warren



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: SE879124
Area: 33.8 ha

Survey: 2 June 2009
Surveyor: J.Fraser

Main habitat: Semi-natural woodland, Scattered and dense scrub, Unimproved neutral grassland, Unimproved acid grassland

Additional habitat: Fen, Running water, Pond

Additional features: Standing/fallen dead wood, Tussocky vegetation, Abundant nectar sources, Structural diversity, Bare ground, Anthills, Seasonally wet/damp areas, Access/visibility, Educational potential

This is a large, botanically-rich, sandy site, the boundary of which is very similar to Atkinson's Warren Local Nature Reserve. Major habitats are four blocks of dry acidic grassland and three blocks of woodland. Heavy public use, a large population of rabbits and some sheep grazing ensure that significant areas of grassland have a sparse, short and diverse sward, grading into longer and coarser vegetation that is un-managed or inadequately managed. Much of the woodland is on dry ground and of low to moderate nature conservation interest. However, damper woodland at the northern end of the site is of much greater value.

Short grassland habitat includes plentiful sand sedge and a rich assemblage of characteristic grasses, such as early and silver hair-grasses, sheep's-fescue, squirreltail fescue and the locally uncommon bearded fescue. Amongst the many other species are early and changing forget-me-nots, bird's-foot, sheep's sorrel, parsley-piert, common stork's-bill, little mouse-ear, mouse-ear hawkweed and smooth cat's-ear. Longer grassland is less diverse, but includes some of the same plants, as well as sweet vernal-grass, wavy hair-grass, pill sedge, pignut, lady's bedstraw, common bird's-foot-trefoil and cat's-ear. Scrub is a prominent element of some of the longer grassland and beside some of the woodland.

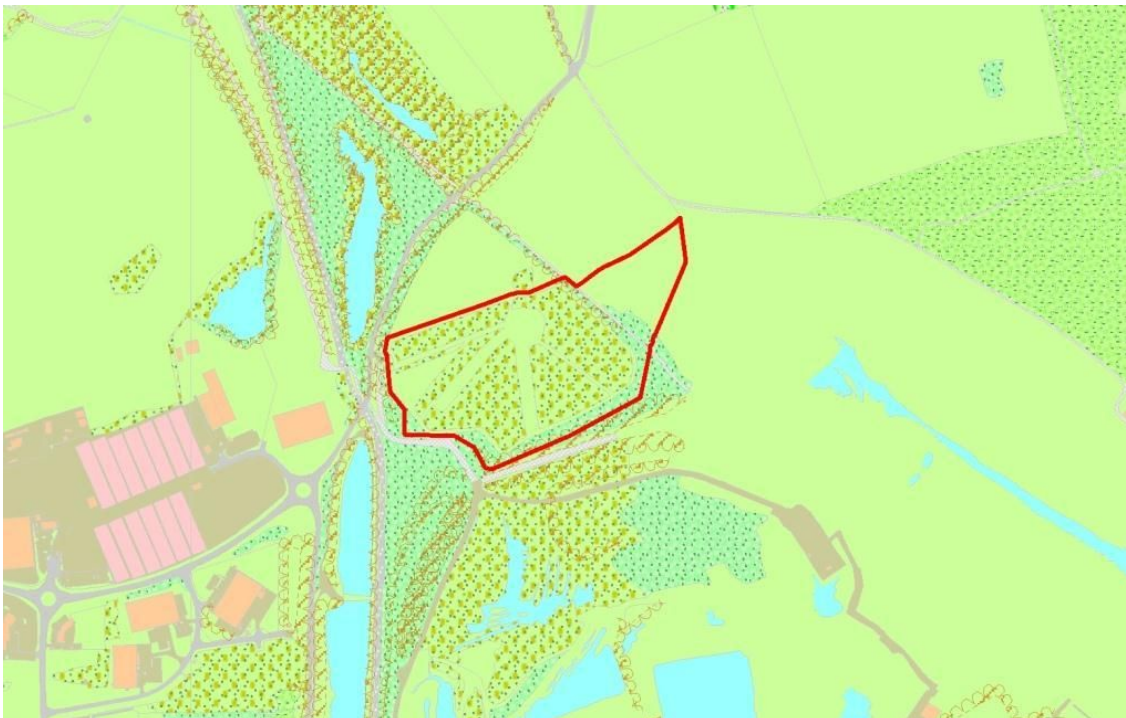
Silver birch is abundant in the drier woodland, occurring with shrub and canopy plants such as pedunculate oak, sycamore, elder, holly, rowan, ivy and honeysuckle. In places the ground flora includes wood avens, three-veined sandwort and foxglove, as well as the invasive bracken, rosebay willowherb and common nettle. Some of the northern woodland displays features associated with ancient woodland, such as pedunculate oak, sycamore and elm, over dog's mercury, enchanter's-nightshade, sweet violet, dog-violet, bluebell and male-fern. One or two glades are also present.

Wetland habitat is uncommon, the most notable example being a westward-flowing wooded stream network that begins as a spring and flush in open habitat to the east. The latter includes a small artificial pond, and species present include lesser spearwort, floating sweet-grass and sharp-flowered rush. Wooded streamside habitat supports alder, water mint, ramsons, brooklime, water figwort and great willowherb.

Criteria passed: NG1, HE2, Mos2

Recommended as a Local Wildlife Site: 24 March 2010

Sawcliffe



© Crown Copyright and Database Rights (2014) Ordnance Survey (100025370)

Grid ref: SE906132
Area: 14.9 ha

Survey: 15 May 2008
Surveyor: J.Fraser

Main habitat: Woodland, Neutral grassland
Additional habitat: Damp grassland, Acid grassland
Additional features: Rock outcrops, Steep slopes, Anthills

This is an area of recently created habitat on a land-filled former sand quarry. The site comprises three elements of which the least extensive is a track running north-west to south-east. To the north-east of the track is an unplanted triangle of sparsely vegetated hillside, while south-west of the track is the largest part of the site. The latter is grassland that in the past five years has been extensively planted with a range of mostly native trees and shrubs in a number of blocks separated by wide rides.

