Preliminary Ecological Appraisal

Land at Engine Lane, Grimethorpe, Barnsley, South Yorkshire S72 7BN

Enviromena

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

> The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.
>
> The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.
>
> (BS 42020, 2013)

Executive Summary

Arbtech Consulting Limited was instructed by Enviromena to undertake a Preliminary Ecological Appraisal (PEA) at Land at Engine Lane, Grimethorpe, Barnsley, South Yorkshire S72 7BN (hereafter referred to as "the site"). The survey was required to inform a planning application for the construction of a temporary solar farm providing 49.9MW (AC) output, to include the installation of ground-mounted solar panels together with associated works, equipment and necessary infrastructure (hereafter referred to as "the proposed development").

The following is work you will need to commission to obtain planning permission and to comply with legislation. Further information, along with opportunities for biodiversity enhancement, are outlined in Table 5 of this report.

Feature	***Foreseen impacts***	***Recommendations*** *Measures required to adhere to guidance, legislation and planning policies.*
Habitats and flora	No direct impacts to any offsite notable habitats will occur as a result of the proposed development and the proposed development layout indicates that onsite hedgerows will be retained. However, due to the proximity of the construction zone to hedgerow and woodland habitats, indirect effects such as pollution or tree damage could occur during construction. The proposed development will result in the loss of areas of arable and agricultural land. This is likely to have a minimal impact on biodiversity due to the low ecological value of these habitats and will be offset by the inclusion of species-rich grassland under the solar panels in the completed development. Hedgerows will be retained and existing field access points will be used insofar as possible. A Biodiversity Net Gain (BNG) Assessment is to be undertaken separately by Arbtech Consulting Ltd.	Best practice measures to minimise the possibility of pollution must be implemented during construction. Trees will be appropriately protected in accordance with BS 5837:2012 - "Trees in relation to design, demolition and construction – Recommendations".
Amphibians	The proposed development will not result in the loss of any ponds. However, due to the presence of ponds within close proximity of the site which are fed by some of the drainage ditches on and directly adjacent to the site, indirect effects such as pollution could occur during construction.	Due to the proximity of ponds to the site and presence of GCN within the local area Environmental DNA (eDNA) surveys will be required of any ponds within 250m/500m of the site (where accessible) to determine the presence or absence of great crested newts. This will comprise collecting water samples and sending them off for laboratory analysis and such surveys must be undertaken between mid-April and June, in accordance with current survey guidelines (Biggs et al, 2014).

<table>
<tr>
<td></td>
<td>Areas of arable and grazing fields will be impacted by the proposed development however the habitats are likely to remain below the solar panels and will likely be enhanced post development.

When georeferencing the proposed development plans over scaled mapping of the site, it is noted that the development area is likely to result in the loss or significant disturbance of upwards of 10ha of grassland and arable land. If great crested newts are present within the pond 40m to the south of the site boundary, when completing the rapid risk assessment published by Natural England (Natural England 2015), the proposed development produces an Red risk score, which states: Offence Highly Likely (see Figure 1 below).

<table>
<tr><th>Component</th><th>Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of</th><th>Notional offence probability score</th></tr>
<tr><td>Great crested newt breeding pond(s)</td><td>No effect</td><td>0</td></tr>
<tr><td>Land within 100m of any breeding pond(s)</td><td>>1 ha lost or damaged</td><td>0.9</td></tr>
<tr><td>Land 100-250m from any breeding pond(s)</td><td>No effect</td><td>0</td></tr>
<tr><td>Land >250m from any breeding pond(s)</td><td>No effect</td><td>0</td></tr>
<tr><td>Individual great crested newts</td><td>No effect</td><td>0</td></tr>
<tr><td colspan="2">Maximum:</td><td>0.9</td></tr>
<tr><td>Rapid risk assessment result:</td><td colspan="2">RED: OFFENCE HIGHLY LIKELY</td></tr>
</table>
</td>
<td>The surveys are likely to be required before planning permission can be granted.</td>
</tr>
<tr>
<td>Reptiles</td>
<td>Arears of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be inconsequential to local reptile populations owing to their low value and lack of high value/suitable connective habitat. However given the presence of reptiles known in the area via BRD, site clearance could result in the death or injury of reptiles, if present.</td>
<td>Owing to the nature of the proposed development and the low potential for impacts to reptiles, further surveys are considered to be disproportionate. A precautionary working method will be implemented during construction, including the following measures:
• A toolbox talk will be given to contractors regarding the possible presence of reptiles at the site.
• A staged approach will be adopted for vegetation clearance, whereby the vegetation will be strimmed to 15cm and left overnight to allow any reptiles to disperse. The vegetation can then be cleared to ground level and must be maintained at this level for the duration of construction to deter reptiles from the working area.
• Any rubble piles will be dismantled by hand and debris and brash will be stored on pallets or removed from the site to prevent reptiles from utilising these areas.</td>
</tr>
</table>

		• Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. In the unlikely event that a reptile is identified, works must cease and advise must be sought from a suitably qualified ecologist.
Roosting bats	It is unclear if the proposed development will result in the removal of the stable buildings. If the stable buildings are to be removed as part of the development the removal could result in destruction of any bat roosts present and could cause disturbance, death or injury to bats. The site boundaries and location of the trees are not to be impacted by the proposed development due to their location within the existing site boundaries that are to be retained.	If the stable buildings are to be removed as part of the proposed development then a Preliminary Roost Assessment must be undertaken on each building to assess their suitability for roosting bats.
Foraging and commuting bats	The proposed development will not result in the removal of any habitats which could be used by foraging or commuting bats. The proposed development may include the use of lighting which could spill on to bat roosting, foraging or commuting habitat and deter bats from using these areas.	A low impact lighting strategy will be adopted for the site during and post-development.
Badger	Arears of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be inconsequential to local badger populations owing the presence of more extensive habitat locally. However, site clearance and development works could result in the death or injury of badgers, if present.	Owing to the nature of the proposed development and the low potential for impacts to badgers, further badger surveys are considered to be disproportionate. A precautionary working method will be implemented during construction.
Hedgehog	Areas of arable land and grassland will likely be removed /impacted during construction. However this loss will be for a limited time as the grassland habitats will likely be retained and enhanced following construction. However , construction activities could result in the death or injury of hedgehogs, if present.	A precautionary working method will be implemented during construction.
Riparian mammals	No works will be undertaken within 30m of any badger setts. Areas of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be inconsequential to local badger populations owing the presence of more extensive habitat locally. However, site clearance and	A precautionary working method will be implemented during construction.

	development works could result in the death or injury of badgers, if present.	
Birds	The construction of the solar farm could result in a temporary loss of nesting and foraging habitat but the completed development will provide enhanced opportunities for farmland birds and other species due to species-rich grassland etc. Hedgerows to be retained but construction could cause disturbance and abandonment of nests and could affect ground nesting species if using the arable land.	Works should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the site should be undertaken immediately, by qualified ecologist, prior to the commencement of work. All active nests will need to be retained until the young have fledged.
Invertebrates	Arears of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be inconsequential to local invertebrate populations owing to their low value and the presence of more extensive habitat locally. In addition the existing habitats are to be enhanced to species rich grassland which will provide enhancements for invertebrates.	None.

