

Ecological Impact Assessment
Low Farm, Grange Moor, Wakefield,
West Yorkshire
April 2022

A report by

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Report details

Site name: Low Farm
Site address: Low Farm, Wakefield Road, Grange Moor, Wakefield, West Yorks
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Grid reference: SE 246 161
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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 the supporting surveys.

Revisions

Date	Report no:	Comment
02/03/2022	WOR 2786.1	Initial draft
17/03/2022	WOR 2786.2	Following input from client
20/04/2022	WOR 2786.3	Taking account of assessment of trees to be removed

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1. Introduction

1.1. Background

Western Ecology has been commissioned to complete an Ecological Impact Assessment in relation to a proposed solar PV farm at Low Farm in West Yorkshire.

1.2. Purpose of this report

A preliminary ecological appraisal of the solar farm was completed in June 2021 along with a great crested newt assessment for all accessible waterbodies within 500 metres.

An assessment of two individual trees and a small group of trees to be removed was completed in March 2022.

This report presents the ecological information relating to valued ecological receptors obtained during those surveys and the desk-study, assesses the significance of the effects of the proposed development on these features, and sets out proposed mitigation measures.

This report also assesses the effect of changes in habitat management associated with the development.

This report is intended to be used to inform consultees of the potential ecological impacts and proposed mitigation in relation to this development.

1.3. 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 point of connection for the cable route is located approximately 3km to the east of Low farm, at the western edge of the village of Horbury Bridge.

2. Assessment methodology

2.1. Development site and Zone of Influence

The Development Site is shown on Map 1, Appendix 1 and includes all areas within the planning application boundary and any immediately adjacent areas that may be affected by the proposed development.

The Zone of Influence for the purpose of this assessment is immediate habitats that will be potentially impacted by these proposals and designated sites within the local landscape.

Records for notable species were searched for within 2km as most species likely to be active here (other than birds) will have a restricted range.

Waterbodies within 500 metres were assessed for their potential to support great crested newt with eDNA sampling being completed on suitable targets.

3.2. Ecological baseline

The ecological baseline for the development site is the ecological surveys completed in June 2021.

3.3. Site surveys

Preliminary Ecological Appraisal

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 the report. Plant species were identified according to Stace (1997).

Great crested newt assessment

All accessible waterbodies within 500 metres of the site were evaluated for their potential to support Great Crested Newt by calculating a habitat suitability index (HSI) as per ARG UK Advice Note 5.

Water samples were taken from waterbodies for GCN eDNA testing that were considered to have sufficient suitability to support GCN, based on HSI score and professional judgement.

The eDNA sampling kits were supplied by SureScreen Scientifics and the survey methodology followed the Natural England protocol¹.

For each water body, 20 samples of 30 ml each were collected from the edge of the waterbody by a suitably licenced and qualified ecologist. These samples were then mixed after which 15ml was withdrawn and added to each of six tubes containing a preservative. Six tubes from each waterbody were sent for analysis by SureScreen Scientifics.

Desktop survey

The 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:

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

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 proposed planned 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.

Assessment of trees for roosting bats

An assessment of trees to be removed was provided by Colin Hicks, an ecologist with 23 years professional experience, a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and holder of a Class 2 licence in relation to bats (Licence no: 2015-15857-CLS-CLS) which permits the surveying and handling of bats.

¹ Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

The trees were assessed from ground level with the aid of torches, endoscope and close-focus binoculars.

Each tree has been assigned a Category based on BS8596:2015 *Surveying for bats in trees and woodland – Guide*:

1. Known or confirmed roost.
2. High/medium risk - Trees with a suitable Potential Roosting Features (PRF), or with several features with some bat roost potential.
3. Low risk – Trees of sufficient size and age to contain bat roosts but with no obvious PRFs seen during the scoping survey, or features seen with limited roosting potential only, e.g. small amounts of ivy
4. Negligible/no risk - Trees with apparently no potential to support bats

The assessment was made on 28th March 2022. Weather conditions were dry, overcast, moderate wind and 6°C.

3.4. Limitations

All areas of the assessment site were readily accessible during surveys. However, it must be realized that surveys only provide a snapshot of a site at a given time.

Although some plant species would have not been visible during the preliminary ecological appraisal, this is not considered a significant constraint.

3.5. Impact assessment method

The assessment of impacts has been carried out in accordance with the principles described by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018²).

The ecological feature or resource that is affected by an impact is referred to as the receptor. Impacts are considered in terms of the value of the receptor in the context of nature conservation, and the character of the impact. From these the significance of the impact is determined.