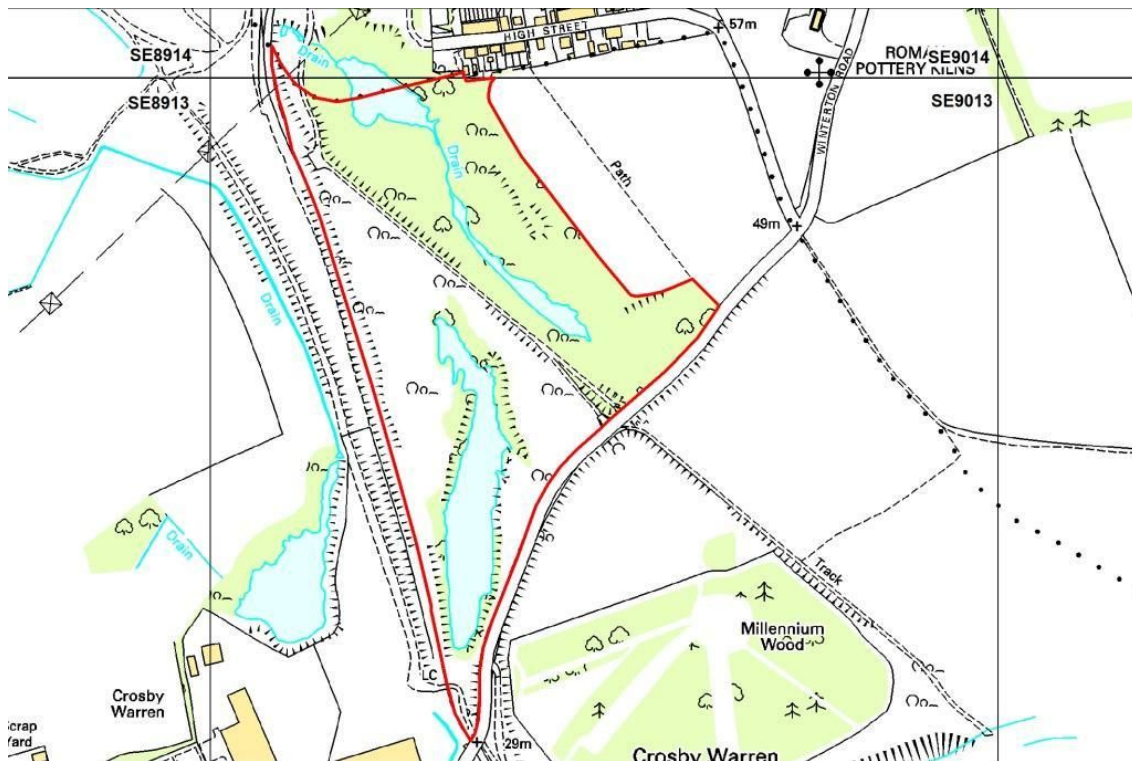
As would be expected, the newly established grassland and woodland is mostly of negligible botanical interest, although species such as common bird's-foot-trefoil, bulbous buttercup, common knapweed, cat's-ear and selfheal are present. Damp patches hold water figwort, hemp-agrimony, common fleabane, great willowherb, meadow foxtail and common reed.

A diverse flora typical of open sandy places occurs along the track cutting and in parts of the north-east triangle. Here can be found early forget-me-not, mouse-ear-hawkweed, biting stonecrop, common stork's-bill, common whitlowgrass, sheep's sorrel, carline thistle, viper's bugloss and sand sedge. Scrubby habitat on the north-east side of the track supports species such as gorse, silver birch, rosebay willowherb and wood sage.

Criterion passed: HE2

Selected as a Local Wildlife Site: 27 March 2014

Dragonby Gullet



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: SE903135 **Survey:** 9 October 2012
Area: 19.2ha **Surveyor:** J.Fraser

Main habitat: Scrub, Semi-improved neutral grassland, Lake
Additional habitat: Unimproved acid grassland, Coarse or rank grassland, Stream, Brownfield mosaic
Additional features: Exposed faces, Anthills, Steep slopes, Bare ground, Structural diversity

Dragonby Gullet comprises 19.2ha of botanically-rich habitat in a former ironstone quarry, north of Scunthorpe. A former railway embankment bisects the site from south-east to north-west and the two strikingly different halves are described separately below.

South West

A major element of this triangular area is an elongate, deep lake with exceptionally clear water, which is managed non-intensively for fishing. Surrounding this is a fringe of largely un-managed trees, scrub and grassland. Further east and west are semi-improved hay meadows.

Unfortunately, the lake holds a large population of the invasive and non-native New Zealand pigmyweed, but there is plenty of room for native aquatic species as well, such as water-crowfoot, water-starwort and an abundance of ivy-leaved duckweed. Much of the lake margin is densely vegetated by trees, shrubs and other plants that flourish where there is little management. However, more open stretches support a good range of waterside species, such as hemp-agrimony, yellow iris, common fleabane, water or tufted forget-me-not, celery-leaved buttercup, bulrush, and sharp-flowered, soft & hard rush. Amongst the woody species here are goat & grey willow, ash, silver & downy birch, pedunculate oak, wild cherry, sycamore, Norway maple, hawthorn and elder.

Many grassland plants growing around the lake and along the former railway line are typical of high quality sparse swards on an acidic substrate. These include blue fleabane, biting stonecrop, field mouse-ear, common stork's-bill, common centaury, thyme-leaved sandwort, carline thistle, hare's-foot clover, sheep's sorrel and ploughman's spikenard. Other species characteristic of denser swards are also well represented, such as common knapweed, meadow vetchling, oxeye daisy, yarrow, autumn hawkbit, crested dog's-tail, yellow oat-grass and common bent, amongst which are gorse, broom, wood sage and bracken.