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1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Enviromena to undertake a Preliminary Ecological Appraisal (PEA) at Land at Engine Lane, Grimethorpe, Barnsley, South Yorkshire S72 7BN (hereafter referred to as "the site"). The survey was required to inform a planning application for the construction of a temporary solar farm providing 49.9MW (AC) output, to include the installation of ground-mounted solar panels together with associated works, equipment and necessary infrastructure (hereafter referred to as "the proposed development"). A plan showing the proposed development is provided in Appendix 1.

The aim of the PEA was to obtain data on existing ecological conditions, and to conduct a preliminary assessment of the likely significance of ecological impacts on the proposed development. No previous ecology reports have been produced for this site by Arbtech Consulting Ltd or, to the author's knowledge, by any other consultancy.

1.2 Site Context

The site is located at its centre at National Grid Reference SE 40243 09215 and has an area totalling approximately 132ha split into four parcels of land comprising of worked arable fields, hedgerows, scattered trees, hard standing and scattered buildings. It is surrounded by agricultural and arable fields, scattered trees and residential developments located to the east and west.

A site location plan is provided in Appendix 2.

1.3 Scope of the Report

This report describes the baseline ecological conditions at the site, evaluates habitats within the survey area in the context of the wider environment and describes the suitability of those habitats for notable or protected species. It identifies possible ecological constraints as a result of the proposed development and summarises the requirements for further surveys and mitigation measures to inform subsequent mitigation proposals, achieve planning or other statutory consent and to comply with wildlife legislation.

To achieve this, the following steps have been taken:

- A desk study has been carried out.
- A field survey has been undertaken to record baseline information on the site and surrounding area including habitat types and their suitability for notable or protected species.
- Invasive plant and animal species (such as those listed on Schedule 9 of the Wildlife & Countryside Act) have been identified.
- Potential impacts on features of value, as a result of the proposed development, have been identified.
- Recommendations for further surveys and mitigation have been made.
- Opportunities for the enhancement of the site for biodiversity have been set out.

2.0 Methodology

2.1 Desk Study

The desk study included a review of the magic.gov.uk database for statutory designated sites within a 3km radius of the site. Landscape value and the presence of notable habitats as well as granted European Protected Species Licence (EPSL) and notable species records held on magic.gov.uk database has also been considered where these are within influencing distance of the site.

Existing biological records including notable species and non-statutory designated sites within a 2km radius were obtained from Barnsley Biological Records Centre.

2.2 Field Survey

The survey was undertaken by Elen Griffin BSc (Hons), MRSB, Ecological Consultant on 24th November 2022.

An extended habitat survey was undertaken, following the methodology set out in *UK Habitat Classification User Manual* (UK Habitat Classification Working Group, 2018). All land parcels are described and mapped and, where appropriate, target notes provide supplementary information on habitat conditions, features too small to map to scale, species composition, structure and management. Botanical species lists were compiled with reference to the DAFOR scale (D = Dominant; A = Abundant, F = Frequent, O = Occasional, R = Rare).

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

2.3 Limitations

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

Specific limitations to the survey were a lack of full access to the land located to the west due to the presence of private residential dwelling, private land, horse paddocks and lack of written confirmation allowing access to the areas. However these areas were visible form the public foot paths and main road.

The survey was completed outside of the optimal survey period (April to October) limiting the identification of ground flora species. However due to the site predominantly comprising arable land, this is not considered to be a significant constraint

These limitations have been taken into account during the evaluation of the site and requirement for further surveys and mitigation.

3.0 Results and Evaluation

3.1 Designated Sites

Details of any statutory and non-statutory designated sites within a 3km radius of the site, including their reasons for notification, are provided in Table 1 below.

The site lies within the impact risk zone for Carlton Main Brickworks Site of Special Scientific Interest (SSSI) and Dearne Valley Wetlands SSSI. Solar farms are not listed as a possible high risk with regard to this designation.

Table 1: Statutory designated and non-statutory sites within 3km radius of the site

Designated site name	***Distance from site (approx.)***	***Reasons for notification from Natural England and Barnsley Metropolitan Council***
West Haigh Wood Local Nature Reserve (LNR)	1754m south east	This is a large and overwhelmingly wooded site existing in two separate sections. The larger northern and eastern section (West Haigh Wood) was surveyed on 6 August 2010 and the smaller area in the southwest (Rakes Wood) was surveyed on 16 September. Most of the larger section (TN9, TN10, TN12, TN13, TN14 and TN15) is on the register of ancient and semi-natural woodlands; the remaining areas, to the east and southwest, are not. These areas outside the ancient woodland area formerly consisted of the more-open landscape of Houghton Common. However, a lack of management has resulted in a mix of silver birch (Betula pendula) and downy birch (B. pubescens) colonising the former common over the years. Oaks have also spread into this area. Patently, the traditional grazing typical of common land was not carried out intensively enough to prevent woodland establishment, so today the greater proportion of the area is dominated by a rapidly closing canopy.
Edderthorpe Ings Local Wildlife Site (LWS)	1647m south east	This is a site of formerly drained agricultural land that has flooded due to subsidence caused by the collapse of workings from the adjacent Grimethorpe Colliery. It lies in the Dearne Valley in a mix of agricultural and post-industrial landscapes. The site is bounded by the embankments of disused railway lines on the north-eastern and south-eastern sides and by the River Dearne on the southwestern edge. Along the eastern side, the recently constructed Park Spring Road runs parallel to the old railway bank. The majority of the site, also known as Cudworth Washland, is open water with a narrow fringe of marginal vegetation (TN3) and an area of taller swamp on the eastern side of the water. Surrounding the large waterbody are areas of marshy grassland (TN2) and neutral grassland (TN4). Along the banks of the River Dearne, on the western edge of the site, is a strip of nettle-dominated tall ruderal herb vegetation (TN5). In the north there is a small area of developing broadleaved plantation (TN1) and some peripheral scattered scrub, mainly along the north-eastern site boundary. The southern extremity of the site is a small patch of semi-natural broadleaved woodland (TN6) linked to the northern part of the site by the course of the River Dearne.