As part of the impact assessment the available means to avoid, minimise or mitigate for adverse impacts are incorporated into the design, so that the final impact assessment identifies the residual (net) impacts that are predicted. The consequences for development control, policy guidance and legislative compliance can then be identified.

3.6. Method for valuation of receptors

The ecological value of habitats present is provided in line with Guidelines for Ecological Impact Assessment (CIEEM, 2018), and those which are important in terms of legislation or

² CIEEM, 2018. *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Technical Guidance Series*. Chartered Institute of Ecology and Environmental Management, 43 Southgate Street, Winchester, Hampshire.

policy are identified. Table 1 summarises this information and details the extent of each habitat recorded here.

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.

3.7. Impact Assessment Criteria

The assessment of potential impacts arising due to the development considers on-site impacts (i.e. within the footprint of the works) and those that may occur to adjacent and more distant ecological features.

Potential effects on valued receptors, adverse or positive, are identified for both the construction and operational phases. The effects are then assessed and characterised according to the following criteria:

- Direction (positive, adverse, or neutral)
- Magnitude of impact
- Spatial extent over which the impact would occur
- The temporal duration of the impact
- Permanence
- Frequency and timing
- Potential for cumulative effects.

The assessment identifies any information gaps and any uncertainties that may be material in the confidence of predicting effects. Confidence in predictions is given as:

- Certain/near-Certain: probability estimated at 95% chance or higher.
- Probable: probability estimated above 50% but below 95%.
- Unlikely: probability estimated above 5% but less than 50%.
- Extremely Unlikely: probability estimated at less than 5%.

The precautionary principle is applied whenever there is substantial doubt. The impact timescale is given as:

- Acute, immediate, and discrete;
- Short-term: 0-3 years;
- Medium term 3-10 years; and
- Long term: 10 years +.

Effects include, but are not restricted to:

- loss or change of habitat;
- disturbance during construction, operation, and decommissioning;
- chemical effects from airborne pollutants
- contravention of legal status or protection (including where the receptor would not meet or exceed the value threshold).

For the purposes of this assessment the significance of the effect is determined using the matrix in Table 1 where the scale of the effect is measured against the value of the receptor.

Ecologically significant impact is defined as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area. For the purposes of this assessment the effects that are identified in red shaded cells are significant.

Table 1. Matrix for assessment of significance of effect

Scale of effect	Evaluation of nature conservation receptor				
	Very high/ International	High/ national	Medium/ regional	Low/ local	Negligible/site only
Major positive effect	Large positive	Large positive	Large positive	Large positive	Large positive
Intermediate positive effect	Moderate positive	Moderate positive	Moderate positive	Moderate positive	Moderate positive
Minor positive effect	Slight positive	Slight positive	Slight positive	Slight positive	Slight positive
Neutral	None	None	None	None	None
Minor negative effect	Slight adverse	Slight adverse	Slight adverse	Slight adverse	None
Intermediate negative effect	Large adverse	Large adverse	Moderate adverse	Slight adverse	None
Major negative effect	Very large adverse	Very large adverse	Large or moderate adverse	Slight adverse	None

European Protected Sites– definition of significance of effect

For a European Protected Site the integrity of a site is:

‘the coherence of the ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.’

Disturbance should not have a significant effect on the integrity of a European Protected Site.

3.8. Mitigation

Where there is potential that the proposed development will have a significant 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.

4. Legislation and Policy used to assess ecological receptors

4.1. Planning policy

National Planning Policy Framework, 2021

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".

Section 15 Conserving and enhancing the natural environment includes the following:

- 174. Planning policies and decisions should contribute to and enhance the natural and local environment by:
 - a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
 - b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
 - c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
 - d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
 - e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
 - f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.
- 175. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework⁵³; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.
- 180. When determining planning applications, local planning authorities should apply the following principles:
 - a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity

[National Planning Practice Guidance 2014](#)

This online resource provides guidance on the Natural Environment and its place with the planning process, including:

- The statutory basis through which planning should seek to minimise impacts on biodiversity and provide net gains in biodiversity where possible.
- How local planning authorities should set about planning for biodiversity and geodiversity.
- Information on ecological networks
- Evidence based ecology
- The legal obligations on local planning authorities and developers regarding European sites designated under the Birds or Habitats Directives, protected species and Sites of Special Scientific Interest
- Why Local Sites are important
- Taking ecosystems services into account in planning
- Nature Improvement Areas
- Taking biodiversity into account in preparing a planning application
- How development can protect and enhance biodiversity
- What questions should be considered in applying policy to avoid, mitigate or compensate for significant harm to biodiversity
- Ensuring mitigation or compensation measures can be delivered where significant harm to biodiversity is unavoidable.

