

Preliminary Ecological Appraisal
Low Farm, Grange Moor, Wakefield,
West Yorkshire

August 2021

A report by

James Gilroy BSc (Hons), MSc - Ecologist

Report details

Site name: Low Farm
Site address: Low Farm, Wakefield Road, Grange Moor, Wakefield, West Yorks
WF4 4BB
Grid reference: SE 246 161
Survey date: 24 & 25th June 2021
Report date: 19th August 2021
Report author: James Gilroy BSc (Hons), MSc
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Report no: WOR 2360.2

Declaration of compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of practice for planning and development.

Code of Professional Conduct

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of survey data and report

The findings of this report are valid for 24 months from the date of survey. If work has not commenced within this period, an updated survey by a suitably qualified ecologist will be required.

Revisions

Date	Report no:	Approved by:	Comment
23/07/2021	WOR 2360	CDH	Initial report
19/08/2021	WOR 2360.2	CDH	Updated to take into account client's comments

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Non-technical summary

Western Ecology has been commissioned to complete a preliminary ecological appraisal of an area of agricultural land located within the grounds of Low Farm, just to the north of the village of Flockton Green, near Wakefield in Yorkshire. A separate area approximately 3km to the east of Low Farm, was also surveyed in relation to the proposed cable route for the point of connection to the national grid. A PV solar park with associated infrastructure is proposed.

To ensure compliance with nature conservation legislation and planning policy, the following recommendations are made with regards to habitats:

Native hedgerows and semi-natural broadleaved woodland

All hedgerows and woodland habitat should be protected from accidental damage during the construction phase by a suitable buffer zone. This protection zone should be delineated by a suitable fence and maintained for the duration of the works, and there should be no access, storage of materials, ground disturbance, burning or contamination within the fenced areas. These buffers should be retained and remain undeveloped for the operational period of the development.

To ensure compliance with nature conservation legislation and planning policy, the following recommendations are made with regards to Species:

Bats

Individual mature trees associated with hedgerows and field compartments provide an unknown potential for roosting bats. If plans show any of these trees are to be affected by the proposed development, an inspection of the trees by a suitably qualified and licensed ecologist will be required prior to the commencement of works.

Birds

The proposed development will not adversely impact local bird populations.

The footprint of the proposed development largely concerns arable field and compartments, which have some potential for ground nesting species such as Skylark. To prevent the risk of damaging or destroying any potentially active nests within the field compartments, if works will place during the accepted nesting season (from March to August inclusive) ground nesting bird surveys should be completed prior to any construction activities likely to impact these areas. A nesting bird survey should also be undertaken ahead of any works likely to impact other nesting habitats such as hedgerows, stone walls and woodland in this period. Further details are contained within Section 5.3 – Birds.

Reptiles

Hedgerows, scrub and woodland habitats provide some potential for reptiles. Sympathetic site clearance involving RAMS should also be implemented to avoid killing or injuring individual reptiles. Further details are contained within Section 5.3 – Reptiles.

To ensure compliance with nature conservation legislation and planning policy, the following recommendations are made with regards to Invasive non-native species:

Japanese Knotweed is growing within hedgerows in Area 4 and in a margin of tall ruderal vegetation in Area 2. A Japanese Knotweed management plan should be developed which should manage risks involved with the construction and operational phases of the development and include a scheme of treatment which would need to be informed by a survey mapping its precise extent.

Further survey work

It is recommended that the following species/group specific surveys are completed to ensure compliance with wildlife legislation and relevant planning policy:

Bats

If mature trees are to be managed, an inspection of the trees by a suitably qualified and licensed ecologist will be required prior to the commencement of works. If any evidence of bats is found, further surveys may be required.

Birds

If site construction is likely to impact potential bird nesting habitats in the period March to August, these habitats should be thoroughly inspected, prior to the start of work, for nesting birds by a suitably qualified person. If nesting birds are found, all activities likely to damage or disturb the nesting area should be delayed until chicks have fledged.

No other survey work is recommended for this site.

1. Introduction

Western Ecology has been commissioned to complete a preliminary ecological appraisal of an area of agricultural land located within the grounds of Low Farm, just to the north of the village of Flockton Green, near Wakefield in Yorkshire. A separate area approximately 3km to the east of Low Farm, was also surveyed in relation to the proposed cable route for the point of connection to the national grid. A PV solar park with associated infrastructure is proposed.

1.1. Survey aims

The survey and this report identify features of conservation importance that could constitute a constraint to the proposals for this site. Where appropriate, recommendations for impact avoidance, mitigation and post-development enhancement are made to ensure compliance with wildlife legislation and relevant planning policy.

This survey has been prepared in accordance with the 'Guidelines for Preliminary Ecological Appraisal' produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017).

1.2. Site location

The development footprint concerns agricultural land situated between the villages of Grange Moor and Overton, approximately 9.6km to the south-west of the town of Wakefield in West Yorkshire. The cable route for the point of connection is located approximately 3km to the east of Low farm, at the western edge of the village of Horbury Bridge.

2. Survey methodology

2.1. Desktop survey

A desktop survey collated existing biological records for the site and adjacent areas and identified any nature conservation sites that may be affected by the proposals. This comprises an important part of the assessment process, providing information on ecological issues that may not be apparent during the site survey.

Consultees for the data search included:

- West Yorkshire Ecology Service provided biological records for protected/notable species and non-statutory sites within 2km of the site.
- Natural England - GIS dataset of SSSI Impact Risk Zones, statutory nature conservation sites, priority habitats and granted European Protected Species license applications.

Species data was examined for protected and notable species records. An assessment was then made, based on known habitat preferences, as to whether these species might be present within the site and how they might be affected by the proposal.

The location of nature conservation sites was examined to determine their ecological and landscape relationships with the proposed site. An assessment was then made of how the sites may be affected by the proposal, taking into account these relationships, and the species and/or habitat types for which the nature conservation site was chosen.