Designated site name	*Distance from site (approx.)*	*Reasons for notification from Natural England and Barnsley Metropolitan Council*
Carlton Marsh LWS	1328m north west	This site lies to the north-east of Barnsley centre between Carlton, in the west, and Cudworth to the south-east. The western site boundary is marked by a mineral line and the eastern by the course of Cudworth Dike. The remains of other disused railway lines cross through the site, on embankments through this lowlying area. This area, until disrupted by the rail embankments, forms a shallow valley at around 50m above sea-level. The route of the disused rail embankment running through the centre of the site has been largely restored for nature conservation, but it does split the site longitudinally. To the west, the site is mainly dry and dominated by neutral grassland (TN1, TN3, TN6). There are areas of broadleaved plantation here too (TN2), associated with development of the site as a nature reserve. Scattered scrub and tree growth occurs as well as some developed scrub and woodland patches with much silver birch (Betula pendula). Also in the west half of the site are some small waterbodies (TN14) linked by a ditch (TN12) and tall ruderal is also present. The eastern side of the site is much wetter with extensive swamp and standing water. A very large pond is present in the north of the site with extensive swamp vegetation (TN15) to the south of it. There is also swamp habitat in the southern extremity of the site (TN11). Neutral grassland habitat is also extensive on this eastern side of the site (TN7, TN16) as well as marshy grassland (TN4, TN10). As in the west, these eastern grasslands and also the swampy area have scattered scrub and tree regeneration occurring. There is dense scrub development and some established woodland along the course of Cudworth Dike and on the former rail bank (TN8, TN9) with a ditch and hedgerow habitat in the north-eastern corner of the site. None of the woodland on site is on the register of ancient woodlands. Overall this narrow site provides a very diverse range of habitats within an urban fringe setting. It was designated as a Local Nature Reserve by BMBC in 1980.
Dearne Valley Wetlands SSSI	1335m south east and north west	Dearne Valley Wetlands SSSI is of special interest for the following nationally important features: ▪ Breeding gadwall Mareca strepera, shoveler Spatula clypeata, garganey Spatula querquedula, pochard Aythya ferina, bittern Botaurus stellaris, black-headed gull Chroicocephalus ridibundus and willow tit Poecile montanus klienschmidti. ▪ Non-breeding gadwall Mareca strepera and shoveler Spatula clypeata. ▪ Diverse assemblages of breeding birds of Lowland damp grasslands, Lowland scrub and a mixed assemblage of Lowland open waters and their margins and Lowland fen
Carlton Main Brickworks SSSI	916m south east	This operational clay pit lies just to the south of Grimethorpe, six kilometres east of Barnsley. The special interests are within the Coal Measures strata, exposed by the extraction of clay. They include one of the best available exposures of the Top Marine Band (Westphalian C, Middle Carboniferous) in the Pennines coalfields. It has yielded an anomalous Myalina-facies fauna, a shelly fauna which contrasts with the Anthracoceras/pectinoid facies fauna found elsewhere in this area of Yorkshire. The Top Marine Band is the highest Coal Measures marine band in Britain, and is the last evidence of normal marine conditions in this country during the Carboniferous Period. A site of considerable scientific interest

3.2 Field Survey Results

The results of the field survey are illustrated in Appendix 3. The weather conditions recorded at the time of the survey are shown in Table 2.

Table 2: Weather conditions during the survey

Date: 24/11/2022

Temperature	8°C
Humidity	585%
Cloud Cover	100%
Wind	10mph
Rain	Intermittent heavy rain

Habitats and Flora

The following habitats are present within and adjacent to the site:

- Managed arable and horticulture land – c1, 75
- Drainage ditch, fresh water man-made – r1, 39
- Hedgerows with scattered trees, scattered scrub, ruderal, flailed – h2b, 10, 11,17, 81
- Artificial unvegetated, unsealed surface, bare ground – u1c, 73
- Modified grazed grassland with ruderal – g4,17, 61
- Building – u1b5

A description and photograph of each habitat is provided in Table 3.

No protected or non-native invasive plant species (as listed under Schedules 8 or 9 of the Wildlife and Countryside Act 1981) were identified on the site.

Table 3: Description and photographs of habitats within and adjacent to the site

Habitat type	***Habitat description***	***Photograph***
Arable and horticulture land – c1, 75	The vast majority of the site is made up of arable fields and croplands which are intensively managed. Crops identified includes wheat, rutabaga and broad bean. The margins of the managed arable land measure approximately 0-1m. No notable 'buffer' zones of wildflower meadows etc were identified around the site.	

		
Drainage ditch – r1, 39	A number of drainage ditches are present around the site boundaries. At the time of the site visit due to heavy rain the ditches included running turbid water. Given the nature of the ditches they are likely to dry over the summer months especially as arable crops are known to dry the land and surrounding areas when in full growth. No aquatic vegetation was noted in the ditches only grassland species that appear to have grown when the ditches were dry and since flooded.	

Hedgerows with scattered trees and scattered scrub – h2a, 10, 11,17, 81	Various, hedgerows are present around the site boundaries of the site, the vast majority of which appear to have been flailed recently as part of their on going management. Hedgerow height varied in heights with some cut to a 'classic' ~120cm and others allowed to grow to >240cm. A number of defunct areas were noted within the hedgerows with some in-filled with fencing and others, for example those between the arable fields left with large gaps. Species identified within the hedgerows included hazel, birch, crab-apple, hawthorn, beech, blackthorn, maple, oak, hazel and sycamore. A number of disused birds nests were noted within the trees along with high levels of common bird activity. Some understorey sections of scrub are present below the hedgerow and along the boundaries between the hedgerows and the arable land. Bramble scrub dominates the species identified, other species noted included ivy, creeping thistle, willow herb and nettle.	 

Artificial unvegetated, unsealed surface – u1c, 73	Mad-made unsealed access roads are present throughout the site utilised to access and managed the planted crops. The roads appear to be in regular use as noted by the lack of vegetation.	 
Modified grazed grassland – g4,17, 61 Building – u1b5	A number of horse paddocks are present around the centre of the site. The grassland has been fenced off in a number of places with post and wire fencing. Species identified within the grassland include perennial rye grass, Yorkshire fog, common velvet grass and white clover with areas of creeping buttercup, ribwort plantain, nettle and spear thistle. The grassland areas appeared to be regularly grazed with a number of horses present at the time of the survey as such the sward is kept short ~10cm with only some longer areas present. A number of agricultural/stable buildings were noted within the paddock areas.	

Fauna

An assessment of the suitability of the site for protected or notable species is provided in Table 4.

Table 4: Assessment of the suitability of the site for protected or notable species

Species	***Assessment of suitability***	***Biological records data***
Amphibians	Six ponds were noted within 500m of the development site, all of which are present to the south of the site and two of which appear to be fed by the surrounding drainage ditches indicating they may dry seasonally. The closest pond is present ~40 south of the site and is separated from the site by the access road. The vast majority of the site consists of areas of arable land and modified grassland which, due to their use, management and lack of structural diversity are considered to be largely unsuitable for GCN and common amphibians. Boundary hedgerows may provide some suitable terrestrial habitat along with connective habitat for common amphibians however some of these hedgerows are split by the drainage ditches which may act as a barrier reducing the dispersal capacity for amphibians. In addition, the site is surrounded by other arable/agricultural fields along with residential areas and main roads which are curbed which are known to act as barriers reducing the dispersal capacity of amphibians including GCN. Great crested newts exist in metapopulations and are known to utilise ponds and their connecting terrestrial habitat during their life cycle; great crested newts are typically found within terrestrial habitats up to 500m from breeding ponds; Records returned through BRD are present over 500m from the site boundaries indicating a likely absence from the site.	No EPSL's, pond survey data or class licences for great crested newts (GCN) were returned within 2km of the site. 20 records of GCN were noted with the closest and majority of the records being located 1.1km south east of the site in Ferry Moor Wader Scrapes and Ponds.
Reptiles	The vast majority of the site consists of areas of arable land and modified grassland which are considered to have negligible value for reptiles due to their management and lack of structural diversity. Areas of scrub within the hedgerows and near to the boundaries may provide some suitable habitat for reptiles however the scrub areas were dense with limited basking areas. Boundary hedgerows may provide some connective habitat to the wider environment however the surrounding area consists of further arable fields, modified grassland and residential areas which are considered to provide limited suitability for reptiles.	76 records of reptile were noted with the closest common lizard record present 1.1km southeast of the site and closest grass snake record present 2.2km to the north west of the site close to Carlton Marsh LWS.