[Kirklees Local Plan adopted 27 February 2019](#)

Policy LP30

Biodiversity and geodiversity

The council will seek to protect and enhance the biodiversity and geodiversity of Kirklees, including the range of international, national and locally designated wildlife and geological sites, Habitats and Species of Principal Importance and the Kirklees Wildlife Habitat Network.

South Pennine Moors

Proposals which may directly or indirectly compromise achieving the conservation objectives of a designated or candidate European protected site will not be permitted unless the proposal meets the conditions specified in Article 6 (3) - (4) of the Habitats Directive.

Statutory Designated Sites

Statutory designated sites, including the South Pennine Moors Special Protection Area (SPA) and Special Area for Conservation (SAC) and Sites of Special Scientific Interest, are already highly protected through existing laws and legislation. In accordance with legislation, the Council will seek to ensure that harmful impacts to these areas as a result of development proposals are avoided. Development proposed within or outside a designated Site of Special Scientific Interest, likely to have an adverse effect on the site's special nature conservation features, will not normally be permitted. Exceptionally development will be allowed where the benefits of the development clearly outweigh the impacts on the site's special conservation features and measures are provided to mitigate harmful impacts.

The Dark Peak Nature Improvement

Area Proposals that contribute to the aims and objectives of the Dark Peak Nature Improvement Area will in principle be supported, subject to other policies in this plan. Development likely to have an adverse impact on the aims and objectives of the NIA will not be permitted.

Local Designated Sites & Important Local Ecological Features

Proposals having a direct or indirect adverse effect on a Local Wildlife Site or Local Geological Site, Ancient Woodland, Veteran Tree or other important tree, will not be permitted unless the benefits of the development can be clearly shown to outweigh the need to safeguard the local conservation value of the site or feature and there is no alternative means to deliver the proposal. In all cases, full compensatory measures would be required and secured in the long term.

Habitats and Species of Principal Importance

Proposals will be required to protect Habitats and Species of Principal Importance unless the benefits of the development clearly outweigh the importance of the biodiversity interest, in which case long term compensatory measures will need to be secured.

Biodiversity and Development

Development proposals will be required to:

- i. result in no significant loss or harm to biodiversity in Kirklees through avoidance, adequate mitigation or, as a last resort, compensatory measures secured through the establishment of a legally binding agreement;
- ii. minimise impact on biodiversity and provide net biodiversity gains through good design by incorporating biodiversity enhancements and habitat creation where opportunities exist;
- iii. safeguard and enhance the function and connectivity of the Kirklees Wildlife Habitat Network at a local and wider landscape-scale unless the loss of the site and its functional role within the network can be fully maintained or compensated for in the long term;

- iv. establish additional ecological links to the Kirklees Wildlife Habitat Network where opportunities exist; and
- v. incorporate biodiversity enhancement measures to reflect the priority habitats and species identified for the relevant Kirklees Biodiversity Opportunity Zone
 - i. ensure that resources are made available for the future enhancement and management of the replacement habitat or feature to enable it to attain the quality and attributes that have been lost

4.2. Nature Conservation Legislation

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.

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. This includes the designation and protection of some of the best areas of natural environmental as Sites of Special Scientific Interest (SSSI).

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

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 (SAC) and Special Protection Areas (SPA).

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.

4.3. Biodiversity strategies

[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.

[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.

[County Level](#)

The Kirklees Biodiversity Action Plan identifies the local habitats and species of principal importance (also known as priority habitats and species). These are the species and habitats taken from the UK National Biodiversity Action Plan that occur in Kirklees or those that are of sub-regional importance. These habitats and species have individual action plans that enable us to prioritise biodiversity work in the district.

The Kirklees Biodiversity Strategy outlines the approach to meeting the targets for Habitats and Species of Principal Importance as set out in the Kirklees Biodiversity Action Plan.

[Local Wildlife Sites](#)

These are not statutory designation like SSSIs, and they do not have any legal status. The National Planning Policy framework (NPPF) requires local authorities to identify and map locally designated sites of biodiversity importance (such as Local Wildlife Sites) as part of the Local Plan process and to draw up criteria based policies against which proposals for development affecting them will be judged. LWS recognition does not demand any particular actions on the part of the Landowner and does not give the public rights of access. However, it may increase eligibility for land management grants.