North East

Like the land to the south west of the railway embankment, this area features a central, elongate lake, but this one is orientated from south-east to north-west and is intensively fished.

Furthermore an outlet from the lake flows north-westwards in a small, incised stream to feed a second water body that lies partially outside the Local Wildlife Site. Most of the surrounding habitat is un-managed coarse grassland with varying amounts of scattered scrub, denser scrub and immature woodland. Hummocky terrain is widespread, and there are also some vertical faces beside the northern lake. Plants typical of high quality sparse swards on acidic substrates are widespread, but in most places they are in imminent danger of disappearing, due to the recent spread of more competitive plants.

The lake flora is diverse and includes mare's-tail, rigid hornwort, yellow water-lily, water-plantain, yellow iris, water figwort, water mint, common fleabane, branched bur-reed, bulrush, common reed, jointed rush and grey willow.

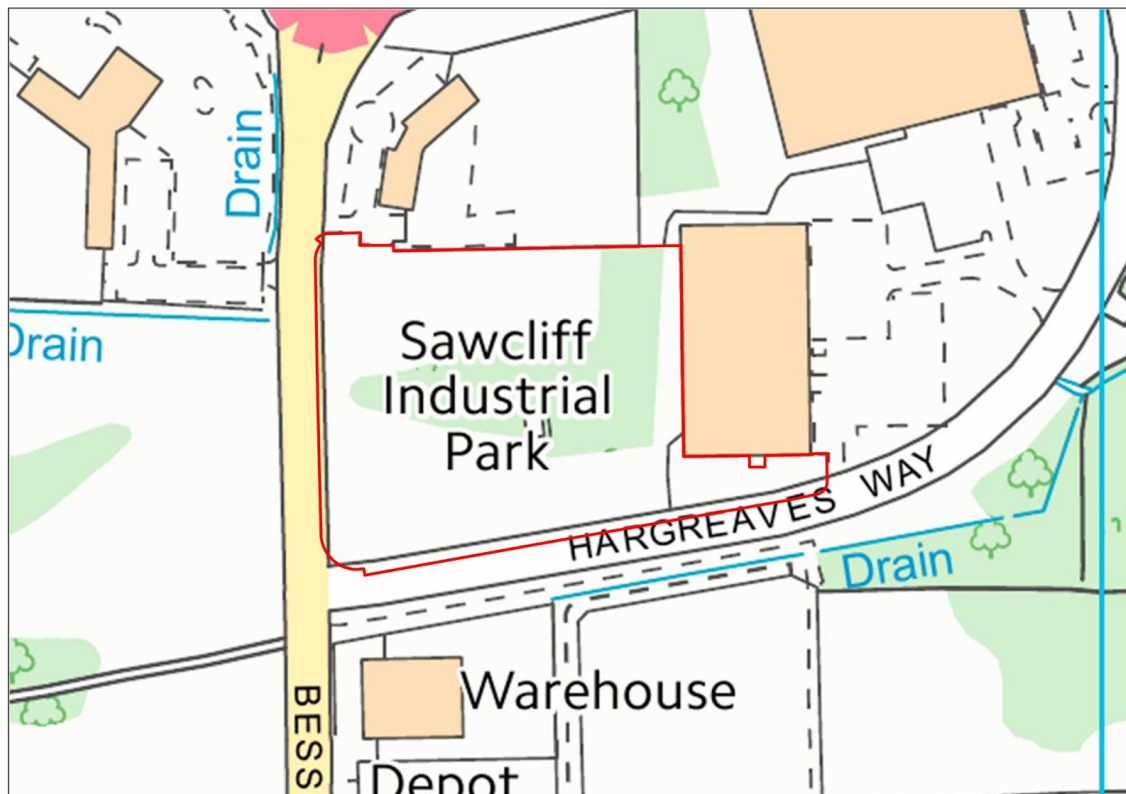
Amongst the many plants typical of sparse swards are biting stonecrop, fairy flax, ploughman's spikenard, carline thistle, blue fleabane, viper's bugloss, yellow-wort, thyme-leaved sandwort, common centaury, mouse-ear-hawkweed and fern-grass. Other grassland plants include wood sage, perforate St John's-wort, cat's-ear, common bird's-foot-trefoil, smooth hawk's-beard, yarrow, selfheal, yellow oat-grass, red fescue and wood small-reed. Scrub and developing woodland comprise species such as sycamore, silver birch, hawthorn, holly, gorse and broom.

The topographical diversity of the site and diverse mosaic of habitat types is likely to support a wide range of invertebrates, birds and other animals.

Criteria passed: CG1, HE2, Sta2

Selected as a Local Wildlife Site: 18 March 2013

Bessemer Way Brownfield Site



© Crown Copyright and Database Rights (2016) Ordnance Survey (100025370)

Grid ref: SE898126

Area: 1.5ha

Survey: 22 June 2016

Surveyor: Jeremy Fraser

Main habitat: Brownfield mosaic

Additional habitat: None

This former industrial site comprises two very different areas; around the western, southern and eastern margins there is managed grassland, while elsewhere is land that until fairly recently was un-managed and dominated by coarse vegetation and developing scrub. In spring 2015 the scrub was all cleared and most was piled up beside the southern road verge; smaller amounts were placed beside the western verge. After this, the ground surface was scraped in a series of north-south strips in an attempt to increase biodiversity.

Plants typical of an open sandy sward are prominent in the scraped areas, and include thyme-leaved sandwort, common stork's-bill, sheep's sorrel, procumbent pearlwort, wall speedwell, field pansy, hop trefoil, bugloss, viper's-bugloss and squirreltail fescue. Other typical neutral grassland species are common bird's-foot-trefoil, black medick, tufted vetch, oxeye daisy and yarrow. A wide range of coarser, weedy species is also present, such as evening-primrose, weld, charlock, teasel, hemlock, prickly lettuce, common mallow, lesser burdock, rosebay, great & broad-leaved willowherb, and creeping, spear & nodding thistle. Woody species include Japanese knotweed, bramble, raspberry, dog-rose, gorse, willow, elder and sycamore.