Badgers	No evidence of badger was noted on the site. The site was, for the most part considered to be unsuitable for sett excavation due to its flat nature and current use/management. Boundary hedgerows and tree lines may provide suitable foraging and commuting habitat for badgers along with connectivity to the winder environment. Badgers are known to utilise agricultural and arable land for commuting and as such may traverse across the site.	7 records of badger were noted with the closest being present approximately 5.6km from the south western site boundary.
Bats	The buildings on site were not assessed for their suitability to support roosting bats, however they are likely to have negligible potential to support roosting bats as the vast appeared to be flat roof horse stables that are subject to regular disturbance. Some mature trees were noted along the site boundaries which may provide some bat roosting features.	Two EPSL's for the destruction of common pipistrelle bat roosts were noted within 2km of the proposed development with the closest being 554m northeast of the site. 13 records of noctule bats were noted with the closest record being present 2.2km north west of the site. 9 records of common pipistrelle and 2 records of soprano pipistrelle were noted, the closest record being 1.8km southeast of the site in West Haigh Wood. 2 brown long-eared bat records are present 6.3km form the northeast boundary of the site.
Hazel Dormouse	Boundary hedgerows may provide some suitability for hazel dormouse due to the presence of fruiting species that are known to support dormouse species. However, the hedgerows around the site were defunct in many places and appear to be managed by flailing which is known to reduce their suitability for dormice. In addition the site lies outside of the natural and re introduced range of hazel dormice.	No records have been identified via BRD.
Hedgehog	Hedgehogs are known to forage along the boundaries of arable land particularly those with wide margins and adjacent hedgerows and trees. Although the field margins/buffers were not particularly wide some suitable foraging and commuting habitat was noted in the form of areas of scrub and boundary hedgerows. The boundary hedgerows also provide connectivity between the site and the wider environment where hedgehogs are likely to be present due to the presence of residential gardens which are also known to be utilised by hedgehogs.	22 records of hedgehog were noted with the closest being present approximately 1km west of the site in a residential area of Cudworth.
Riparian mammals	A number of watercourses are present within 2km of the site along with a number of drainage ditches on the site itself. The water level of the ditches on site appeared to change seasonally and were full at the time of the survey due to recent high rainfall. Due to their nature as drainage ditches are likely to dry completely during the summer months. The banks did not appear to provide any suitable lay up areas or hot creation areas for otter. Some banks appeared to have been suitable for water vole borrow	No records of otter have been identified via BRD. 115 records of water vole have been noted with the closest being present approximately 712m east of the site. The aforementioned records had no connectivity to the site and are isolated to an outside waterbody/pond.

	creation however no suitable foraging habitat was noted likely due to the presence of the arable land and its intensively managed nature. Furthermore drainage ditches do not support fish due to the surrounding terrestrial habitat and their seasonally drying nature.	
Birds	The site with its arable fields and boundary hedgerows is likely to be used by farmland bird assemblages for nesting and foraging. Raptors and owls may also use the site for foraging but the site does not present any nesting opportunities for these species. Large arable fields, like those present in the site, are also often favoured by wintering bird populations including waterfowl. However, the site is located over 40km from Humber Estuary and its various ornithological statutory designations and is therefore unlikely to be used by significant populations of qualifying bird species associated with this area. Many of the species whose records were returned in the BRD are likely to be passing migrants enroute to Humber Estuary or the Peak District which have higher value for breeding and wintering bird populations in comparison to the site. Furthermore, some of the species such as bittern and kingfisher have specific habitat requirements which are not provided on site.	Upwards of 3000 records of birds have been returned via the BRD search. No records were noted on the site itself. Records included 41 records of barn owl, 14 records of pink footed geese, 10 records of black-tailed godwit, 16 records of kingfisher and 31 records of buzzard. A review of Magic database confirms that the site is not located within any Important Bird Areas.
Invertebrates	The vast majority of the site consists of areas of arable land and modified grassland which are considered to provide low ecological value for rear species of invertebrate due to their management and a lack of structural diversity. Boundary hedgerows provide more suitable habitat for rarer species of invertebrate along with providing connectivity between the site and the wider environment.	Upwards of 4000 records of invertebrates have been returned via the BRD search. Records included 11 records of dingy skipper, 7 records of great diving beetle and 142 records of dragonfly.

4.0 Conclusions, Impacts and Recommendations

4.1 Informative Guidelines

A summary of the relevant legislation and planning policies is provided in Appendix 4.

Likelihood of the Presence of Protected Species

Where physical evidence of the presence of protected species is indeterminate during the survey, the habitats on site are evaluated as to their likelihood to provide sheltering, roosting, foraging, basking or nesting habitat.

Where this report supports a planning application, the ecological interest of the study area (i.e. the area covered by the desk study and field survey) and the proposed development has also been evaluated in terms of the planning policies relating to biodiversity.

4.2 Evaluation

Taking the desk study and field survey results into account, Table 5 presents an evaluation of the ecological value of the site and also details any ecological constraints identified in relation to the proposed development which will comprise for the construction of a solar farm providing 49.9MW (AC) output, to include the installation of ground-mounted solar panels together with associated works, equipment and necessary infrastructure.

Table 5: Evaluation of the site and any ecological constraints

Ref	***Summary of Survey Findings***	***Foreseen Impacts***	***Recommendations*** *Measures required to adhere to guidance, legislation and planning policies.*	***Biodiversity Enhancements*** *The Local Planning Authority has a duty to ask for enhancements under the NPPF (2021)*
Designated sites	There are three statutory sites within 3km of the site, the closest being Carlton Main Brickworks SSSI located 916m from the site. There are two non-statutory	No impacts to designated sites are anticipated due to the distance of the proposed development from such sites and the likely low scale of construction and operational impacts that could occur.	None.	None.

	sites within 3km of the site, the closest being Carlton Marsh LWS located 1328m from the site.			
Habitats and flora	Hedgerows are present on the development site. In addition ancient woodland, good quality semi-improved grassland, deciduous woodland and lowland heathland are present within 3km of the site, the closest being woodland habitat directly adjacent to the site. These habitats were not designated on Magic. Other habitats within the site are common and widespread and have low ecological value due to their management and the sites current use for mostly	No direct impacts to any offsite notable habitats will occur as a result of the proposed development and the proposed development layout indicates that onsite hedgerows will be retained. However, due to the proximity of the construction zone to hedgerow and woodland habitats, indirect effects such as pollution or tree damage could occur during construction. The proposed development will result in the loss of areas of arable and agricultural land. This is likely to have a minimal impact on biodiversity due to the low ecological value of these habitats and will be offset by the inclusion of species-rich grassland under the solar panels in the completed development. Hedgerows will be retained and existing field access points will be used insofar as possible. A Biodiversity Net Gain (BNG) Assessment is to be undertaken separately by Arbtech Consulting Ltd.	Best practice measures to minimise the possibility of pollution must be implemented during construction. Trees will be appropriately protected in accordance with BS 5837:2012 - "Trees in relation to design, demolition and construction – Recommendations".	The proposed development will include the creation of species-rich grassland and native tree, shrub and hedgerow planting as well as the enhancement of existing hedgerows via gap planting. Full details will be provided in the BNG Assessment.