5. Ecological baseline

5.1. Desktop Study

Statutory nature conservation sites

The solar farm site does not lie within or immediately adjacent to a statutory designated nature conservation site.

Denby Grange Colliery Ponds SSSI which was designated for its regionally significant populations of Great Crested Newt is located 2km to the south east.

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

Receptor value: Denby Grange Colliery Ponds SSSI is of National importance.

This site underpins Denby Grange Colliery Ponds SAC, a Natura 2000 site selected for Great Crested Newt.

Receptor value: Denby Grange Colliery Ponds SAC is of European importance.

Non-Statutory nature conservation sites

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

Receptor value: Kirklees Wood LWS is of County importance.

Records of notable Species

The biological records search found a number 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.

Table 2. Biological records of notable species within 2km

Taxon	Species	Number of records	Comment
Amphibians	Common Toad	5	UK and Local BAP species
	Common Frog	4	Local BAP species
	Great Crested Newt	12	No records from this site, although there are records from 2006 and 2007 within a pond associated with the mining museum. UK and Local BAP species. WCA Schedule 5 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

5.2. The need for an appropriate assessment

An appropriate assessment is required by Regulation 48 of the Habitats Regulations 1994 implementing Article 6(3) of the Habitats Directive (92/43/EEC) in the event that it is considered a plan or project, not connected with the management of that site, is likely to have a 'significant effect' on any European (Natura) site, i.e. Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites.

The purpose of appropriate assessment is to ensure that protection of the integrity of European sites is a part of the planning process at a regional and local level. Permission can only be granted if it can be ascertained that the plan or project will not affect the integrity of the European site.

It is appropriate to use the information assembled for this EcIA when carrying out the appropriate assessment under the Habitats Regulations.

The site is not within a SSSI impact zone for a designated site that underpins a Natura 2000 designation. An appropriate assessment is not required.

5.3. Phase 1 habitats

Habitats within the development along with an assessment of their biodiversity value are given in Table 3. Habitat maps are provided in Appendix I.

Table 3. Habitats within the development

Habitat	Description	Receptor value
Arable	Arable habitats were common 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 within the solar farm footprint and the point of connection (POC) area, 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.	Negligible

	The grassland in some areas 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.	
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 present. 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 single field compartment, 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 4 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 some field compartments. 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

5.4. Great Crested Newt (GCN) assessment

GCN Habitat Suitability Index (HSI) scores were calculated for all of the ponds within 500m and that were accessible, based on ARG UK Advice Note 5. 13 ponds were surveyed, while 2 ponds were not accessible.

There are five ponds located within or immediately adjacent to the Site boundaries (Ponds A-E) and a further 10 ponds located beyond the boundaries of the Site (Ponds 1-10). A map of pond locations is provided in Appendix 1.

Great Crested Newt Habitat Suitability Index (HSI) has been calculated for all ponds. Details are contained within Table 1 below.

Table 4. HSI of ponds

Pond Number	HSI score and suitability	Comments
Pond A	0.76 – good	
Pond B	0.52 – below average	Historic fishing lake. Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity.
Pond C	0.69 – average	
Pond D	0.52 – below average	Historic fishing lake. Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity
Pond E	0.76 – good	
Pond 1	No access	Scoped out of further surveys
Pond 2	No access	Scoped out of further surveys
Pond 3	0.52 – below average	Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity.
Pond 4	0.52 – below average	Scoped in for further survey due to presence of good terrestrial habitat and other ponds in close vicinity
Pond 5	<0.4 - poor	Low score due to poor water quality from acid mine drainage (used as settling bed for mine drainage). Scoped out of further surveys.
Pond 6	0.76 - good	Reedbed area for mine drainage
Pond 7	<0.4 - poor	Used as settling tank for mine drainage. Scoped out of further surveys
Pond 8	<0.4 - poor	Used as settling tank for mine drainage. Scoped out of further surveys
Pond 9	0.56 – below average	Scoped in to further surveys
Pond 10	N/A – pond has been filled in and no longer in existence	Scoped out of further surveys

eDNA surveys were completed on Ponds A, B, C, D, E, 3, 4, 6 & 9 on 25th June 2021. Subsequent samples were received at the laboratory on 30th June and results reported on 13th July.

Analysis was successfully completed on all of the samples from the ponds surveyed. All ponds returned a Negative result for GCN eDNA.