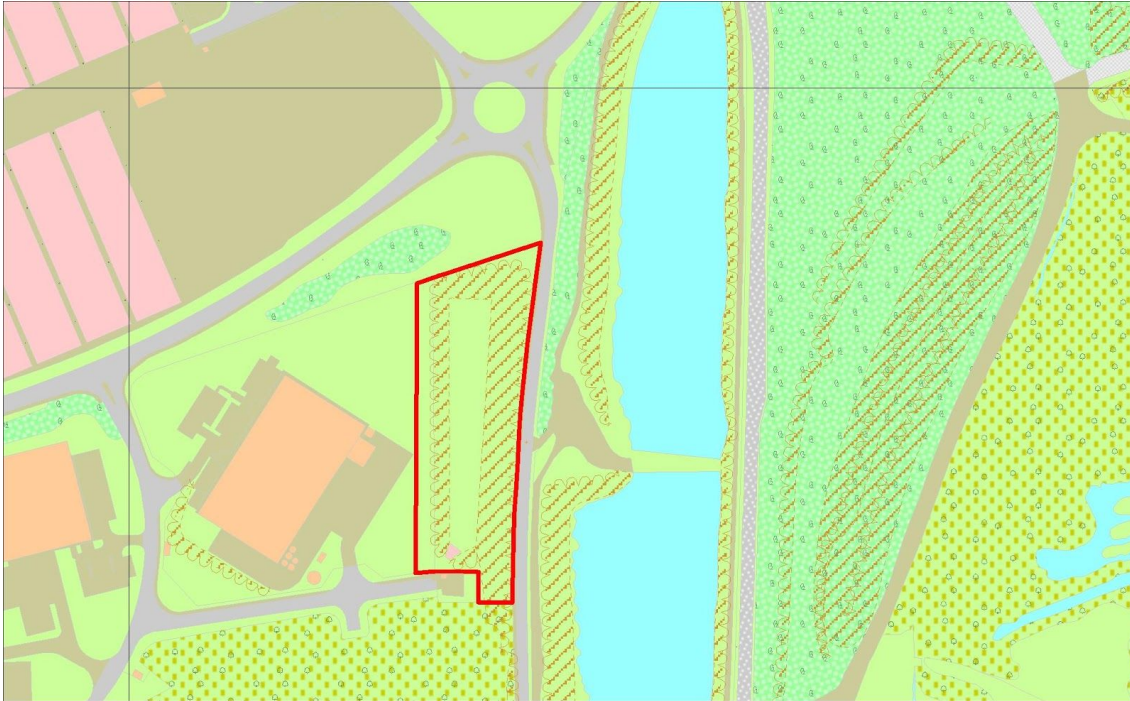
Reasonable quality grassland is largely restricted to the southern verge, but the comparatively large patch of frequently mown lawn in the south-eastern corner is also

of some interest. Plants restricted these areas are biting stonecrop, hare's-foot & red clover, hairy tare, bee orchid, hard rush, and spiked & glaucous sedge.

Criterion passed: HE2

Recommended as a Local Wildlife Site: 29 March 2017

Mannaberg Way Drainage Area



© Crown Copyright and Database Rights (2015) Ordnance Survey (100025370)

Grid ref: SE902128

Area: 1.2ha

Survey: 25 July 2014

Surveyor: Jeremy Fraser

Main habitat: Marsh, Neutral grassland - semi-improved, Scrub – scattered

Additional habitat: Acid grassland - semi-improved, Brownfield mosaic, Coarse or rank grassland, Pond, Reedbed

This rectangular flood alleviation basin on the west side of the A1029 and south of Mannaberg Way has been created to accommodate floodwater from surrounding hard surfaces in the industrialised north-eastern part of Scunthorpe. The lowest part of the site seems to be a concrete structure close to the southern boundary, which apparently encompasses the water inlet pipe. Wetland vegetation occupies lowest levels, while the sloping sides support a mixture of plants typical of open sandy soils, under-managed neutral grassland and wasteland.

The only water visible was a small amount at the southern end, but a recent flood line was clearly visible several metres higher. Duckweed and fool's water-cress are restricted to the open water, whereas common reed surrounds this and extends upslope with some grey sallow until gradually replaced by a selection of typical wetland plants. These include field and marsh horsetail, false fox-sedge, hemp-agrimony, common fleabane, square-stalked St John's-wort, water figwort and water mint. This vegetation then grades into damp grassland featuring tufted vetch, common sorrel, creeping buttercup, hard rush, couch, creeping bent, rough meadow-grass and meadow foxtail. Some slopes that are seldom inundated support common bird's-foot-trefoil, cat's-ear, common knapweed, hairy and smooth tare, yarrow, lesser trefoil, smooth hawk's-beard, black medick, narrow-leaved fescue and common bent, plus two large patches of wild liquorice. Weeds, ruderal plants and scrub are