	arable and agricultural purposes. No protected or notable plant species were recorded during the survey.			
Amphibians	No EPSL's, pond survey data or class licences have been identified within 2km of the site. 20 records of GCN were returned via the BRD with the closest being over 1km from the site boundaries. No suitable connection between the site and the returned records is present given the sites location over 500m form the aforementioned records. No ponds are present on the site and 6 ponds are present within 500m of the site with the closest being ~40 south of the site. A	The proposed development will not result in the loss of any ponds. However, due to the presence of ponds within close proximity of the site which are fed by some of the drainage ditches on and directly adjacent to the site, indirect effects such as pollution could occur during construction (recommendation for pollution prevention measures is made in the habitat section above). The total land take of the solar farm will be low and some such as cable installation will be temporary in nature. The land below the solar panels will be retained and sown with species-rich grass seed mix which will enhance the site overall for amphibians. Affected habitats will be arable land and short grassland only which have negligible value for amphibians. The onsite hedgerows, which have higher value for amphibians, will be retained. Habitat losses are subsequently likely to be inconsequential for amphibians and the main risk will be via construction activities and impacts to amphibians that may cross the development area whilst works are underway. Given that the areas of site clearance and excavation are likely to be small, it is anticipated that the risk to amphibians, including GCN, could be minimised to an acceptably low level through the implementation of a precautionary working method. When georeferencing the proposed development plans over scaled mapping of the site, it is noted that the development area is likely to result in the loss or significant temporary disturbance of upwards of 10ha of grassland and arable land. If great crested newts are present within the pond 40m to the south of the site boundary, when completing the rapid risk assessment published by Natural England (Natural England 2015), the proposed	Due to the proximity of ponds to the site and presence of GCN within the local area Environmental DNA (eDNA) surveys will be required of any ponds within 250m/500m of the site (where accessible) to determine the presence or absence of great crested newts. This will comprise collecting water samples and sending them off for laboratory analysis and such surveys must be undertaken between mid-April and June, in accordance with current survey guidelines (Biggs et al, 2014). The surveys are likely to be required before planning permission can be granted.	To be confirmed upon completion of the surveys.

<table>
<tr>
<td></td>
<td>number of the ponds appear to be connected to the site as a result of the drainage ditches on and directly adjacent.

The dominant habitat on site is considered to be unsuitable for GCN and common amphibian due to their managed nature and current use for arable fields and grazing fields.

Boundary hedgerows and areas of scrub provide some suitable foraging and hibernation habitat for common amphibians.</td>
<td>development produces a Red risk score, which states: Offence Highly Likely (see Figure 1 below).

<table>
<tr><th>Component</th><th>Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of</th><th>Notional offence probability score</th></tr>
<tr><td>Great crested newt breeding pond(s)</td><td>No effect</td><td>0</td></tr>
<tr><td>Land within 100m of any breeding pond(s)</td><td>>1 ha lost or damaged</td><td>0.9</td></tr>
<tr><td>Land 100-250m from any breeding pond(s)</td><td>No effect</td><td>0</td></tr>
<tr><td>Land >250m from any breeding pond(s)</td><td>No effect</td><td>0</td></tr>
<tr><td>Individual great crested newts</td><td>No effect</td><td>0</td></tr>
<tr><td></td><td>Maximum:</td><td>0.9</td></tr>
<tr><td>Rapid risk assessment result:</td><td colspan="2">RED: OFFENCE HIGHLY LIKELY</td></tr>
</table>
</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reptiles</td>
<td>A number of reptile records were returned via the BRD search.
The majority of the habitats present on site are not suitable for reptiles due their current use and management</td>
<td>Arears of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be inconsequential to local reptile populations owing to their low value and lack of high value/suitable connective habitat. However given the presence of reptiles known in the area via BRD, site clearance could result in the death or injury of reptiles, if present.</td>
<td>Owing to the nature of the proposed development and the low potential for impacts to reptiles, further surveys are considered to be disproportionate. A precautionary working method will be implemented during construction, including the following measures:
• A toolbox talk will be given to contractors regarding the possible presence of reptiles at the site.</td>
<td>The proposed development will include the creation of species-rich grassland and native tree, shrub and hedgerow planting as well as the enhancement of existing hedgerows via gap planting.</td>
</tr>
</table>

	along with a lack of structural diversity.		• A staged approach will be adopted for vegetation clearance, whereby the vegetation will be strimmed to 15cm and left overnight to allow any reptiles to disperse. The vegetation can then be cleared to ground level and must be maintained at this level for the duration of construction to deter reptiles from the working area. • Any rubble piles will be dismantled by hand and debris and brash will be stored on pallets or removed from the site to prevent reptiles from utilising these areas. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • In the unlikely event that a reptile is identified, works must cease and advise must be sought from a suitably qualified ecologist.	
Roosting bats	Two EPSL's were returned within 2km of the site. A number of bat BRD records are also present within the local area.	It is unclear if the proposed development will result in the removal of the stable buildings. If the stable buildings are to be removed as part of the development the removal could result in destruction of any bat roosts present and could cause disturbance, death or injury to bats.	If the stable buildings are to be removed as part of the proposed development then a Preliminary Roost Assessment must be undertaken on each building to assess their suitability for roosting bats.	To be confirmed following further surveys or confirmation that the stable buildings are to be retained as part of the proposed development.

	The buildings which appeared to mostly be stable buildings present on the site were not assessed for their suitability to support roosting bats. Some mature trees were noted along the site boundaries which may provide some bat roosting features.	The site boundaries and location of the trees are not to be impacted by the proposed development due to their location within the existing site boundaries that are to be retained.		
Foraging and commuting bats	Boundary hedgerows and trees could be used by local bat populations for foraging and commuting. These could also be used by bats dispersing from nearby roosts outside of the site.	The proposed development will not result in the removal of any habitats which could be used by foraging or commuting bats. The proposed development may include the use of lighting which could spill on to bat roosting, foraging or commuting habitat and deter bats from using these areas.	A low impact lighting strategy will be adopted for the site during and post-development, which will include the following measures: • Use narrow spectrum light sources to lower the range of species affected by lighting. • Use light sources that emit minimal ultra-violet light. • Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin.	The proposed development will include the creation of species-rich grassland and native tree, shrub and hedgerow planting as well as the enhancement of existing hedgerows via gap planting. These enhancements will benefit foraging bats due to increase in invert presence.

			• Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on. • Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available.	
Badger	No evidence of badger was noted on the site. A	No works will be undertaken within 30m of any badger setts. Areas of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be	A precautionary working method will be implemented during construction, including the following measures:	The proposed development will include the creation of species-

	number of badger records were returned as part of the BRD search. Boundary hedgerows and trees may provide some suitable foraging habitat for badgers and badgers are known to utilise agricultural and arable land for commuting and as such may traverse across the site. The site has very limited suitability for sett excavation.	inconsequential to local badger populations owing the presence of more extensive habitat locally. However, site clearance and development works could result in the death or injury of badgers, if present.	• Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape. • The use of night-time lighting will be avoided, or sensitive lighting design will be implemented to avoid light spill on to retained habitats which badgers could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • In the unlikely event that a badger sett is identified, works must cease and advise must be sought from a suitably qualified ecologist.	rich grassland and native tree, shrub and hedgerow planting as well as the enhancement of existing hedgerows via gap planting. Species should include fruiting species to provide foraging opportunities for badger.
Hazel dormouse	Boundary hedgerows may provide some suitability for hazel dormouse however the hedgerows are defunct in many places and appear to be managed by flailing which is known to reduce their suitability for dormice In addition the site is outside of the	It is to the best of the consultants knowledge that the proposed development will not impact any hedgerows on or directly adjacent to the site. Therefore, no impacts are anticipated on hazel dormice as a result of the proposed development.	None.	None.