There are historic records of GCN associated with ponds at the National Coal Mining Museum in 2007. These ponds have been included in this assessment, either being scoped

out due to extremely low water quality (Ponds 5, 7 & 8) or returning negative eDNA results (Pond A and 6).

Based on these survey results it is clear that a population of GCN that were recorded here in 2007 are no longer associated with the museum site. The reason for this is unknown but may be associated with changes in the local environment such as accidental introduction of fish, changes in water quality or changes in nearby habitat management affecting the local meta-population.

It is reasonable to conclude that GCN are not associated with this proposed development.

Receptor value: The Site is of negligible value for great crested newt.

5.5. Other species of nature conservation importance

Habitats have been assessed from the results of the field survey for their potential to support the following protected species. 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 other species of nature conservation importance

Species	Assessment	Receptor value
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.	Local Site
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 woodland providing suitable nesting habitat. The majority arable habitats are autumn/winter sown cereals which are unsuitable for ground nesting birds as the crop becomes too tall and dense early in the nesting season. The improved grassland habitats provide limited opportunities for ground nesting bird species, but due to intensive management they are unlikely to successfully fledge young before the first silage cut, or if grazed the sward will be too low for nesting and trampling becomes an issue. These agricultural management practices are the main driver for recent declines in ground nesting birds in the UK, and this includes Skylark.	Site (scrub nesting) Negligible (ground nesting)
Brown Hare	Several individual animals were observed during the survey, and it is likely the arable and grassland habitats provide some foraging opportunities.	Site

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.	Site
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 at the margin of fields.	Site
Otter	No suitable water bodies/courses associated with the Site.	Negligible
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. 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.	Present

Assessment of trees for roosting bats

The tree survey identified two individual trees and a small group of trees for removal as follows:

- T7 – Sycamore
- T22 – Sycamore
- G4 – Elm, elder and hawthorn

T7 is an early mature sycamore, 12 metres in height with evidence of previous branch removal on the main stem. None of these removals have resulted in features suitable for roosting bats and the tree is assessed as being Negligible/no risk for roosting bats.

T22 is a multi-stem semi mature sycamore, 8 metres in height with no evidence of previous management. The stems are small with no features suitable for roosting bats and the tree is assessed as being Negligible/no risk for roosting bats.

G4 is a small group of semi-mature elm, hawthorn and elder, none of which have features suitable for roosting bats and the group is assessed as being Negligible/no risk for roosting bats.

These trees can be removed with negligible risk to roosting bats, and with no further surveys required.

The ecological receptors to be considered for significant effects are given in Table 6. These are of local or higher value; those ecological receptors that have less than local value are not considered further unless they are European Protected Species and there is potential for them to be present (in which case the regulatory context i.e. the Habitats Regulations 2010 is considered), or they are the subject of national legislation (i.e. Wildlife and Countryside Act 1981).

Table 6. Table of ecological receptors to be considered for significant effects

Receptor	Relevant legislation/policy	Value
Denby Grange Colliery Ponds SAC	Conservation of Habitats and Species Regulations (2017)	European
Denby Grange Colliery Ponds SSSI	Wildlife and Countryside Act 1981	National
Kirklees Wood LWS	Local Plan	County
Native hedgerows	Habitat of Principal Importance, LBAP	Local
Semi-natural broadleaved woodland	Habitat of Principal Importance, LBAP	Local
Bats	European Protected Species, Species of Principal Importance	Local
Breeding birds	Wildlife and Countryside Act 1981, Priority BAP species	Site
Brown hare	Species of Principal Importance	Site
Reptiles	Wildlife and Countryside Act 1981, Priority BAP species	Site
Invasive non-native species (Japanese Knotweed)	Wildlife and Countryside Act 1981	Present

6. Assessment of ecological impacts

6.1. The development

The Solar Park consist of photovoltaic (PV) panels, ancillary infrastructure and equipment, landscaping and access.

6.2. Construction phase impacts

During the construction phase, there is predictable adverse effects which are generally unavoidable; many are short term and can be minimised as part of the construction management, but some have the potential for more lasting effect.

The potential for adverse effects are largely short term impacts associated with noise and vibration, airborne and waterborne, pollutants, short term habitat loss or disturbance. The potential for adverse impacts would be minimised as far as possible through the application of good practice techniques and adherence to well-designed method statements; these would be managed through a Construction Environmental Management Plan (CEMP).

