Land adjacent to the A614, Normanton Larches, Worksop, Nottinghamshire S80 3PA

Ecological Impact Assessment & Biodiversity Net Gain Assessment

August 2024

on behalf of **One Planet Developments Ltd**

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Client	One Planet Developments Ltd
Job name	Land adjacent to the A614, Normanton Larches, Worksop, Nottinghamshire S80 3PA
Survey date	2nd February 2024
Report date	8th August 2024
Report title	Ecological Impact Assessment & Biodiversity Net Gain Assessment
Reference	W5378_rep_Normanton Larches Solar Farm_08-08-24

	Signed	**Name**	**Position**	**Date**
Prepared by		Edward Bodsworth *MA (Cantab) PhD MCIEEM*	Director	08/08/2024

Contents

1 Introduction

1.1 Site Description & Context

The land adjacent to the A614, referred to as the 'site' within this report, is located to the east of the A614 and to the north of Normanton Larches (an area of plantation woodland), approximately 7.2km to the south-east of the town of Worksop in Nottinghamshire S80 3PA. The approximate Ordnance Survey grid reference for the centre of the site is SK 6542 7479.

Please refer to Appendix 1 for photographs and Appendix 2 for location plans.

The site comprises a series of arable fields (cropland; cereal crops) with two sections of native hedgerow, one small parcel of plantation woodland (other Scot's pine woodland) and one small area of modified grassland. A number of existing trackways (artificial unvegetated; unsealed surface) are also present within the site.

The site is within the open countryside. Clumber Park Hotel is located to the west of the site, but in all other directions the site boundaries lead into other habitats within the wider local area including plantation woodland, arable farmland, scrub, bracken and hedgerows. The River Poulter is located approximately 25m to the north-east of the site at its nearest point.

1.2 Proposals

The proposal is to create a solar farm and battery energy storage system together with all associated works, equipment, necessary infrastructure and landscaping within the site, with associated habitat creation and enhancement.

Solar panel arrays will be positioned within areas of created grassland (other lowland acid grassland). Other created habitats will include mixed scrub, willow scrub (riparian edge) and woodland (other woodland; mixed). New areas of developed land; sealed surface will be created in the form of new tracks, parking, substation, battery compound and inverters.

1.3 Aims of Study

The aims of this study are to describe and evaluate the habitats present within the site and to assess the potential for the site to support protected and notable species. The report discusses the likely impacts of proposed development on the ecology of the site, on valued habitats and on protected/notable species.

A further aim of this study is to assess and quantify the biodiversity value of the site and to assess and calculate the impacts of the proposed development on the site's biodiversity value, given as a net loss, no net change or gain in biodiversity units, in line with the National Planning Policy Framework (NPPF) and Environment Act 2021.

This report aims to:

- Establish the total number of baseline biodiversity units for the site prior to the development taking place;
- Establish the total number of biodiversity units which will be created, retained and/or enhanced under landscape and ecological mitigation proposals for the site of; and
- Determine whether the proposed development scheme will result in a net loss, no net loss or a net gain for biodiversity

1.4 Biodiversity Statement

1.4.1 Pre-development Biodiversity Value of On-site Habitats

The pre-development biodiversity value of the site is 196.28 Habitat Units and 1.26 Hedgerow Units.

Watercourse Units are not applicable to this site.

1.4.2 Date the On-site Pre-development Biodiversity Value was Calculated

25th March 2024.

1.4.3 Version of the Biodiversity Metric

Statutory Biodiversity Metric.

1.4.4 Version of the Biodiversity Metric Publication Date

29th November 2023

1.4.5 Supporting Documentation

I. Biodiversity Metric calculation – provided in Excel format as Appendix 7 to this report. Results as follows:

- Total net unit change in habitats: **+333.48 habitat units**
- Total net % change in habitats: **+169.89% habitat units**

- Total net unit change in hedgerows: **+3.13 hedgerow units**
- Total net % change in hedgerows: **+247.99% hedgerow units**

II. Onsite irreplaceable habitats – not applicable

III. Onsite habitats existing on the date of the application for planning permission

Table 1. UKHAB habitats existing on the date of the application for planning permission.

Primary Code	Secondary Code	Description
c1c	600	Cropland; cereal crops (ploughed)
u1c	-	Urban; artificial unvegetated; unsealed surface
g4	-	Grassland; modified grassland
w2b	29	Woodland & Forest; other Scot's pine woodland (plantation)
h2a6	116	Native hedgerow (other)

1.4.6 Loss of On-site Habitats

There has been no loss of on-site habitats prior to the submission of the planning application.