	known natural and reintroduced range of dormice.			
Hedgehog	Hedgehogs may utilise the arable/grassland areas along with the boundary hedgerows and scrub for foraging and commuting.	Areas of arable land and grassland will likely be removed /impacted during construction. This loss will be for a limited time as the grassland habitats will likely be retained and enhanced following construction. However, construction activities could result in the death or injury of hedgehogs, if present.	A precautionary working method will be implemented during construction, including the following measures: • Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape. • The use of night-time lighting will be avoided, or sensitive lighting design will be implemented to avoid light spill on to retained habitats which hedgehogs could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • If a hedgehog is found then this should be moved by gloved hand to an undisturbed and sheltered area of the site or adjacent land.	The proposed development will include the creation of species-rich grassland and native tree, shrub and hedgerow planting as well as the enhancement of existing hedgerows via gap planting. Species should include fruiting species to provide foraging opportunities for hedgehog.
Riparian mammals	A number of watercourses are present within 2km of the site along with a number of drainage ditches on the site itself. The on-site ditches did not appear to provide any suitable habitat for otter	The existing drainage ditches are located around the existing filed edges which are to be retained as part of the development. Existing crossing points where the ditches have been culverted will be used to access the site. In addition is to the consultants understanding that works within 5m of the ditch banks will be avoided insofar as possible therefore impacts to water vole are considered unlikely to occur.	Owing to the nature of the proposed development and the low potential for impacts to riparian mammals , further surveys are considered to be disproportionate. A precautionary working method will be implemented during construction, including the following measures: • A toolbox talk will be given to contractors regarding the possible presence of water vole at the site.	The following habitat creation and enhancement opportunities could be incorporated into the proposed development which would be beneficial for otter: • Planting native trees and shrubs close to the watercourse to increase

	and limited suitable habitat for water vole however a number of records of water vole are present within the local area and therefore may be present directly adjacent to the site and therefore within the zone of influence.		• Heras fencing will be erected around the working area to prevent encroachment within 5m of the watercourse – **if any works are proposed to encroach within 5m of any watercourse then a water vole scoping survey will be required to fully assess any potential impacts to water voles.** • Any excavations will be covered overnight, or a ramp will be installed to enable any trapped animals to escape. • The use of night-time lighting will be avoided, or sensitive lighting design will be implemented to avoid light spill on to the watercourse and any retained habitats which water voles could use. • Best practice pollution prevention measures will be implemented to minimise impacts to the watercourse and any retained habitats that water vole could use. • Any chemicals or pollutants used or created by the development should be stored and disposed of correctly according to COSHH regulations. • In the unlikely event that water voles or evidence of water voles is identified, works must cease and advise must be sought from a suitably qualified ecologist.	opportunities for shelter. • Existing ditches could be enhanced with the addition of aquatic plant planting and ensuring water permanency

Birds	Boundary hedgerows and trees are likely to provide suitable nesting habitat for more common birds. The site is not considered to provide suitable habitat for overwintering birds due to its location over 10km away from and SPA site designated for overwintering birds.	The construction of the solar farm could result in a temporary loss of nesting and foraging habitat but the completed development will provide enhanced opportunities for farmland birds and other species due to species-rich grassland etc. Hedgerows to be retained but construction could cause disturbance and abandonment of nests and could affect ground nesting species if using the arable land.	Works should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the site should be undertaken immediately, by qualified ecologist, prior to the commencement of work. All active nests will need to be retained until the young have fledged.	The installation of a minimum of ten bird boxes on mature trees around the site boundaries will provide additional nesting habitat for birds e.g. • Vivara Pro Barcelona Woodstone Open Nest Box • Woodstone Nest Box Or a similar alternative brand. Tree boxes should be positioned approximately 3m above ground level where they will be sheltered from prevailing wind, rain and strong sunlight. Small-hole boxes are best placed approximately 1-3m above ground on an area of the tree trunk where foliage will not obscure the entrance hole.
Invertebrates	The habitats on site are mostly considered to be unsuitable for rarer species of invertebrate due to their management and lack of structural diversity.	Arears of arable land and grassland habitats are likely to be impacted by the proposed development this impact is likely to be inconsequential to local invertebrate populations owing to their low value and the presence of more extensive habitat locally. In addition the existing habitats are to be enhanced to species rich grassland which will provide enhancements for invertebrates.	None.	The proposed development will include the creation of species-rich grassland and native tree, shrub and hedgerow planting as well as the enhancement of existing hedgerows via gap planting.