Statutory nature conservation sites

Adverse effect can be discounted for Denby Grange Colliery Ponds SAC and SSSI due to separation distance resulting in no realistic pathway of effect on their interest features. This assessment is supported by the fact that the proposed development is not within a SSSI impact zone for this type of development.

Assessment: It is near-certain that construction would have a negligible impact on statutory nature conservations sites.

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

Assessment: It is near-certain that construction would have a negligible impact on non-statutory nature conservations sites.

Valued habitats of the Assessment Site

Native hedgerow

The primary pathway of effect would be accidental damage due to vehicle movements, pollution and material storage, damage during installation of the solar panels, or damage during construction any cable routes.

Assessment: It is likely that unmitigated construction would have a negligible effect on hedgerow habitat. If an effect were to occur, it would likely be associated with accidental damage and would be minor, short term adverse.

Semi-natural broadleaved woodland

The primary pathway of effect would be accidental damage due to vehicle movements, pollution and material storage, or damage during installation of the solar panels or any cable routes.

Assessment: It is likely that unmitigated construction would have a negligible effect on woodland habitat. If an effect were to occur, it would likely be associated with accidental damage and would be minor, short term adverse.

Bats

Trees and woodland along the field boundaries are likely to be Local value for roosting bats, whilst the development site is of Site value for foraging and commuting bats.

The primary pathway of effect would be through impacts to broadleaved trees, and habitat features used by foraging bats, such as direct habitat loss and damage. There will be a short-term loss in arable habitat associated with construction due to storage areas/compounds, although these habitats are of little value for bats.

No night-time works are planned during the construction phase and mature trees will be retained. Short term disturbance to grassland habitats is unlikely to affect local bat populations.

Assessment: Construction is near certain to have a negligible effect on roosting, foraging and commuting bats.

Birds

Hedgerows associated with the proposed development are of Site value for nesting birds whilst arable habitats provide negligible opportunities for ground nesting birds.

The primary pathway of effect would be through accidental damage to hedgerows and disturbance/damage to nests and harm to chicks during construction.

Assessment: It is probable that unmitigated construction would have a minor, short term adverse effect on nesting birds.

There is potential to impact birds in a way that could be considered an offence under relevant wildlife legislation.

Brown Hare

The application site is of Site value for Brown Hare.

The primary pathway of effect would be through disturbance during the construction phase. However, these animals exist in a modern agricultural landscape which is regularly managed.

Assessment: Unmitigated construction is near certain to have a negligible effect on Brown Hare. If an effect were to occur, it would be short-term, minor adverse.

Reptiles

There is 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.

Construction would not result in the loss of these habitats, although there is potential for accidental damage.

Assessment: It is likely that unmitigated construction would have a negligible effect on reptiles. If an effect were to occur, it would likely be associated with accidental damage to boundary habitats and would be minor, short term adverse.

There is potential to impact reptiles in a way that could be considered an offence under relevant wildlife legislation.

Invasive non-native species

Japanese Knotweed is present within some limited sections of hedgerow as well as tall ruderal vegetation.

There is potential for construction to cause the spread of this plant across the site and beyond.

Assessment: It is probable that unmitigated construction would cause the spread of this plant. If an effect were to occur, it would be minor, medium term, adverse.

There is potential for an offence under relevant wildlife legislation if construction causes the spread of this species in the wild.

6.3. Operational phase impacts

Overview

During the operational phase, effects may arise from the following activities within the solar farm:

- Maintenance;

- changes in land-management: these can be positive, associated with changes in agricultural practices.
- loss of habitat, habitat fragmentation and disturbance to valued receptors.
- additional habitat creation.

Statutory nature conservation sites

Adverse effect can be discounted for all statutory nature conservation sites due to separation distance resulting in no realistic pathway of effect on their interest features during the operational phase.

Non-statutory nature conservation sites

Adverse effect can be discounted for all non-statutory nature conservation sites due to separation distance resulting in no realistic pathway of effect on their interest features during the operational phase.

Valued habitats of the Assessment Site

Native hedgerow

The primary pathway of effect would be through permanent habitat loss. No habitat loss is predicted within the solar farm.

Assessment: It is near certain that operational impacts would have a negligible effect on hedgerow habitat.

Semi-natural broadleaved woodland

There will be no loss of woodland habitat and a realistic, ecological pathway of effect does not exist for the operational phase.

Assessment: It is near certain that the operational impacts would have a negligible effect on woodland habitat.

Protected and notable species

Bats

Trees and woodland along the field boundaries are likely to be Local value for roosting bats, whilst the development site is of Site value for foraging and commuting bats.