Does the pre-development biodiversity value and date used above factor in the loss of any onsite habitat because of activities carried out before the submission of this application? – not applicable.

1.4.7 Irreplaceable Habitats

There are no irreplaceable habitats within the site.

2 Methodology

2.1 Desk Study

The Nottinghamshire Biological and Geological Records Centre (NBGRC) was contacted in February 2024 to collate records that it holds for protected/notable species and non-statutory sites of nature conservation importance within a 1km radius of the site.

The Multi-Agency Geographic Information for the Countryside (www.magic.gov.uk) website was searched for information regarding internationally protected sites (e.g. Special Areas of Conservation) within 5km of the site and statutory sites of nature conservation importance (e.g. Sites of Special Scientific Interest) within a 1km radius of the site. Other Internet resources interrogated as part of the desk study include:

- Bing Maps - www.bing.com/maps
- Google Earth - www.earth.google.co.uk
- Google maps - www.google.co.uk/maps

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 was also consulted to gather information pertaining to priority habitats and species for conservation action at the national and local level.

Aerial photography interpretation is used to place the site into an ecological context and to provide information on the nature of the habitats beyond the site boundary. The information gathered is used to provide a baseline to the habitat assessment.

2.2 Field Surveys

2.2.1 Extended UKHAB Habitat Survey

An extended UKHAB Habitat Survey was undertaken on 2nd February 2024 by Edward Bodsworth *MA (Cantab) PhD MCIEEM*.

A field survey, using the UK Habitat Classification (UKHAB) system was undertaken of the site. The field survey technique used is detailed in the UK Habitat Classification User Manual (Butcher, Carey, Edmonds, Norton, & Treweek, UK Habitat Classification Manual Version 1.1, 2020).

The MAGIC website and Google Earth Pro satellite imagery were also used to determine whether there are known or possible locations for rare and/or habitats of high nature conservation importance.

Field survey maps were prepared in QGIS and printed off for use in the field. Survey sheets were printed at a scale relevant to the scope and extent of the survey. They are between 1:10,000 and 1:200 scale.

The UKHab system comprises a five-level Primary Habitat Hierarchy and a list of Secondary Codes, the latter is divided into Essential codes and Additional Codes. It is mandatory that each recorded habitat parcel (which can be a point, line or polygon using geospatial vector data terminology) is allocated a single Primary Habitat Code and to record the presence of all Essential Secondary Code features associated with that habitat parcel. Additional Secondary Codes can also be associated with habitat parcels, where it is relevant to the whole parcel.

The UKHAB system recommends that up to six Secondary Coes can be allocated to a single habitat parcel.

The UKHAB system includes all habitat types identified in the UK, irrespective of scale and geographic range, including all habitats listed under Section 41 of the NERC Act 2006 and all Habitats Directive Annex 1 habitats recorded in the UK. Where possible, synonyms for UKHab habitats in other major habitat classifications are provided in the definitions.

The UK Habitat Classification Version 2.0 has been used (UKHAB Ltd, 2023), with the use of Level 3 to 5 Primary Habitats and Secondary Codes. Primary Habitats and Secondary Codes follow the UKHAB. Definitions listed in the aforementioned document. The Secondary Codes selected are appropriate to the site and habitats recorded.

Target notes were also prepared on features of particular ecological interest and an assessment was made of the site's potential to support protected and notable species (such as species listed under Section 41 of the NERC Act 2006) as well as invasive species (listed on Schedule 9 of the Wildlife & Countryside Act 1981).

A Habitat Condition Assessment was also undertaken alongside the UKHAB Habitat Survey on 2nd February 2024.

2.2.2 Breeding Bird Survey

Three breeding bird surveys were undertaken in June and July 2024 by Ian Nixon. The surveys followed a modified version of the territory mapping approach utilised within the Common Bird Census (CBC) methodology which was developed by the British Trust for Ornithology (BTO).

The modifications involved a reduction in survey visits from ten to four survey visits during the spring/early summer (Table 2). The survey visits were timed to ensure that both resident breeding birds and migrant breeding birds (which tend to start breeding later in the season) were recorded.

The whole of the site was surveyed on three visits, in June and July 2024 (Table 2), with each visit starting approximately at sunrise and lasting around 3-4 hours after sunrise. The survey involved a slow walked transect through the site, with stops and observation points, to record all bird calls and observations. The survey recorded the locations of birds exhibiting territorial or breeding behaviour: singing or calling; repeated territorial calls; territorial aggression; displaying; adults carrying food, nesting material or faecal sacs; juvenile birds and family groups. These records were mapped onto a detailed aerial map of the site.