SSSI Impact Risk Zones are areas where the change to the environment could either create significant damage to a local SSSI, or might require additional planning and consultation in order to avoid impacting such sites. The assessments are made according to the particular sensitivities of the features for which the SSSI is notified, and specifies the types of development that have the potential for adverse impacts.

In compliance with the terms and conditions relating to its commercial use, the full desk study data is not provided within this report.

2.2. Field survey

A Preliminary Ecological Appraisal of the site was completed by James Gilroy BSc (Hons), MSc.

The survey was undertaken on 24th June 2021 between 14:00 and 19:00, and on the 25th June 2021 between 08:00 to 10:00. Both survey visits were conducted in suitable weather conditions.

Habitats were classified using the Phase 1 Habitat Survey methodology developed by the Joint Nature Conservation Committee (JNCC, 2010) and modified by the Institute of Environmental Assessment (IEA, 1995). The main plant species were recorded and broad habitat types mapped. Habitats encountered are described within the Results section, with a map included within this report. Plant species were identified according to Stace (1997).

2.3. Method for valuation of habitats

The ecological value of habitats present is provided in line with Guidelines for Ecological Impact Assessment (CIEEM, 2016), and those which are important in terms of legislation or policy are identified.

The nature conservation value, or potential value, of the habitat is determined within the following geographic context:

- International importance (e.g. internationally designated sites such as Special Areas of Conservation, Special Protection Areas, Ramsar sites);
- National importance (e.g. nationally designated sites such as Sites of Special Scientific Interest or species populations of importance in the UK context);
- County importance (e.g. SNCI, habitats and species populations of importance in the context of Yorkshire);
- Local importance (e.g. important ecological features such as old hedges, woodlands, ponds);
- Site importance (e.g. habitat mosaic of grassland and scrub which may support a diversity of common wildlife species);
- Negligible importance. Usually applied to areas such as built development or areas of intensive agricultural land.

The examples are not exclusive and are subject to further professional ecological judgment.

2.4. Survey constraints

All areas of the site were readily accessible. Although some plant species would have not been visible during the survey period, within a site comprising common and widespread habitat types, the timing of this survey is not a significant constraint to a robust initial site assessment.

It should be noted that habitats, and the species they may support, change over time due to natural processes and because of human influence. In line with current guidelines, the survey on which this report is based is valid for two years, after which time it will need updating. This report is valid until 25th July 2023.

2.5. Study area

The study area for the desktop survey is within 2km. The study area for the Preliminary Ecological Appraisal was the footprint of the proposed development, hereafter referred to as the 'Site', and its immediate boundaries. This is the area included within the line described as "Survey area" within the legend of Map 1.

3. Results

3.1. Site description

The Site concerns nine discrete parcels of land (Areas 1 – 9, see Map 1) all within the grounds of Low Farm and under agricultural management, comprising arable and improved grassland habitats. Field boundaries were comprised of a mixture of vegetated stonewalls, hedgerows and fencing, while some fields were open to the adjacent habitats. There is a small area of semi-natural broadleaved woodland located within the Site, while larger areas of woodland are located immediately adjacent to some of the external boundaries. There are also four waterbodies located immediately adjacent to the site boundaries.

The Site also includes a separate area relating to the proposed cable route for the point of connection (P.O.C, see Map 2), approximately 3km to the east of Low Farm. This area comprises two field compartments containing improved grassland, bounded by native hedgerows and stock fencing.

The Site is located within a broadly rural area with agricultural land and woodland land extending beyond the site boundaries.

3.2. Phase 1 habitats

Habitats have been classified using the Phase 1 Habitat Survey methodology, and are described below and detailed in Map 1. Habitats which are important in terms of legislation or policy are identified. Plant species that characterise each of these habitats are identified, although this is for descriptive purposes, and comprehensive inventory is not provided.

Habitat photos are contained in Appendix 2.

Table 1: Habitat description, biodiversity value and extent.

Habitat	Description	Biodiversity value
Arable	Arable habitats were present in Areas 1, 2, 3, 6, 7 & 8 (see Map 1) and consisted of monoculture winter cereal crops (wheat and barley). The fields extended to the boundaries where margins of rough grasses and ruderals were associated with the boundary features.	Negligible
Improved grassland	Improved grassland habitat was present in areas 3, 4, 5, 9 and the P.O.C area (see Maps 1 & 2), mostly as temporary leys. The grassland featured a fairly short and open sward and was dominated by Perennial Rye-grass (>50%) with few other grasses and forbs such as Yorkshire Fog, Cock's-foot, Red Fescue, White Clover, Chickweed, Creeping Buttercup and Broad-leaved Dock. The grassland in areas 3 & 9 had been recently cut and exhibited a very short sward. The southern field associated with the POC area featured grassland that was very tightly grazed by horses.	Negligible
Tall ruderal	Distinct bands of ruderal vegetation were present at the boundaries of some of the field compartments and consisted of common grasses and forbs, such as False Oat-grass, Cock's-foot, Common Nettle, Broad & Rosebay Willowherb, Hogweed, Creeping Thistle and Broad-leaved dock.	Site