The primary pathway of effect would be through impacts to habitat features used by foraging bats, such as direct habitat loss or changes in management.

Mature broadleaved trees will be retained and the solar farm development will result in the creation of permanent grassland habitat that is currently in arable rotation. Pastoral grazing of habitats beneath panels is likely to improve its value for foraging bats.

No potential roosting habitats will be affected and there is negligible potential for disturbance, direct harm or injury.

Assessment: Changes in land management make it is near-certain that the development will have a minor positive effect on this receptor for the period of its operation.

Birds

Hedgerows associated with the proposed development are of Site value for nesting birds whilst arable habitats provide negligible opportunities for ground nesting birds.

The primary pathway of effect would be associated with disturbance or destruction of nests during maintenance within the solar farm, and increased food items associated with changes in land management

Assessment: Changes in land management make it is near-certain that the development will have a minor positive effect on this receptor for the period of its operation.

There is potential to impact birds during unmitigated management in a way that could be considered an offence under relevant wildlife legislation.

Brown Hare

The application site is of Site value for Brown Hare.

The primary pathway of effect would be improved habitat quality through provision of shelter and reduced agricultural management.

Assessment: Changes in land management make it is near-certain that the development will have a minor positive effect on this receptor for the period of its operation.

Reptiles

There is 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.

No potential reptile habitats will be lost to development, whilst pastoral grazing of habitats beneath panels is likely to improve its value for foraging reptiles.

Assessment: Changes in land management make it is near-certain that the development will have a minor positive effect on this receptor for the period of its operation.

Invasive non-native species

Japanese Knotweed is present within some limited sections of hedgerow as well as tall ruderal vegetation.

There is potential for management of these habitats too cause the spread of this plant across the site and beyond.

Assessment: It is likely that unmitigated management in the operational phase would cause the spread of this plant. If an effect were to occur, it would be minor, medium term adverse.

There is potential for an offence under relevant wildlife legislation if operational management causes the spread of this species in the wild.

6.4. Decommissioning

After operation it is likely that the site will be restored to its original condition. During decommissioning, the above ground infrastructure (solar panels and supports, substation, inverters, switchgear, CCTV & fencing) and the underground cabling would be removed from site. Tracks will be removed, unless the landowner wishes for them to be retained.

The site is to be reinstated to its former state and condition, as at the date of the lease. As such, the land will be returned to its original state - available and suitable for its current agricultural use.

The baseline for receptors assessed here are those present prior to the construction phase.

Decommissioning impacts will be assessed through updated habitat and species surveys prior to works to allow an informed assessment taking into account future wildlife legislation and guidelines and changes to the assessment site during its operational life. Mitigation will be designed on the basis of this future assessment.

Designated sites

Adverse effects on designated sites are unlikely during decommissioning due to separation distance.

Valued Habitats

Adverse effects on habitats are near-certain during decommissioning although they would likely be limited to terrestrial habitats. The primary pathway of effect would be through direct habitat loss and damage associated with compounds, storage areas and cable recovery.

It is near-certain that there will be a short term loss of a small extent of valued habitat to the decommissioning phase. This negative effect would be minor, short term.

Notable species

Adverse effects on notable species are unlikely during decommissioning. However, it is likely that notable species legislation and guidance will change during the operational phase of the development and an updated assessment would be necessary prior to decommissioning.

7. Mitigation

7.1. Construction phase

The following mitigation would be provided to minimise the unavoidable effects during the construction phase:

- Design and delivery of a Construction Environment Management Plan that incorporates ecological protections for all sensitive ecological features. This will include:
 - statement of responsibilities
 - duties of the ecological clerk of works
 - ecological mitigation during the construction phase
 - rigid control of worksite boundaries
 - control of waste
 - storage of materials
 - dust management plan
 - pollution prevention
- 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.
- 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.
- 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. If any evidence of bats is found, further surveys may be required.
- Under current management the site has limited potential for ground nesting birds. However, due to the risk of a potential offence if the nest of a ground nesting bird is destroyed, if works will take place during the accepted nesting season (from March to August inclusive) a pre-construction ground nesting bird survey should be completed prior to any construction activities within these areas as changes in management may occur immediately prior to construction. This could include leaving land unsown over winter if Spring construction is intended. The pre-construction ground nesting bird survey will need to be completed by a suitable experienced Ecological Clerk or Works (ECoW). If nesting birds are detected, works in that area will need to stop until

bird 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. 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.
- Any cable routes should be dug under hedgerows. A 'Broken Trench' hand-dug technique will be used that combines hand dug trench sections with excavation. Excavation by machine will be used up to the edge of a 2 metre protection zone of the hedges, beyond which the trench will be excavated by hand with precautions taken.
- Reptiles:
 - 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.
- A Japanese Knotweed management plan should be developed which should manage risks involved with the construction phase of the development and include a scheme of treatment which would need to be informed by a survey mapping its precise extent.