Birds flying over and not using the site or surrounding area were noted separately. Records were mapped using the BTO Common Bird Census notation.

The fact that no breeding bird surveys were undertaken in April or May is not considered to be a significant constraint to the survey results. The focus of the survey was ground-nesting bird species, skylarks *Alauda arvensis* in particular. This is due to the nature of the habitats within the site, which are mostly arable farmland (cropland), which are of limited value to most nesting bird species. Skylarks were recorded during all three of the surveys, and adequate data were also gathered for other breeding bird species.

Table 2. Timing of breeding bird surveys in June and July 2024.

Date	Time	Weather conditions
14/06/2024	04:30-07:40	Cool (12.5°C-14°C), overcast (100-80% cloud), dry and breezy (Beaufort Scale 3)
24/06/2024	04:35-07:55	Warm (17.9°C-19.3°C), some cloud (80-10% cloud), dry and still (Beaufort Scale 0)
08/07/2024	04:50-08:20	Cool (8.6°C-13.1°C), Clear (10% cloud), dry and still (Beaufort Scale 0)

2.3 Biodiversity Net Gain Assessment

A Biodiversity Net Gain Assessment was conducted, using the Statutory Biodiversity Metric published by Natural England (December, 2023), to calculate the impact of the proposed development on biodiversity. The calculation also ascertains whether the proposals achieve a net gain, a net loss or no net loss in biodiversity, calculated as biodiversity units and percentage biodiversity units.

To effectively assess the impacts of the proposals the habitats within the site were classified according to the habitat types given in the UKHab classification system (Butcher *et al.*, 2020). Habitats were assessed for their condition and strategic significance according to the criteria given within the Statutory Biodiversity Metric User Guide and Technical Supplement (Natural England Joint Publication, 2023) through onsite visits and the interrogation of internet resources including MAGIC (www.magic.gov.uk) and Google Earth (www.earth.google.co.uk).

The areas of given habitats in both their current state and the proposed development were mapped using on site data, satellite imagery and QGIS software, with the resulting areas inputted into the Statutory Biodiversity Metric alongside strategic significance classifiers.

A site visit was undertaken by a suitably qualified ecologist to determine the habitats present on site, their location, size, condition and connectivity. This survey was conducted by Edward Bodsworth *MA (Cantab) PhD MCIEEM* on the 2nd February 2024.

The principles of biodiversity net gain as set out in the Biodiversity Net Gain Good Practice Guidelines (CIEEM, IEMA & CIRIA, 2019) have been considered throughout this process as listed below:

- **Principle 1.** Apply the Mitigation Hierarchy
- **Principle 2.** Avoid losing biodiversity that cannot be offset by gains elsewhere
- **Principle 3.** Be inclusive and equitable
- **Principle 4.** Address risks
- **Principle 5.** Make a measurable Net Gain contribution
- **Principle 6.** Achieve the best outcomes for biodiversity
- **Principle 7.** Be additional
- **Principle 8.** Create a Net Gain legacy
- **Principle 9.** Optimise sustainability
- **Principle 10.** Be transparent

2.4 Evaluation Methodology

The evaluation of habitats follows the geographic frame of reference presented within the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* version 1.1 (CIEEM, 2018).

The Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines recognise that ecological evaluation is a 'complex and subjective process' but provides key considerations to apply when 'applying professional judgement to assign values to ecological features and resources. These include consideration of geographic frame of reference; site designations and features; biodiversity value; large populations or important assemblages of species; potential or supporting value; social value and economic value.

Focusing on assessments of biodiversity value, there are various characteristics that can be used to identify ecological resources or features that are likely to be important in terms of biodiversity. These include:

- Rare or uncommon species in the local, national or international context;
- Endemic or locally distinct sub-populations of a species;
- Species on the edge of their distribution;
- Notably large populations of animals or concentration of animals considered uncommon or threatened in a wider context;
- Species, rich assemblages of plants or animals;
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and/or assemblages;
- Plant communities (and associated animals) considered typical of valued natural/semi-natural vegetation types; and
- Habitat diversity, connectivity and/or synergistic associations.

In this report, habitats are assigned to a value relating to their geographic frame of reference, using the following scale:

- International
- UK
- National (England)
- Regional (Midlands)
- County (Nottinghamshire)
- District (Bassetlaw)
- Local or parish (Worksop)
- Immediate zone of influence of the site (Site)
- Negligible

Regarding protected and notable species, an assessment of habitat suitability and potential presence of species has been undertaken given the results of the desk study and field surveys.