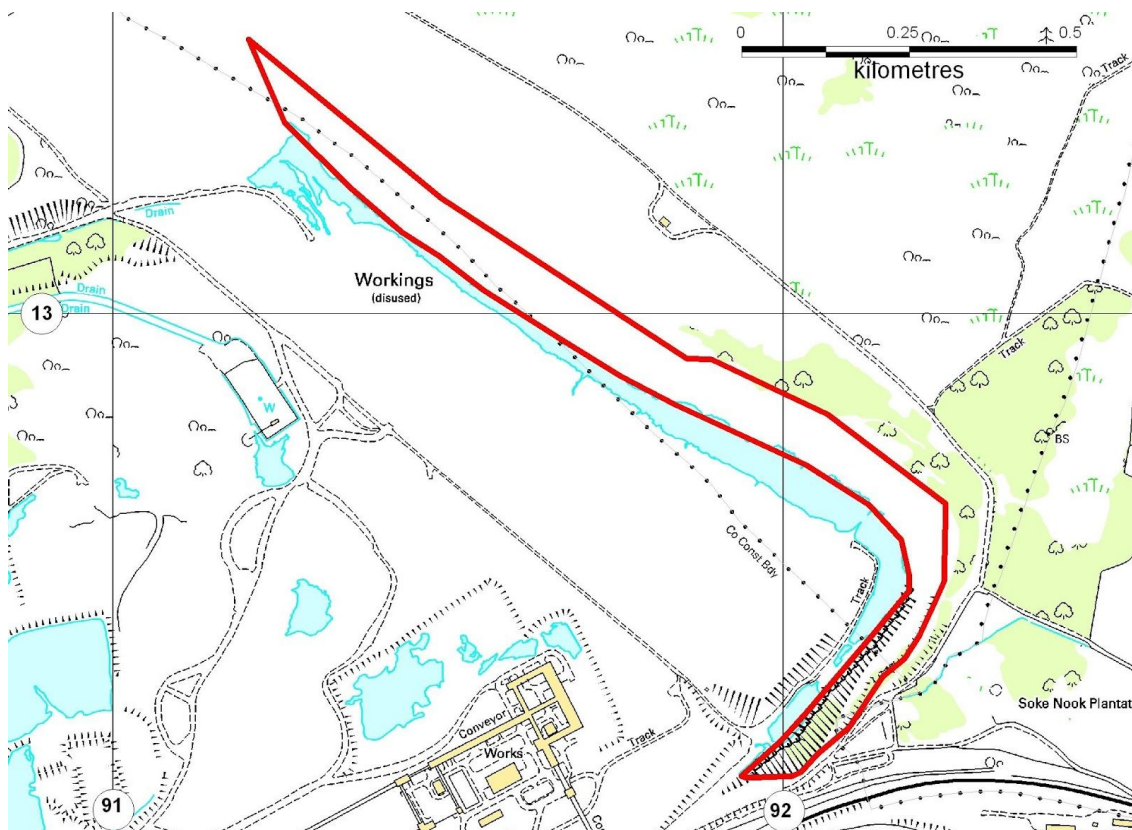
widespread, and include evening-primrose, weld, bristly ox-tongue, common and hoary ragwort, common and long-headed poppy, fennel, red valerian, teasel, hop, white bryony, bramble, dog-rose, gorse, non-native dogwood and sycamore. Open, dry sandy patches are characterised by thyme-leaved sandwort, wall speedwell, common cudweed, common centaury, changing forget-me-not, blue fleabane, bugloss, viper's-bugloss and Canadian fleabane.

This site comprises many features favourable to faunal diversity, such as shelter, vegetation that is diverse in composition and structure, wet and dry conditions, bare ground and lack of disturbance. Some of the birds and invertebrates seen during the survey were wren, a pair of grey wagtails, common blue, small heath, gatekeeper, meadow brown, Essex skipper and common blue damselfly.

Criteria passed: BM1, We2

Selected as a Local Wildlife Site: 2 April 2015

Crosby Warren Quarry



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: SE919128

Area: 14.3 ha

Survey: January 2010

Recorder: T.Langdale-Smith, J.Aram

Description and geomorphology

An important part of the Crosby Warren workings is the fishing lake established at the west end of the former workings (at NGR: SE 918 128) and made available exclusively for the steel workers. It remains as a good example of quarry restoration works although fly-tipping is making the lake look a little untidy and uninviting and has introduced Japanese Knotweed.

The faces at the east end are still exposed but there is a proposal to fill the quarry with inert waste and allow the faces to flood.

Brief history and present status

Iron had been worked in the area of Scunthorpe as far back as Roman times and the presence of ironstone around Scunthorpe was certainly known in the 19th century. Ironstone was quarried and used for building and road-mending, and, being rich in lime, was also used for agricultural purposes. It wasn't until the late 1850's, however, that the extent of the iron ore and its potential for ironmaking began to be realised and exploited. There is no doubt that Rowland Winn, son of local landowner Charles Winn, began a systematic search for ironstone beds around 1858 which allowed him to set up the commercial enterprise that was to establish the iron industry in Scunthorpe.

The first blast furnaces were constructed in 1863 by George Dawes, an ironmaster from Barnsley, at a site to the north of Dawes Lane. The Frodingham Iron Company was established in 1864 and the first of many furnaces came into operation in 1865, situated on the land to the east of Brigg Road. The 19th century iron and steel works had been erected by companies for that purpose but after 1900 firms from outside Lincolnshire began to take control and by 1920

there were only three companies each owning an integrated iron and steel works, including Guest Keen and Nettlefold (GKN) who acquired John Lysaght's Normanby Park.

Ironstone was extracted where it outcropped close to the surface and then subsequently deeper as the faces worked down dip. The method of extraction involved the removal of the overburden, by 'sanders' to expose the ironstone that was then worked by pick and explosives.

The original quarrying took place on Winn's land but in the 1870's moved into Crosby (Lord Sheffield's land) and, after 1885, onto land west of Brigg Road (Earl Beauchamp's land). The production of steel in 1890 gave further impetus to quarrying and by 1909 the southern limit of the ore bed was reached with the opening of the Ashby Ville Pit, which proved to be of poor quality. Expansion eastwards involved removal of increasing amounts of overburden that was not economically feasible but expansion continued northwards with the Yorkshire and Thealby Pits in 1907 and Flixborough Pit (Bagmoor) in 1912.

During the inter-war years there was a dramatic increase in the production of both pig iron and crude steel since Scunthorpe was the lowest cost producer. However, the iron content of the ore was also the lowest and Scunthorpe produced more slag per ton than any other centre in the world. After 1914 commercial uses were found for the slag in agricultural fertilizers and road building materials.

In 1967 the three remaining plants were nationalized and became the British Steel Corporation works. The Appleby-Frodingham works received the major redevelopment but by the late 1970's the industry was declining. Even though the weight percentage (Wt %) of iron from the ore was as little as 23 %, with some areas falling as low as 20 % iron, peak production still produced 3.63 m tonnes of the total UK production of 3.74 m tonnes in 1977. Unfortunately it became economically viable to import higher grade ores in excess of Wt. 40% and all of the quarries and mines eventually closed.