7.2. Operational phase

The following mitigation is provided for the operational phase:

- Hedgerows will be managed in winter months outside the accepted bird nesting season.

- A Japanese Knotweed management plan should be developed which should manage risks involved with the operational phase.

8. Residual impacts

Residual impacts on valued ecological receptors during the construction and operational phases are minimal, with no effect being significant at the level of assessment. Detail of potential impacts and their significance at the level of assessment are given in Table 7. Where no reasonable pathway of effect exists and pre-mitigation impact has been discounted, the receptor is not considered here.

This section does not consider de-commissioning effects as there are too many unknowns at this stage.

Table 7. Summary of residual impacts following mitigation

Receptor (valuation)	Description of impact	Magnitude of potential impact	Level of effect (incl: adverse or beneficial, short term or permanent, short, medium or long term)	Mitigation	Residual impact - Significant / not significant?
Construction phase					
Native hedgerows (Local)	Accidental damage	Minor	Short term, adverse	Protected from accidental damage during the construction phase by a suitable buffer zone of 5 metres. Broken Trench' technique for cable laying	Negligible
Semi-natural broadleaved woodland (Local)	Accidental damage	Minor	Short term, adverse	Protected from accidental damage during the construction phase by a suitable buffer zone informed by the arboricultural survey	Negligible
Breeding birds (Site)	Accidental damage to hedgerows, temporary loss of nesting habitats, and disturbance/damage to nests and harm to chicks.	Minor Potential for offence	Short term, adverse	Boundary habitats protected. Pre-works construction bird survey	Negligible Offence avoided
Brown Hare (Site)	Disturbance	Minor	Short term, adverse	None recommended	Slight adverse – not significant
Reptiles (Site)	Accidental damage to boundary habitats	Minor	Short term, adverse	Reasonable avoidance measures adopted	Negligible Offence avoided
Invasive non-native species (present)	Cause spread	Minor	Medium term, adverse	Japanese Knotweed management plan adopted	Negligible Offence avoided
Operational phase					
Badgers (Site)	Becoming trapped within the operational site	Animal welfare issue		Pre-construction badger survey to inform mitigation which will include operational site design to avoid trapping badgers and impacting their setts	Slight positive – not significant
	Changes in land management	Minor	Positive, medium term		
Bats (Local)	Changes in land management	Minor	Positive, medium term	Result of changes in land management	Slight positive – not significant
Breeding birds (Site)	Changes in land management	Minor	Positive, medium term	Result of changes in land management	Slight positive – not significant
	Destruction of nests during site management	Potential for an offence		Hedgerows will be managed in winter months outside the accepted bird nesting season.	Offence avoided
Brown Hare (Site)	Changes in land management	Minor	Positive for period of solar farm operation	Result of changes in land management	Slight positive – not significant
Reptiles (Site)	Changes in land management	Minor	Positive for period of solar farm operation	Result of changes in land management	Slight positive – not significant
Invasive non-native species (present)	Accidental spread during management	Minor Potential for an offence	Medium term, adverse	Japanese Knotweed management plan developed and adopted	Negligible Offence avoided

Appendix 1: Mapping



Legend

- ✕ Japanese Knotweed
- Scattered trees
- Survey area
- Native hedgerow with trees/Line of mature 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



0 100 200 m

Title: Map 1. Phase 1 Habitat Survey

Project: Low Farm, Wakefield,
West Yorkshire

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



- Legend
- Survey area
 - Native hedgerow
 - Fence
 - P.O.C Tower
 - Improved grassland

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



1 Geffery Close
Landrake
Saltash
Cornwall
PL12 5HA

Tel: 0800 622 6828
email: office@westernecology.co.uk

Legend

- Site boundary
- 500m buffer
- Pond location and survey result
- Dried out/filled in
- Low HSI
- Negative
- No access



Title: Map 3. Waterbodies surveyed for
Great Crested Newt HSI and eDNA

Project: Low Farm, Wakefield,
West Yorkshire

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