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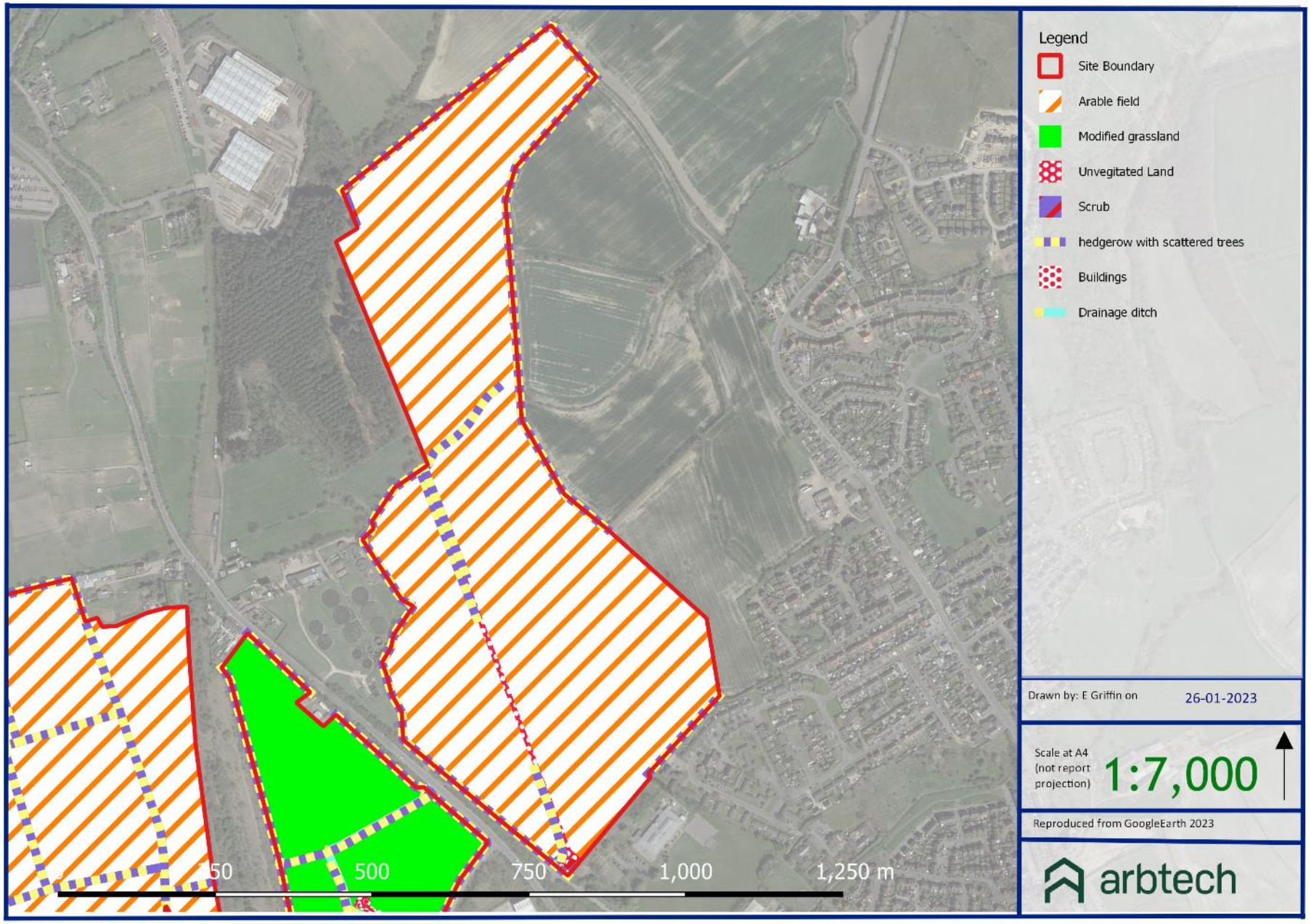
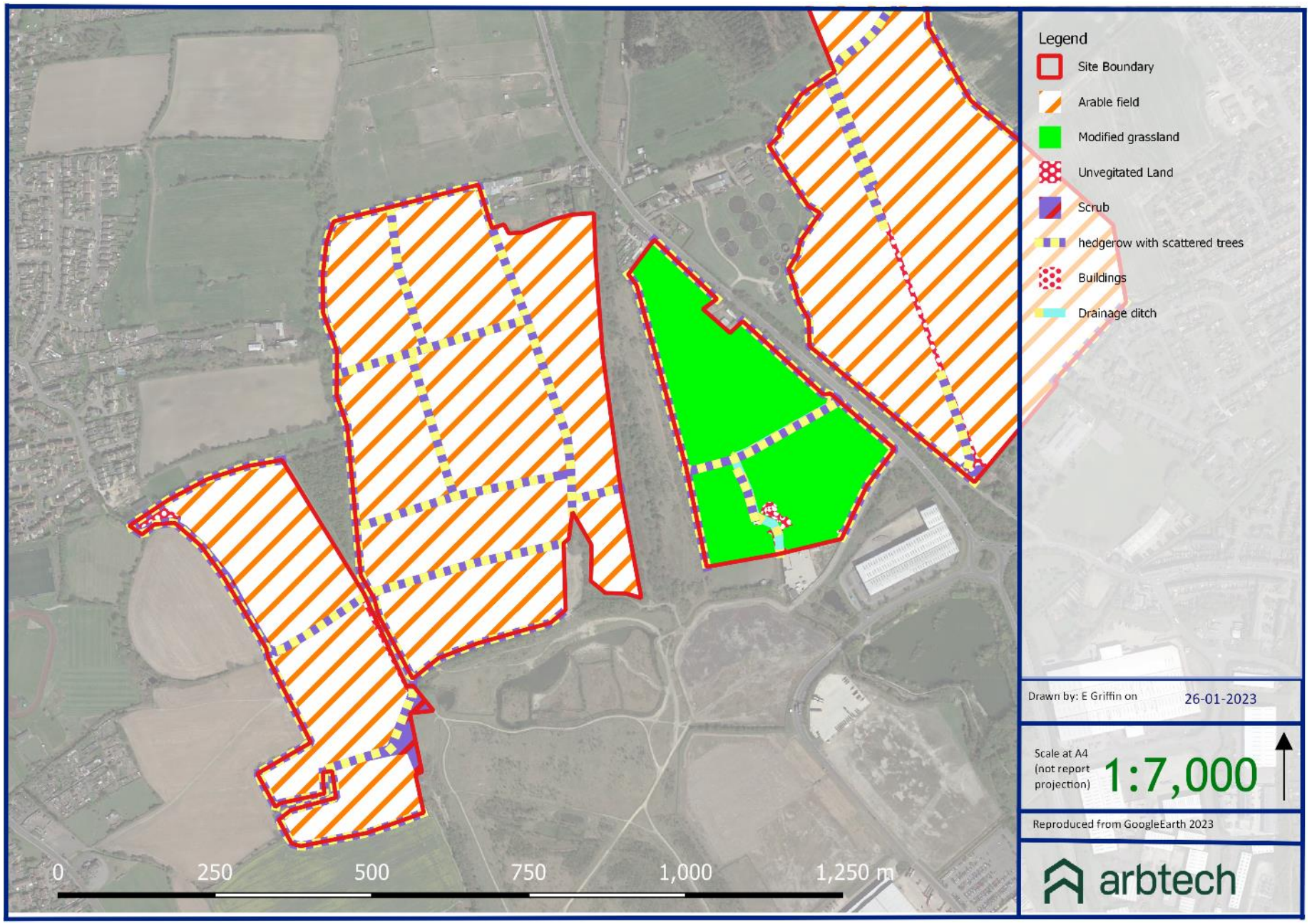
Appendix 1: Proposed Development Plans


KEY
Site Boundary
Landlord Boundary
Proposed Fenceline
EXISTING LANDSCAPE FRAMEWORK
Existing Tree
Existing Vegetation (Trees & Hedgerow)
LANDSCAPE MITIGATION
Proposed Meadow Grassland
Amenity Grassland
Proposed Shade/Semi Shade Tolerant Meadow
Proposed Tree
Proposed Native Hedgerow
Proposed Native Shrub/Tree Mix
Proposed Landscape Mitigation
Landscape Strategy 2 of 2
11371
GRIMETHORPE
Enviromena
fpcr
09 December 2024
11371-FPCR-ZZ-XX-DR-L-0002