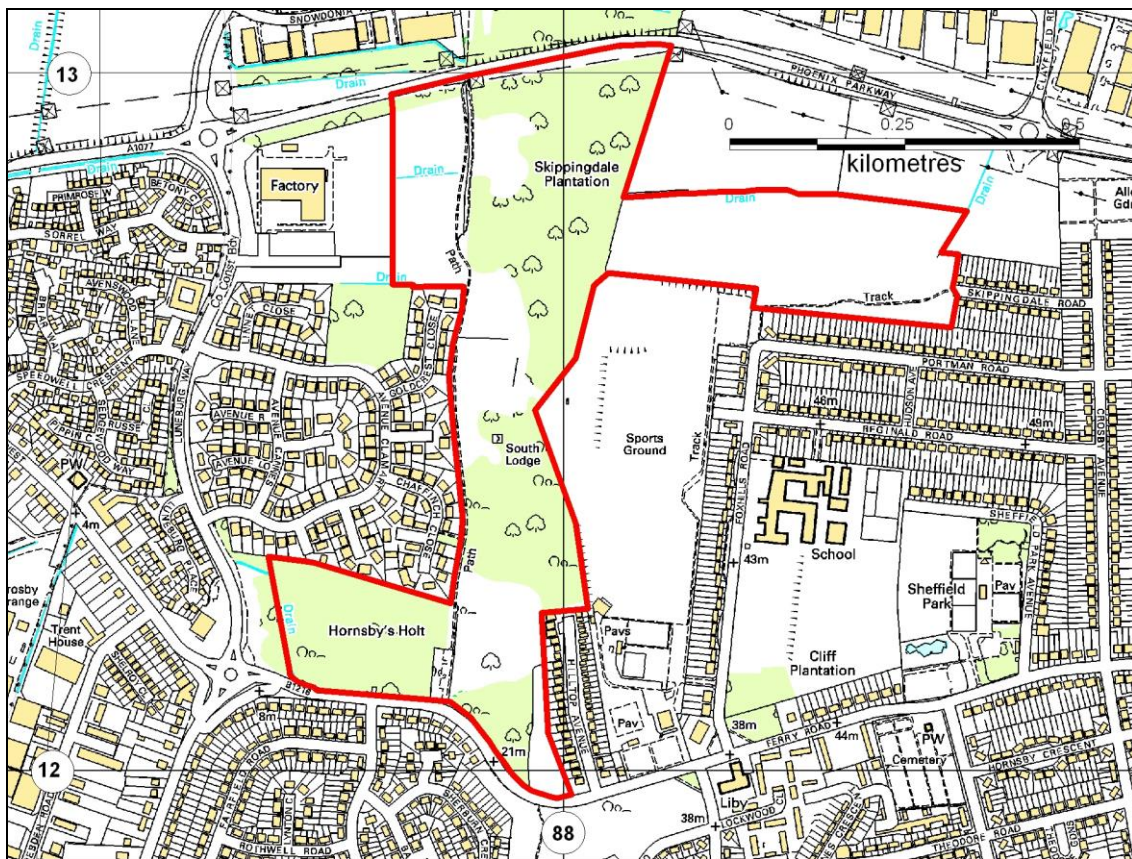
The site was notified as a SSSI in March 1985 and last reviewed in April 1996, due to the well-preserved ammonite fauna which are of international importance, particularly the *Stellare* and *Denotatus* sub-zones of the Upper Sinemurian which are a key reference level for European correlations. Conesby is one of only two localities in Britain where this fauna was well documented.

The site was also a Geological Conservation Review site.

There is an application for permission to fill the quarry with inert fill. The restoration plan will abut the exposed ironstone at the east end. Flooding will result in burial of the exposure.

Criteria passed: Scientific, Cultural, Access and safety
Recommended as a Local Geological Site: 24 March 2010

Atkinson's Warren



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: SE879125
Area: 32.8 ha

Survey: April 2009
Recorder: T.Langdale-Smith, J.Aram

Description and geomorphology

Atkinson's Warren is an extensive sloping area of grassland and woodland, containing a variety of habitats. It includes a meadow grazed by rabbits through rough grassland developing scrub, birch and oak woodland. There are also newly planted Scots pine and sycamore.

The ground slopes to the west and comprises Coversand, which has been banked up against the west-facing bluff at an angle of natural repose (*i.e.* approximately 1:2) and then become vegetated with grass and gorse, holding the sand in place.

Access within the Warren is open but generally restricted to foot-worn pathways of sand that slope variously making wheel chair access difficult on all but level surfaces.

Exposures of the Coversand show the relationship between the loose sand and the bracken overgrowth.