Semi-natural broadleaved woodland	An area of semi-natural broadleaved woodland is located within Area 1. The woodland features an open canopy and generally lacks age diversity, containing predominantly mature trees of Sycamore, Beech, Ash, Horse Chestnut, Common Lime, Oak sp. and Wild Cherry. Occasional young self-seeded trees were present, while ground flora consisted of rank grasses and ruderals usually associated with high nutrient inputs, such as Cock's-foot, False Oat-grass, Rough Meadow-grass, Common Nettle, Hogweed, Cleavers and Bramble. An access track passes through the woodland, with trees growing to either side.	Local: this habitat qualifies as a Habitat of Principal Important (JNCC & Defra, 2012) and as a Local Biodiversity Action Plan priority habitat.
Scattered trees	Individual, scattered mature trees are present within a field compartment in Area 1, consisting of Oak and Common Lime. Rank grasses were associated with the base of the trees.	Site
Standing water: ponds	There are total of five ponds located immediately adjacent to the Site boundaries. Details of these are contained in Table 2 below.	Site
Stone wall	Stone walls provided some of the field boundaries. Some sections of walls were in poor repair and featured gaps. Scattered shrubs and mature trees were associated with some of the walls, consisting of mainly Hawthorn, Elder, Sycamore and Ash. The wall structures were themselves mostly unvegetated although featured margins of rank grasses and ruderals which provided a corridor of semi-natural vegetation. Species included False Oat-grass, Barren Brome, Cock's-foot, Hogweed, Common Nettle, Bramble, Bracken.	Site
Native hedgerow	Hedgerows of both native shrubs and mature trees provided boundaries to some of the field compartments. Management of hedgerows varied, with some (particularly in the south of the Site) featuring bushy growth to top and sides, while others were closely managed. Species included Hawthorn, Elder, Field Maple, Hazel, while trees were mostly Ash, Wych Elm, Lime and Oak sp. Most of the hedgerows were continuous features, however the hedgerows containing mostly mature trees featured gaps between trees which supported rough grasses and ruderal vegetated. Most of the hedgerows featured narrow margins (~1m) of rough grasses and forbs.	Local: this habitat qualifies as a Habitat of Principal Important (JNCC & Defra, 2012) and as a Local Biodiversity Action Plan priority habitat.
Ephemeral/short perennial	Areas of bare ground supporting sparse vegetative cover of agricultural weeds were present within a field compartment in Area 1. Species consisted of Redshank and Scentless Mayweed.	Negligible
Bare ground	Large areas of bare soil supporting very little vegetation were present within some of the arable field compartments.	Negligible
Fencing	Stock fencing provide some of the field boundaries and usually had margin of rank grasses and ruderals associated with it.	Site

Table 2: Pond description, Habitat Suitability Index (HSI) value for ponds within the Site.

Pond Number	Pond description	HSI score
Pond A	Medium sized pond, with some bankside scrub consisting of Oak, Willow and Birch which provided ~40% shading. Bankside vegetation consisting of tall forbs such as Willowherb spp., Common Nettle, Bramble The pond featured a dense margin of emergent vegetation comprising Flag Iris, Bulrush, Soft Rush, Brooklime and Bittersweet. Most of the pond basin was open and contained fragmented matts of pond weed, providing approximately 30% cover. . Moderate surrounding habitat.	0.76 – good
Pond B	Large pond previously used as a fishing lake. Bank side vegetation comprised rank grasses, ruderals, scattered trees and woodland. Aquatic and emergent vegetation consisted of pond weed, Water-plantain, White Water-lily, Common Water-crowfoot,	0.52 – below average

	Yellow Flag-iris, Water Mint, Brooklime and Soft Rush. Moderate water quality, and large areas of open water column. Large fish seen at surface.	
Pond C	Medium sized pond within woodland area and previously used as a fishing pond. Banks support very dense scrub of native shrubs and large swathes of Japanese Knotweed. Overhanging vegetation provided ~70% shade. Aquatic vegetation was limited and consisted of pond weed and Flag Iris. Good surrounding habitat. No fish seen.	0.69 - average
Pond D	Large pond located within woodland and historically used as a fishing lake. Bankside vegetation was very dense and comprised native shrubs as well as Japanese Knotweed. Limited aquatic vegetation included Flag Iris, Bulrush and Brooklime. Small fish (possibly Roach) seen at surface. Moderate water quality.	0.52 – below average
Pond E	Small pond, also historically used for fishing, located within area of woodland. Overhanging trees provide ~70% shade. Aquatic vegetation consisted of large mats of pond weed, as well as Flag Iris. No waterfowl or fish observed. Good surrounding terrestrial habitat.	0.76 - good

3.3. Desktop survey

The biological records search returned records of notable species within the geographical parameters of the search (2km). Due to the broad scale of many records, it is not possible to determine if they relate to the Site. Details are contained in Tables 3 and 4 below.

Table 3. Notable species records within 2km

Taxon	Species	Number of records	Comment
Amphibians	Common Toad	5	UK and Local BAP species
	Common Frog	4	Local BAP species
	Smooth Newt	1	Local BAP species
Mammals	Common Pipistrelle bat	17	Local BAP species. WCA Schedule 5 species
	Soprano Pipistrelle bat	2	UK and Local BAP species. WCA Schedule 5 species
	Whiskered bat	1	UK and Local BAP species. WCA Schedule 5 species
	Brown Long-eared bat	6	Local BAP species. WCA Schedule 5 species
	Noctule bat	5	UK and Local BAP species. WCA Schedule 5 species
	Bat (unidentified)	9	WCA Schedule 5 species
	Brown Hare	1	UK and Local BAP species.
Birds	Mallard	1	Amber conservation status
	House Martin	1	Amber conservation status
	House Sparrow	1	Red conservation status
	Swallow	1	Local BAP species
	Starling		Red conservation status
	Barn Owl	1	Schedule 1 bird (WCA)
Invertebrates	Wall (Lasiommata megera)	2	UK and Local BAP species.
Plants	Bluebell	3	Local BAP species. WCA Schedule 5 species

Non-statutory Nature Conservation Sites (NNCS)

Kirklees Wood Local Wildlife Site (LWS) is located approximately 1km to the southeast of the site and was selected for species rich acid woodland.

Ancient Woodland

The woodland areas located adjacent to the northern boundaries of Areas 2 & 7 are included in the register of Ancient Replanted Woodland.