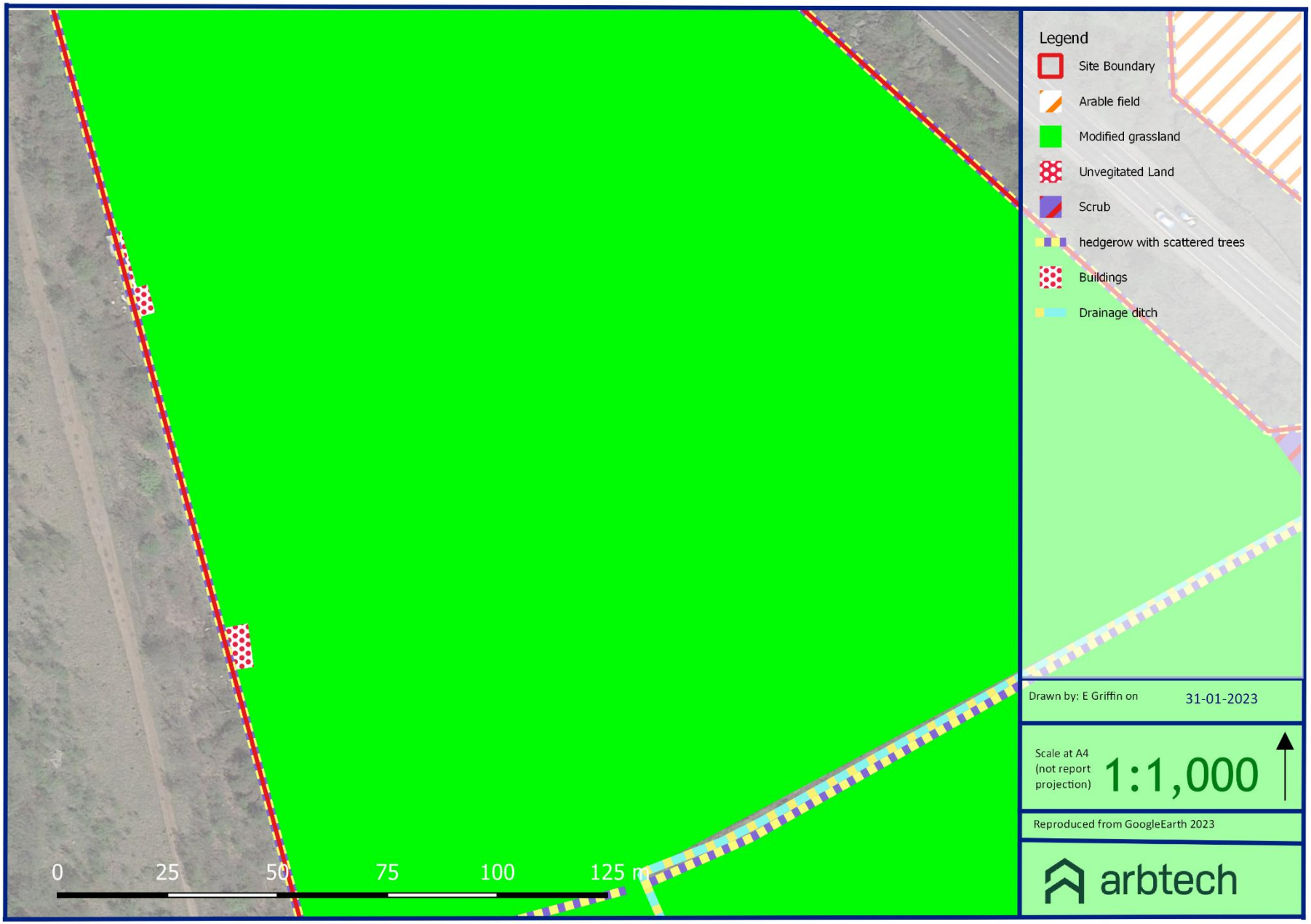
Appendix 2: Site Location Plan

Appendix 3: Habitat Survey Plan




Legend
Site Boundary
Arable field
Modified grassland
Unvegitated Land
Scrub
hedgerow with scattered trees
Buildings
Drainage ditch
Drawn by: E Griffin on
26-01-2023
Scale at A4 (not report projection)
1:7,000
Reproduced from GoogleEarth 2023
arbtech
0
250
500
750
1,000
1,250 m

Appendix 3a: Habitat Survey Plan – building locations


Legend
Site Boundary
Arable field
Modified grassland
Unvegitated Land
Scrub
hedgerow with scattered trees
Buildings
Drainage ditch
Drawn by: E Griffin on
31-01-2023
Scale at A4
(not report
projection)
1:1,000
Reproduced from GoogleEarth 2023
arbtech
0
25
50
75
100
125 m

Appendix 4: Legislation and Planning Policy

LEGAL PROTECTION

National and European Legislation Afforded to Habitats

International Statutory Designations

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

Under the Habitats Directive Article 3 requires the establishment of a network of important conservation sites (SACs) across Europe. Over 1000 animal and plant species, as well as 200 habitat types, listed in the directive's annexes are protected in various ways:

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

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

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

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

The Conservation of Habitats and Species Regulations 2017 (as amended) form the legal basis for the implementation of the Habitats and Birds Directives in terrestrial areas and territorial waters out to 12 nautical miles in England and Wales (including the inshore marine area) and to a limited extent in Scotland and Northern Ireland.

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention covers all aspects of wetland conservation and recognises the importance of wetland ecosystems in relation to global biodiversity conservation. The Convention refers to wetlands as "*areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres*". However, they may also include riparian and coastal zones. Ramsar sites are statutorily protected under the Wildlife & Countryside Act 1981 (as amended 01.04.1996) with further protection provided by the Countryside and Rights of Way (CRoW) Act 2000. Policy statements have been issued by the Government in England and Wales highlighting the special status of Ramsar sites. The Government in England and Wales has issued policy statements which ensure that Ramsar sites are afforded the same protection as areas designated under the EC Birds and Habitats Directives as part of the Natura 2000 network (e.g. SACs & SPAs). Further provisions for the protection and management of SSSIs have been introduced by the Nature Conservation (Scotland) Act 2004.

National Statutory Designations

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

Local Statutory Designations

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

Non- Statutory Designations

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

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

The Hedgerow Regulations 1997

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

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

National and European Legislation Afforded to Species

The Conservation of Habitats and Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) aims to promote the maintenance of biodiversity by requiring the Secretary of State to take measures to maintain or restore wild species listed within the Regulations at a favourable conservation status.

The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

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

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

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

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

Badgers

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

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

Effects on development works:

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

Birds

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

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

Certain species of bird, for example the barn owl, bittern and kingfisher receive additional protection under Schedule 1 of the WCA and are commonly referred to as "Schedule 1" birds.

This affords them protection against:

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

Effects on development works:

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

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

Amphibians and Reptiles

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

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

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

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

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

- Intentionally or recklessly kill or injure these species.

Effects on development works:

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

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

Water Voles

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

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

- Intentionally or recklessly disturb water voles while they are occupying a structure or place used for shelter or protection

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

Otters

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

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

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

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

Effects on development works:

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

Bats

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

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

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

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

Effects on development works:

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

Hazel Dormice

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

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

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

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

Effects on development works:

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

White Clawed Crayfish

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

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

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

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

Effects on development works:

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

Wild Mammals (Protection Act) 1996

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

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

Legislation Afforded to Plants

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

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

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

Effects on development works:

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

Invasive Species

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

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

Effects on development works:

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

Injurious weeds

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

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

Effects on development works:

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

NATIONAL PLANNING POLICY (ENGLAND)

Environment Act 2021

The Environment Act 2021 (EA 2021) received Royal Assent on 9 November 2021 and is expected to become fully mandated within the next couple of years. The Act principally creates a post Brexit framework to protect and enhance the natural environment. Through amendments to the Town and Country Planning Act 1990, the Act will require all planning permissions in England (subject to exemptions which is likely to include householder applications) to be granted subject to a new general pre-commencement condition that requires approval of a biodiversity net gain plan. This will ensure the delivery of a minimum of 10% measurable biodiversity net gain. The principal tool to calculate this will be the Defra Biodiversity 3.0 Metric. Works to enhance habitats can be carried out either onsite or offsite or through the purchase of 'biodiversity credits' from the Secretary of State. However, this flexibility may be removed (subject to regulations) if the onsite habitat is 'irreplaceable'. Both onsite and offsite enhancements must be maintained for at least 30 years after completion of a development (which period may be amended).

National Planning Policy Framework 2021

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) is also listed as a requirement of planning policy.

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

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

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

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

EUROPEAN PROTECTED SPECIES POLICIES

In December 2016 Natural England officially introduced the four licensing policies throughout England. The four policies seek to achieve better outcomes for European Protected Species (EPS) and reduce unnecessary costs, delays and uncertainty that can be inherent in the current standard EPS licensing system. The policies are summarised as follows:

- Policy 1; provides greater flexibility in exclusion and relocation activities, where there is investment in habitat provision;
- Policy 2; provides greater flexibility in the location of compensatory habitat;
- Policy 3; provides greater flexibility on exclusion measures where this will allow EPS to use temporary habitat; and,
- Policy 4; provides a reduced survey effort in circumstances where the impacts of development can be confidently predicted.

The four policies have been designed to have a net benefit for EPS by improving populations overall and not just protecting individuals within development sites. Most notably Natural England now recognises that the Habitats Regulations legal framework now applies to 'local populations' of EPS and not individuals/site populations.