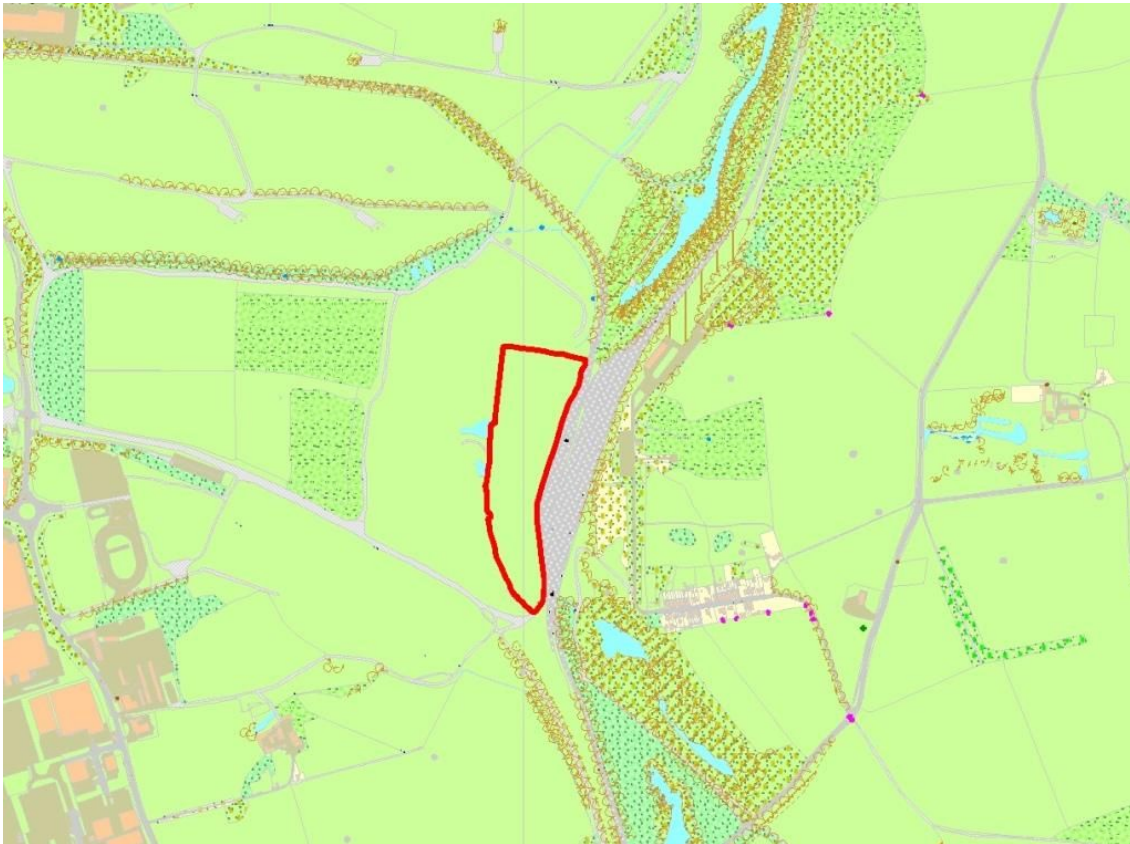
Brief history and present status

Atkinson's Warren has remained undeveloped since before the Industrial Revolution. It avoided the vagaries of the ironstone mining activities by virtue of its location west of the western limit of quarrying activities in the area.

The undisturbed character of the area has led to the designation as a Local Nature Reserve.

Criteria passed: Scientific, Access and safety
Recommended as a Local Geological Site: 24 March 2010

Conesby Quarry



© Crown Copyright and Database Rights (2013) Ordnance Survey (100025370)

Grid ref: SE900143
Area: 7.5 ha

Survey: 27 March 2013
Surveyor: P. Hildreth

Brief history and present status

Former ironstone quarry producing raw materials for Scunthorpe iron and steelworks. Now owned by North Lincolnshire Council and recently used for inert landfill. Partly landscaped and terraced for safety. Though offered for sale by the NLC, future use would be restricted to inert landfill.

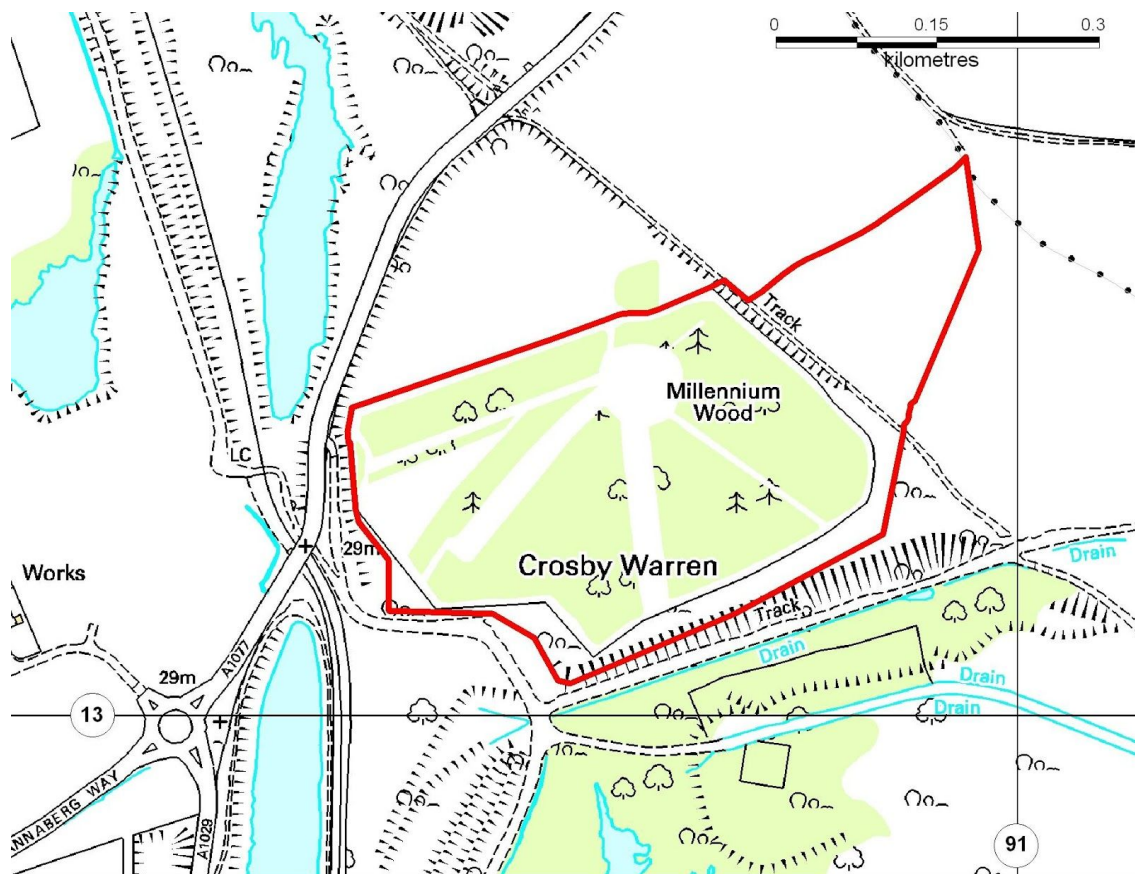
General description of geology/geomorphology

A good, reasonably fresh exposure of an estimated 8m, probably the full thickness at this location, of the Frodingham Ironstone Member of the Lower Jurassic, Scunthorpe Mudstone Formation, is provided by a face on the eastern side of the lower part of the quarry. Weathered beds of the overlying Coleby Mudstone are also exposed. There is a fringe of superficial "Coversands" (reworked ? Devensian) on the eastern edge of the site adjacent to the railway line but most of this has been removed or redistributed.