SSSI Impact Risk Zones

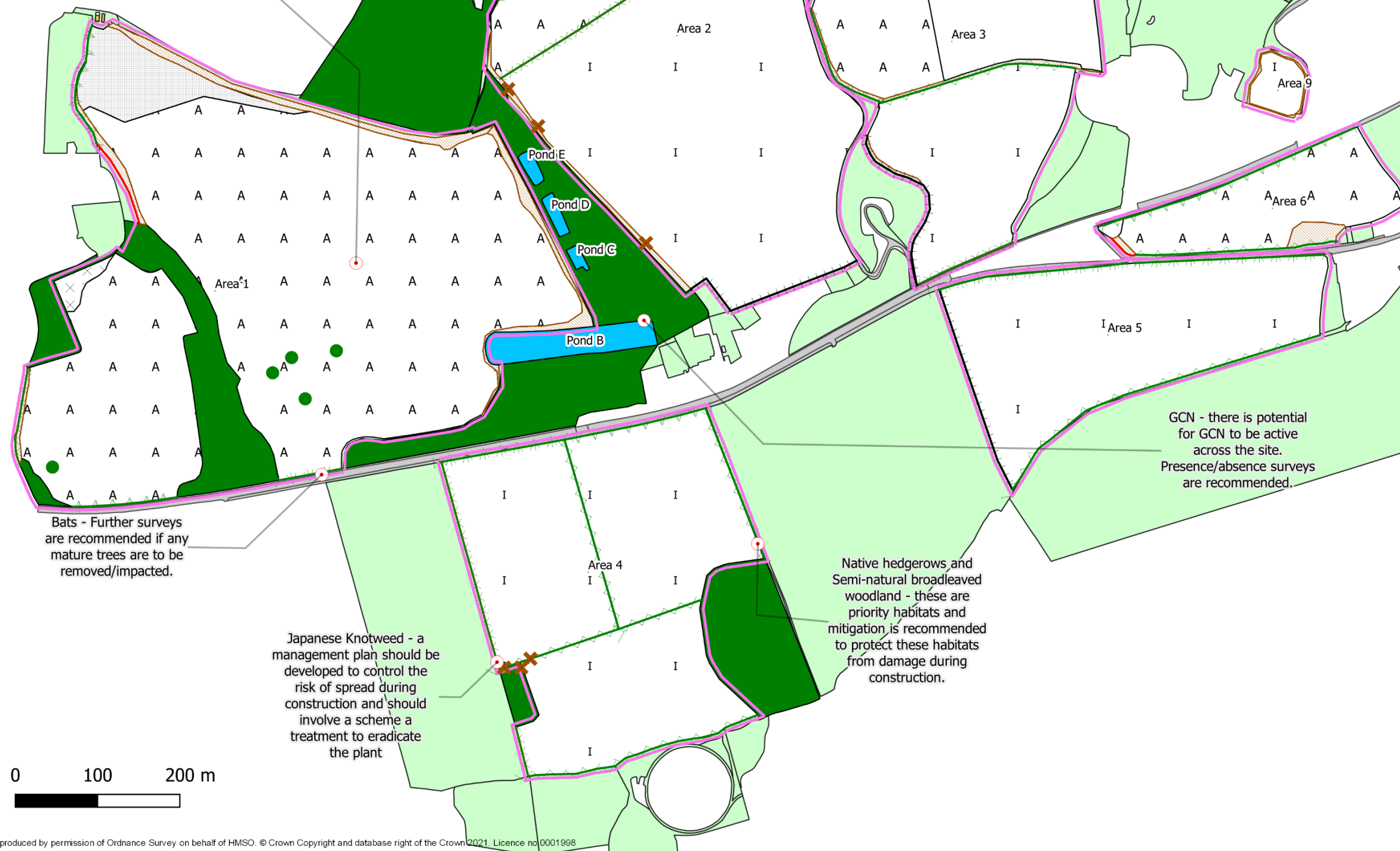
The proposed development is not within an area identified as a SSSI Impact Risk Zone for solar developments.



Reptiles - there is some low potential for reptiles within the site. Reasonable Avoidance Measures (RAMS) are recommended for any habitat clearance works where they may be present.

Badgers & Hedgehogs - Simple mitigation is recommended to prevent animals becoming trapped during construction, and to prevent restriction of movement through the site.

Birds - Simple mitigation is recommended for any works likely to impact any potential nesting habitat during the accepted breeding season.



Bats - Further surveys are recommended if any mature trees are to be removed/impacted.

Japanese Knotweed - a management plan should be developed to control the risk of spread during construction and should involve a scheme a treatment to eradicate the plant

Native hedgerows and Semi-natural broadleaved woodland - these are priority habitats and mitigation is recommended to protect these habitats from damage during construction.

GCN - there is potential for GCN to be active across the site. Presence/absence surveys are recommended.

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Legend

- Target note
- Japanese Knotweed
- Scattered trees
- Survey area
- Native hedgerow with trees
- Native hedgerow
- Stone wall with associated vegetation
- Fence
- Stone wall
- Arable
- Tall ruderal
- Scrub
- Standing water
- Bare ground
- Semi-natural broadleaved woodland
- Ephemeral/short perennial
- Improved grassland

Title: Map 1. Phase 1 Habitat Survey

Project: Low Farm, Wakefield, West Yorkshire

Checked by: CDH Version: 01
Date: 23 July 2021



Legend

- Target note
- Survey area
- Native hedgerow
- Native hedgerow - defunct
- Fence
- P.O.C Tower
- Improved grassland

Birds - simple mitigation
is recommended for any
works likely to impact
any potential nesting
habitat during the
accepted breeding season

Native hedgerows -
mitigation is recommended
to protect this habitat
during construction

0 10 20 m

Title: Map 2. Phase 1 Habitat
Survey

Project: Point of connection area -
Low Farm, Wakefield, West
Yorkshire

Checked by: CDH Version: 01
Date: 23 July 2021

3.4. Potential for species of nature conservation importance

Habitats have been assessed from the results of the field survey for their potential to support protected species (Table 5). Where there is no potential for a species or species group to be present within the site, or where habitats with the potential to support this species or species group will not be impacted by the proposals, they may be scoped out at this stage.

Table 5. Potential for species of nature conservation importance

Species	Assessment	Likely value
Amphibians	The majority of the terrestrial habitat within the site is poor, with hedgerows, tall ruderal margins and woodland providing the only consistent opportunities for foraging and shelter. There is potential for GCN and other common amphibians to be present within the terrestrial and aquatic habitats associated with the Site.	Moderate
		<i>R</i>
Bats	Individual mature trees associated with hedgerows or boundaries may provide potential for roosting bats. The intensive agricultural habitats contained within the Sites provide very little value for foraging and commuting bats. Semi-natural habitats such as woodland, waterbodies and hedgerows are likely to provide some opportunities for foraging and commuting and it is likely a variety of bat species utilise these areas, particularly at the margins of the sites.	Unknown Moderate
Birds	Given the extent of the site and their agricultural management, the site is likely to support assemblages of farmland birds, with hedgerows, stone walls and	Moderate

	woodland providing suitable nesting habitat. The arable & improved grassland habitats provide limited opportunities for ground nesting bird species such as Skylark due to intensive management.	
Brown Hare	Several individual animals were observed during the survey, and it is likely the arable and grassland habitats provide some foraging opportunities.	
Common Dormice	Potentially suitable habitats are limited to hedgerows and woodland habitats. Hedgerows in particular are largely suboptimal due to close management or a lack of sufficient structure or diversity of woody, fruiting shrubs. There are no records or known populations of the species in the local area and it is highly unlikely that Dormice are present in the Site and they do not need to be considered further.	Negligible
Hedgehog	There are no records for hedgehog within 2km of the Site, however habitats such as woodland and hedgerows may provide some foraging opportunities within the site.	Low
Reptiles	There are no records for reptiles within 2km of the Site. The intensive agricultural habitats provide negligible potential for reptiles. Most of the suitability for reptiles within the site is associated with the boundary habitats, woodland and waterbodies. If present, reptiles of common species such as Slow Worm and Grass Snake are likely to exist at very low densities.	Low
Otter	No suitable water bodies/courses associated with the Site.	Low
Water Vole	There is no suitable habitat associated with the Site.	Negligible
Notable invertebrates	The habitats associated with the Site provide limited potential for notable invertebrate species.	Negligible
Notable plants	Habitats within the Site provide little potential for notable or rare plants and they do not need to be considered further.	Negligible
Invasive non-native plants	Japanese Knotweed was located within tall ruderal and hedgerow habitats associated with Areas 2 & 4. Japanese Knotweed is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as invasive non-native with respect to England and Wales.	Absent

4. Evaluation of ecological features and potential impacts

4.1. Introduction

Ecological features that have the potential to be present have been assessed in light of current nature conservation policy, planning policy and wildlife legislation by an experienced ecologist (see Appendix 1). Where necessary, the ecological value of an ecological feature is given along with the potential effect of the proposed development.

If it is considered that the proposed development is likely to have no effect on features that have been identified as present, or potentially present, they may be scoped out at this stage.

4.2. Habitats of nature conservation importance

Protected habitats

Habitats are protected under international and national legislation including The Conservation of Habitats and Species Regulations 2017, and Wildlife and Countryside Act 1981 (as amended). These have been formulated into policy measures, with many examples protected under formal site designations such as SSSIs and SACs.

No habitats of European Community Importance as defined within The Conservation of Habitats and Species Regulations 2017 were present within this site. Protected habitats of this type are not a consideration for this project.

Notable habitats

Sixty five habitats are listed as being of principal importance, in the Secretary of State's opinion, for the purposes of conserving biodiversity. Under section 41 (England) of the NERC Act (2006) there is a need for these habitats to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. These habitats are the subject of National and Local Biodiversity Action Plans.

Hedgerows are given particular protection under the Protection of Hedgerows Act 1997.

Native hedgerows

The native hedgerows would qualify as a Habitat of Principal Importance. Any loss in extent would be a material consideration to a planning application. If any hedgerow habitat is to be lost to the development, or adversely impacted, mitigation is recommended.

Semi-natural broadleaved woodland

The areas of woodland located within and adjacent to the Site would qualify as a Habitat of Principal Importance. Any loss in extent or impact would be a material consideration to a planning application. If any woodland habitat is to be lost to the development, or adversely impacted, mitigation is recommended.

4.3. Species of nature conservation importance

Overview

Many native wild plants and animals are protected by law with the two main legal instruments being the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017. The latter consolidates amendments to the Conservation (Natural Habitats, &c) Regulations 1994 which transposed into UK Law the EU Habitats Directive.

One thousand, one hundred and fifty species of fungi, plant or animal are listed as being of principal importance, in the Secretary of State's opinion, for the purposes of conserving biodiversity. Under section 41 (England) of the NERC Act (2006) there is a need for these species to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. These species are the subject of National and Local Biodiversity Action Plans.

Amphibians

The four native widespread amphibians (Common Frog, Common Toad, Common Newt and Palmate Newt) are given limited protection from trade under the Wildlife and Countryside Act 1981 (as amended).

Great Crested Newt and Natterjack Toad and their breeding sites and resting places (during all parts of their lifecycle) are fully protected under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017. They are identified as European Protected Species. Under these laws it is an offence to:

- capture, kill, disturb or injure Great Crested Newts and Natterjack Toads (on purpose, or by not taking enough care);
- damage or destroy a breeding or resting place (even accidentally);
- obstruct access to their resting or sheltering places (on purpose, or by not taking enough care);
- possess, sell, control or transport live or dead newts, or parts of them;
- take Great Crested Newt or Natterjack Toad eggs.

The very rare Pool Frog, only recently recognised as a native amphibian, is fully protected under the Wildlife and Countryside Act 1981 (as amended) from killing, injury, trade and disturbance, whilst their habitats are also protected.

Great Crested Newt, Natterjack Toad, Common Toad and Pool Frog are listed as species 'of principal importance for the purpose of conserving biodiversity'.

The ponds located close to the Site boundaries (A-E), as well as most of the off-site ponds (that were accessible) have some potential to support GCN during the breeding season. GCN are also known to be in the area, with Denby Grange Colliery Ponds SSSI/SAC located within 2km of the Site, supporting a regionally significant population. As such, hedgerows, woodland and any rough semi-natural vegetation within the Site may also be used during their terrestrial phase and the hibernation period.