The western and northern sides of the quarry have been landscaped with stabilised slopes and grassed over.

Criteria passed: Access and Safety, Cultural, Educational, Scientific
Selected as a Local Geological Site: 13 September 2013

Sawcliffe



OS copyright No. AL100016739, Banovallum House, Manor House Street, Horncastle, Lincolnshire. LN9 5HF

Grid ref: SE906132

Area: 14.9 ha

Survey: January 2010

Recorder: T.Langdale-Smith, J.Aram

Description and geomorphology

The Millennium Wood is still being regenerated and access is restricted by a fence so the path follows the perimeter. The access path is a natural unprepared surface that can be too steep and too soft for wheel chairs. Large pieces of concrete and some partly buried metalwork concealed within the bushes next to the pathway testify to the former industrial nature of this area.

The gradient and uneven nature of the path make the walk to the end quite arduous but the view to the southeast across Crosby Warren Quarry is breathtakingly spectacular.

Brief history and present status

Iron had been worked in the area of Scunthorpe as far back as Roman times and the presence of ironstone around Scunthorpe was certainly known in the 19th century. Ironstone was quarried and used for building and road-mending, and, being rich in lime, was also used for agricultural purposes. It wasn't until the late 1850's, however, that the extent of the iron ore and its potential for ironmaking began to be realised and exploited. There is no doubt that Rowland Winn, son of local landowner Charles Winn, began a systematic search for ironstone beds around 1858 which allowed him to set up the commercial enterprise that was to establish the iron industry in Scunthorpe.

The first blast furnaces were constructed in 1863 by George Dawes, an ironmaster from Barnsley, at a site to the north of Dawes Lane. The Frodingham Iron Company was established in 1864 and the first of many furnaces came into operation in 1865, situated on the land to the

east of Brigg Road. The 19th century iron and steel works had been erected by companies for that purpose but after 1900 firms from outside Lincolnshire began to take control and by 1920 there were only three companies each owning an integrated iron and steel works, including Guest Keen and Nettlefold (GKN) who acquired John Lysaght's Normanby Park.

Ironstone was extracted where it outcropped close to the surface and then subsequently deeper as the faces worked down dip. The method of extraction involved the removal of the overburden, by 'sanders' to expose the ironstone that was then worked by pick and explosives.

The original quarrying took place on Winn's land but in the 1870's moved into Crosby (Lord Sheffield's land) and, after 1885, onto land west of Brigg Road (Earl Beauchamp's land). The production of steel in 1890 gave further impetus to quarrying and by 1909 the southern limit of the ore bed was reached with the opening of the Ashby Ville Pit, which proved to be of poor quality. Expansion eastwards involved removal of increasing amounts of overburden that was not economically feasible but expansion continued northwards with the Yorkshire and Thealby Pits in 1907 and Flixborough Pit (Bagmoor) in 1912.

During the inter-war years there was a dramatic increase in the production of both pig iron and crude steel since Scunthorpe was the lowest cost producer. However, the iron content of the ore was also the lowest and Scunthorpe produced more slag per ton than any other centre in the world. After 1914 commercial uses were found for the slag in agricultural fertilizers and road building materials.

In 1967 the three remaining plants were nationalized and became the British Steel Corporation works. The Appleby-Frodingham works received the major redevelopment but by the late 1970's the industry was declining. Even though the weight percentage (Wt %) of iron from the ore was as little as 23 %, with some areas falling as low as 20 % iron, peak production still produced 3.63 m tonnes of the total UK production of 3.74 m tonnes in 1977. Unfortunately it became economically viable to import higher grade ores in excess of Wt. 40% and all of the quarries and mines eventually closed.

The site was notified as a SSSI in March 1985 and last reviewed in April 1996, due to the well-preserved ammonite fauna which are of international importance, particularly the *Stellare* and *Denotatus* sub-zones of the Upper Sinemurian which are a key reference level for European correlations. Conesby is one of only two localities in Britain where this fauna was well documented.

The site was also a Geological Conservation Review site.

There is an application for permission to fill the quarry with inert fill. The restoration plan will abut the exposed ironstone at the east end. Flooding will result in burial of the exposure.

Criteria passed: Scientific, Cultural, Access & safety
Selected as a Local Geological Site: 24 March 2010

Greater Lincolnshire Nature Partnership
Banovallum House
Manor House Street
Horncastle
Lincolnshire
LN9 5HF

Tel: 01507 528398
Email: info@glnp.org.uk
Web: www.glnp.org.uk

Achieving more for nature





**Ecological Appraisal and Roost Assessment Survey Winterton Road,
Scunthorpe, North Lincolnshire DN15 0DH**

Ellgia Ltd

Status	Issue	Name	Date
Draft	1	Louise Sawrey BSc (Hons), Consultant	02/03/2020
Reviewed	1.1	Chris Formaggia BSc (Joint Hons) CBiol CEnv MCIEEM MRBS VR - Company Principal	03/03/2020
Draft	1.2	Louise Sawrey BSc (Hons), Consultant	03/03/2020
Final	2	Louise Sawrey BSc (Hons), Consultant	03/03/2020

Arbtech Consultant's Contact details:
Louise Sawrey BSc (Hons)
Consultant
Tel: 07748275573 Email: louise@arbtech.co.uk
Arbtech Consulting Ltd
<https://arbtech.co.uk>