It is also likely that occasional common and widespread amphibians are associated with ponds and field boundaries. These areas should be protected during the construction and operational phases and no adverse effect is predicted for this group.

Badgers

Badgers are protected from persecution or ill-treatment under the Protection of Badgers Act 1992. Under the Act, it is an offence to:

- wilfully kill, injure or take, or attempt to kill, injure or take, a badger;
- damage a badger sett or any part of it;
- destroy a badger sett;
- obstruct access to, or any entrance of, a badger sett;
- cause a dog to enter a badger sett; or
- disturb a badger when it is occupying a badger sett.

Bats

Bat species and their breeding or resting places (roosts) are protected under the Wildlife and Countryside Act 1981 (as amended), and The Conservation of Habitats and Species Regulations 2017. They are identified as European Protected Species. Under these laws it is an offence to:

- capture, kill, disturb or injure bats (on purpose or by not taking enough care);
- damage or destroy a breeding or resting place (even accidentally);
- obstruct access to their resting or sheltering places (on purpose or by not taking enough care); or
- possess, sell, control or transport live or dead bats, or parts of them.

Seven species of bat are listed as species “of principal importance for the purpose of conserving biodiversity”.

Mature trees associated with hedgerows and boundary habitats have an unknown potential to support roosting bats. If any trees are likely to be impacted by the proposals, mitigation may be required.

The intensively managed agricultural habitats which account for the majority of the Site provide very poor foraging habitat due to a lack of supported insect prey. Semi-natural habitats associated with the site (such as hedgerows, woodland and ponds) which are mainly present at boundaries are likely to provide some foraging and commuting opportunities. There are records for a variety of bats in the local area, including light-averse species (such as Long-eared & Myotis) and it is likely that they are active around the Site margins.

There is currently little evidence to suggest either way whether solar farms can impact foraging and commuting bat populations through land use changes such as habitat loss, fragmentation or barrier effect (Harrison *et al.* 2017; Taylor *et al.* 2019). However, the loss of very low value intensive agricultural habitats to this development is considered to be unlikely to impact local bat populations.

Lighting is often a concern for foraging and commuting bat populations associated with other types of development. However, this solar site will be unlit during the operational phase, whilst construction will be limited to daylight hours. No mitigation for adverse effect on foraging and commuting bats is required.

Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended) from being killed, injured or captured whilst their nests and eggs are protected from being damaged, destroyed or taken. Birds which are listed under Schedule 1 of the Act are given additional protection against disturbance.

Fifty-nine species of bird are listed as species “of principal importance for the purpose of conserving biodiversity”.

Hedgerows, stone walls, woodland and mature trees will support widespread and common nesting bird species.

The arable and pastoral farmland associated with the Site provides some limited potential for ground nesting passerines, such as Skylarks. The fields mostly contain winter sown cereal crops which provide limited value due to the dense structure of ground cover which would constrain the success of multiple broods, while the grassland leys featured insufficient cover for nesting. However, the likelihood of successful nesting within the Site is likely to vary depending on cropping regime, which may change on a seasonal or annual basis. Skylarks are likely to be active within the local area given the rural setting, and it is possible that territories are located within the Site. A study into the impacts of Solar farms on ground nesting bird species (Montag *et al.* 2016) found that solar farms did not result in a decrease in number of Skylark territories, while also increasing foraging opportunities. Therefore, the proposed development is unlikely to negatively impact local Skylark populations in the local area, given the variable suitability of the Site under its current land use. The proposed development also has potential to increase food availability, which may serve to benefit local populations.

However, some construction activities have potential to damage or destroy active birds nests (such as vegetation clearance or ground works) which would be considered an offence under current legislation. Mitigation is therefore recommended.

Brown Hare

Brown Hare are protected by a closed season for hunting under the Wildlife and Countryside Act 1981 (as amended). They are listed as species “of principal importance for the purpose of conserving biodiversity”.

Brown Hare are active across the Site. It is likely that changes in habitat management associated with the proposed solar PV farm (grassland creation under arrays) would benefit Brown Hare and no mitigation is required.

Hedgehog

Hedgehogs are partially protected under the Wildlife & Countryside Act and may not be trapped without a licence from Natural England. Hedgehogs are listed as a species “of principal importance for the purpose of conserving biodiversity”.

There is potential that Hedgehogs are active within Site habitats and the proposed development has potential to fragment foraging habitat or create a barrier to dispersal. Precautionary mitigation is therefore recommended.

Reptiles

All native reptiles are protected to some degree under the Wildlife and Countryside Act 1981 (as amended), whilst our two rarest species, the Sand Lizard and Smooth Snake, are given full protection under the Act, and also identified as European Protected Species.

The four common species (Slow Worm, Adder, Grass Snake and Common (Viviparous) Lizard) are protected from deliberate killing, injury and trade.

All six native reptiles are listed as species “of principal importance for the purpose of conserving biodiversity”.

There is some low potential for common reptile species such as Slow Worm to be active within the stonewalls, hedgerows and woodland that are associated with the Site. The presence of numerous waterbodies may also provide foraging habitat for Grass Snake.

As these semi-natural habitats are generally in existence at the margins of the Site, it is considered unlikely that they would be lost to the development, which will occupy the open field compartments. The loss of agricultural habitats to the development is therefore unlikely to impact local reptile populations.

However, site clearance or construction activities could result in the killing or injury of individuals which may be deemed an offence under the Wildlife and Countryside Act 1981 (as amended). If clearance activities are to impact any hedgerows, stone walls or rough vegetation, mitigation may be required.

4.4. Invasive Non-native Species

Invasive non-native plant species are listed on Schedule 9 of the Wildlife & Countryside Act and it is an offence to spread or to cause the spread of these species in the wild.

Japanese Knotweed is present within some limited sections of hedgerow within Area 4, as well as tall ruderal vegetation within Area 2. Mitigation is therefore recommended.

4.5. Non-statutory Nature Conservation Sites

Kirless Wood LWS is located approximately 1km to the southeast of the Site. Due to separation distance and lack of defined impact pathways, it is extremely unlikely that the proposed development would adversely impact the species and habitats for which this site has been selected. No mitigation is required.

4.6. Statutory Nature Conservation Sites

Denby Grange Colliery Ponds SSSI/SAC is located approximately 2km to the southeast of the Site. The proposed development would not lead to loss or damage of any of the habitats associated with this designation, while it also will not impact any of the amphibian populations for which it has been selected, or any other species. No mitigation is required.

Natural England has assessed the potential for various development types to impact nearby statutory nature conservation sites when they created SSSI Impact Risk Zones. The proposed development type is not of a type that Natural England judges to be a risk to statutory nature conservation sites. No mitigation is required and there is no requirement to consult Natural England on the potential impact on these sites.

The potential for adverse effects on statutory nature conservation sites does not need to be considered further.

5. Recommendations for mitigation and further surveys

5.1. Mitigation

Where there is potential that the proposed development will have a significant¹ effect on a valued ecological feature of nature conservation interest, recommendations for mitigation are made based on the mitigation hierarchy suggested in Paragraph: 018 Reference ID: 8-018-20140306 of National Planning Practice Guidance;

Avoidance –significant harm to wildlife species and habitats should be avoided through design.

Mitigation – where significant harm cannot be wholly or partially avoided, it should be minimised by design, or by the use of effective mitigation measures that can be secured by, for example, conditions or planning obligations.

Compensation – where, despite whatever mitigation would be effective, there would still be significant residual harm, as a last resort, this should be properly compensated for by measures to provide for an equivalent value of biodiversity.

Where the detail of a proposal is unknown, such as in outline planning applications, general mitigation will be suggested. This should be re-addressed once final plans are known.

Further survey work

Where further survey work is not recommended, this is because it is the professional judgement of the ecologist that adequate information is already available and further surveys would not make any material difference to the assessment provided.

Where the information within this report is insufficient to allow a full description of the nature conservation features of the site along with a robust assessment of the potential effects on these features, further survey work will be recommended.

5.2. Habitats of nature conservation importance

Native hedgerow

Current plans do not indicate the loss of any hedgerow habitat. All hedgerows should be protected from accidental damage during the construction phase by a suitable buffer zone of 5 metres. This protection zone should be delineated by a suitable fence and maintained for the duration of the works, and there should be no access, storage of materials, ground disturbance, burning or contamination within the fenced areas. These buffers should be retained and remain undeveloped for the operational period of the development.

If plans change, and any hedgerow removal is required, mitigation should involve the replanting of at least an equal extent of hedgerow using a native species mix.

¹ For the purposes of this report, a practical approach has been taken to define the term 'significant'. If an effect is sufficiently important to be given weight in the planning process or to warrant the imposition of a planning condition, it is likely to be 'significant' in the context of the level under consideration (BSI, 2013).

Semi-natural broadleaved woodland

Current plans do not indicate the loss of any woodland habitat. All woodland habitat should be protected from accidental damage during the construction phase by a suitable buffer zone informed by the arboricultural survey. This protection zone should be delineated by a suitable fence and maintained for the duration of the works, and there should be no access, storage of materials, ground disturbance, burning or contamination within the fenced areas. These buffers should be retained undeveloped for the operational period of the development.

5.3. Protected species and species of nature conservation importance

To ensure compliance with nature conservation legislation and planning policy, the following recommendations are made with regards to species:

Amphibians

There is unknown potential for Great Crested Newt to be utilise aquatic and terrestrial habitats associated with the Site. Presence/absence surveys should be completed to allow informed mitigation.

Badgers & Hedgehogs

There is potential that Badgers and or Hedgehogs may become trapped within site during the construction and operation phases. To prevent this, the following is recommended:

- Site fencing along the boundaries should leave a gap of at least 5 metres wide between the fence and any woodland, hedgerow or wall boundary;
- Any trenches left open at night should have some means of escape for Badgers, such as the placement of a scaffolding board at one end;
- Any security fences should have a gap at each corner sufficient to allow Badgers to exit the Site should they gain entry.

There is also potential for security fencing associated with the completed development to restrict movement across the Site. To prevent this from happening, bucket scrapes providing a 30cm gap beneath permanent fencing should be made to allow Badgers and other mammals to continue to use the Site during the operational phase.

Bats

Roosting

Individual mature trees associated with hedgerows and field compartments provide an unknown potential for roosting bats. If plans show any of these trees are to be managed in relation to the proposed development, an inspection of the trees by a suitably qualified and licensed ecologist will be required prior to the commencement of works. If any evidence of bats is found, further surveys may be required.

Birds

The footprint of the proposed development largely concerns the arable and improved grassland field compartments, which have some limited potential for ground nesting species such as Skylark. To prevent the risk of damaging or destroying any potentially active nests within the field compartments, if works will take place during the accepted nesting season

(from March to August inclusive) ground nesting bird surveys should be completed prior to any construction activities within these areas. The ground nesting bird surveys will need to be completed by a suitable experienced Ecological Clerk or Works (ECoW). If ground nesting birds are detected, works in that area will need to stop until birds have fledged. The buffer to the nest will depend on the species present and will be decided by the ECoW.

Potential bird nesting habitats associated with field boundaries such as hedgerows, stone walls and woodland that will not be directly impacted by the development should be protected from accidental damage during the construction phase by a suitable buffer zone (see 5.2 above). If construction activities are also likely to impact any of these areas during the nesting season, a pre-works nesting bird survey of these areas will also be required.

Reptiles

Habitats such as hedgerows, stone walls and woodland provide low suitability for common reptiles such as Slow Worm and Grass Snake. It is not anticipated that these areas will be lost to the development, however, site preparation may involve clearance of a limited extent of some of these habitats. Any risk of harm or injury to individuals during construction can be avoided through the implementation of the 2 metre protection zone for hedgerows and woodland (as detailed in Section 5.2), as well as the adoption of Reasonable Avoidance Measures (RAMS). By adopting sympathetic clearance methods, any adverse impact to reptiles within these habitats can be avoided.

It is preferable to undertake clearance works during the period September to October inclusive, a time when nesting birds are absent, while reptiles are still active and able to disperse freely.

Clearance in period late March to October

If any woodland/hedgerow/stone wall clearance is to occur during the active reptile season (late March to October) areas to be affected by construction activities, should first be checked for the presence of any active birds' nests, by a suitably qualified person. Areas which do not support any active birds should then be de-vegetated prior to any site activities under the supervision of a suitably qualified ecologist, as detailed below.

Vegetation should initially be cut to a height of no more than 10cm and work in a direction towards retained habitat. This will encourage any reptiles to disperse naturally. After at least 48hrs, a second cut will be made as close to ground level as possible. This should ensure that any reptiles, if present, are displaced from the construction site. Once cleared, vegetation within the works area should be maintained below 10cm for the duration of the works to prevent attracting reptiles back into the area.

Construction during the period November to mid-March:

Clearance of areas that may provide hibernacula (such as logs, wood piles, debris piles) should be avoided during these periods as there is unknown potential for hibernating reptiles to be present. If this is planned but unavoidable, it is recommended that vegetation is cut back to bank level during September and October and kept close-managed to deter hibernating reptiles.

5.4. Invasive Non-native Species

Japanese Knotweed is growing within hedgerows in Area 4 and in a margin of tall ruderal vegetation in Area 2. A Japanese Knotweed management plan should be developed which should manage risks involved with the construction and operational phases of the development and include a scheme of treatment which would need to be informed by a survey mapping its precise extent.

6. Further survey work

Information within this report is sufficient to allow a robust assessment of the potential effects on the majority of ecological features associated, or potentially associated, with this site.

However, it is recommended that the following species/group specific surveys are completed to ensure compliance with wildlife legislation and relevant planning policy:

Great Crested Newt

Environmental DNA (eDNA) surveys should be completed on all suitable ponds within 500 metres.

Bats

If mature trees are to be managed, an inspection by a suitably qualified and licensed bat ecologist will be required prior to the commencement of works. If any evidence of bats is found, further surveys may be required.

Birds

If site construction is likely to impact potential bird nesting habitats in the period March to August, these habitats should be thoroughly inspected, prior to the start of work, for nesting birds by a suitably qualified person. If nesting birds are found, all activities likely to damage or disturb the nesting area should be delayed until chicks have fledged.

No other survey work is recommended for this site.

7. References

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Appendix 1:

Legislation and Policy used to assess habitats and species:

European Habitats and Species Directive (CEC, 1992)

The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

European Red Data lists (IUCN, 2000)

International Union for Conservation of Nature (IUCN and the European Commission have been working together on an initiative to assess around 6,000 European species according to IUCN regional Red Listing Guidelines. Through this process they have produced a European Red List identifying those species which are threatened with extinction at the European level so that appropriate conservation action can be taken to improve their status.

European Council Birds Directive (CEC, 1979)

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. An important part of this Directive is the identification and classification of Special Protected Areas (SPAs) to protected vulnerable bird species listed in Annex 1 of the Directive and regularly occurring migrating species.

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

This Act is the primary legislation that protects animals, plants and certain habitats in the UK.

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 consolidate and update the Conservation of Habitats and Species Regulations 2010, and transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and elements of Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”) in England, Wales, and to limited extent, Scotland and Northern Ireland.

The objectives of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species. These sites form a network termed Natura 2000 and include Special Areas of Conservation and Special Protection Areas.

Protection of Badgers Act 1992

The Protection of Badgers Act 1992 consolidated and improved previous legislation. Under the Act it is an offence to kill, injure or take a Badger, or to damage or interfere with a sett used by a Badger unless a licence is obtained from a statutory authority.

The Hedgerow Regulations 1997

The Hedgerows Regulations 1997 protect certain hedgerows from being removed (uprooted or destroyed) if they meet certain criteria.

The Countryside and Rights of Way (CROW) Act 2000

This Act increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

Circular 06/2005 Biodiversity and geological conservation – statutory obligations and their impact within the planning system

This circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It complements the national planning policy in the National Planning Policy Framework and the Planning Practice Guidance.

Natural Environment and Rural Communities Act 2006

The Act made amendments to the both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way (CROW) Act 2000. For example, it extended the CROW biodiversity duty to public bodies and statutory undertakers.

UK Post-2010 Biodiversity Framework, 2012

The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach', and is the result of a change in strategic thinking.

National Planning Policy Framework, 2019

The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied. It contains a number of policies relating to ecology including "minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures".

The natural choice: securing the value of nature (2011) (Natural Environment White Paper)

This White Paper outlines the Governments vision for the future of landscape and ecosystem services.

Biodiversity 2020

This is a national strategy for England's wildlife and ecosystem services based on the White Paper.

Appendix 2:



Image 1. Improved grassland habitat in Area 3



Image 2. Adjacent woodland habitat and tall ruderal margin in Area 3



Image 3. Improved grassland, with tall ruderal margin (containing JPK)



Image 4. Arable cereal crops in Area 2



Image 5. Stone wall with associated ruderal vegetation



Image 6. Stone wall with occasional mature trees



Image 7. Tall ruderal margins at field boundaries



Image 8. Stone wall with occasional shrubs and margin of rough grasses



Image 9. Pond A



Image 10. Semi-natural broadleaved woodland within Area 1



Image 11. Scattered trees in Area 1



Image 12. Arable cereal crop in Area 1



Image 13. Bare ground associated with arable crop in Area 1



Image 14. Pond B



Image 15. JPK in Area 4



Image 16. Closely managed hedgerows in Area 4



Image 17. P.O.C site (looking into N field compartment from road)



Image 18. P.O.C site (looking across S field compartment)