Characterising and Quantifying Effects and Assessing Significance

The guidelines state that ecological effects should be characterised in terms of ecosystem structure and function and reference should be made to: positive or negative effects; extent; magnitude; duration; reversibility; timing and frequency; and cumulative effects. The guidelines provide a list of 'key aspects of ecosystems to consider when predicting effects'.

Following the characterisation of effects, an assessment of the ecological significance of an effect is made. Prior to the publication of the guidelines in 2006, ecological significance was defined using a matrix in which ecological value and magnitude of effect were combined to determine different grades of significance; usually high, medium or low. The guidance now advises that assigning levels of significance in this way obstructs a clear understanding of the EcIA process and can result in an assessment that lacks rigour.

The guidelines promote a more transparent approach in which a beneficial or adverse effect is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued. The decision about whether an effect is significant or not, is independent of the value of the ecological feature; the value of any feature that will be significantly affected is then used to determine the implications, in terms of legislation, policy and or development control.

2.5 Limitations on Survey Data

There were no significant limitations on the survey data and all parts of the site could be accessed thoroughly and safely.

As with any survey undertaken on a certain date, the data presented within this report provide information at a particular point in time and present a 'snap-shot' of the ecological status of the site. Ecosystems and species behaviour/activity are dynamic and can change over time.

Whilst this report presents a characterisation and evaluation of habitat and species status at the time of the study, it should not be taken as an exhaustive representation of the ecological status of the site either at present or into the future.

3 Results

3.1 Desk Study

3.1.1 Statutory Sites

Clumber Park Site of Special Scientific Interest (SSSI) is located approximately 130m to the west of the site boundary, on the western side of the A614 (Blyth Road). There are no other Sites of Special Scientific Interest within 1km of the site.

Birklands and Bilhaugh Special Area of Conservation (SAC) is located approximately 5km to the south-west of the site.

Clumber Park SSSI

This is of the largest areas of mixed habitat in Nottinghamshire, Clumber Park supports extensive areas of lowland acid grassland, heath and mature deciduous woodland characteristic of the English North Midlands. An exceptionally rich beetle fauna is associated with mature timber and dead wood habitats and the park is notable for its breeding bird communities.

Clumber Park comprises an extensive area of mature deciduous and mixed woodland, heathland, scrub, unimproved acid grassland, marsh, streamside and lake development on soils derived largely from the Sherwood Sandstone but also locally from glacial and alluvial deposits.

Birklands and Bilhaugh SAC

Annex I habitats that are a primary reason for selection of this site are old acidophilous oak woods with *Quercus robur* on sandy plains.

Birklands and Bilhaugh is the most northerly site selected for old acidophilous oak woods and is notable for its rich invertebrate fauna, particularly spiders, and for a diverse fungal assemblage, including *Grifoa suphurea* and *Fistulina hepatica*.

Both native oak species, *Quercus petraea* and *Quercus robur*, are present, with a mixture of age-classes, so there is good potential for maintaining the structure and function of the woodland system and a continuity of dead-wood habitats.

3.1.2 Non-statutory Sites

There are no non-statutory sites of nature conservation importance within the site.

Three non-statutory sites of nature conservation importance (Local Wildlife Sites LWS) are located near the site boundary.

These are Poulter Valley Plantation West 5/154, approximately 50m of which is located adjacent to the eastern boundary of the site, Clumber Park LWS which is located approximately 130m to the west of the site (to the west of A614 Blyth Road) and Bothamsall Lane Verges 2/405 which is located approximately 460m to the south of the southern site boundary.

Please refer to Figure 1.

Poulter Valley Plantation West LWS

This site comprises conifer plantations and deciduous woodland interspersed with grassy rides and botanically rich wetland areas along the River Poulter, which borders the site to the north.

The broadleaved woodland has a canopy dominated by birch *Betula pendula*, with some oak *Quercus robur*, sycamore *Acer pseudoplatanus* and sweet chestnut *Castanea sativa* with alder (*Alnus glutinosa*) and willow *Salix* sp. growing in wetter areas. Wet, regularly inundated areas adjacent to the River Poulter support a range of marginal and marshland plants.

The site provides a range of breeding and foraging habitats for woodland birds, invertebrates, mammals and amphibians.

Clumber Park LWS

This large site comprises a diverse area of mixed habitats including deciduous and mixed woodland, lowland acid grassland, heathland, a large lake and habitats associated with the River Poulter. It is of considerable botanical interest and of zoological importance for the species of birds, invertebrates, herptiles and bats it holds.

Bothamsall Lane Verges LWS

This minor road has verges of dry neutral grassland with species-rich hedgerows behind.

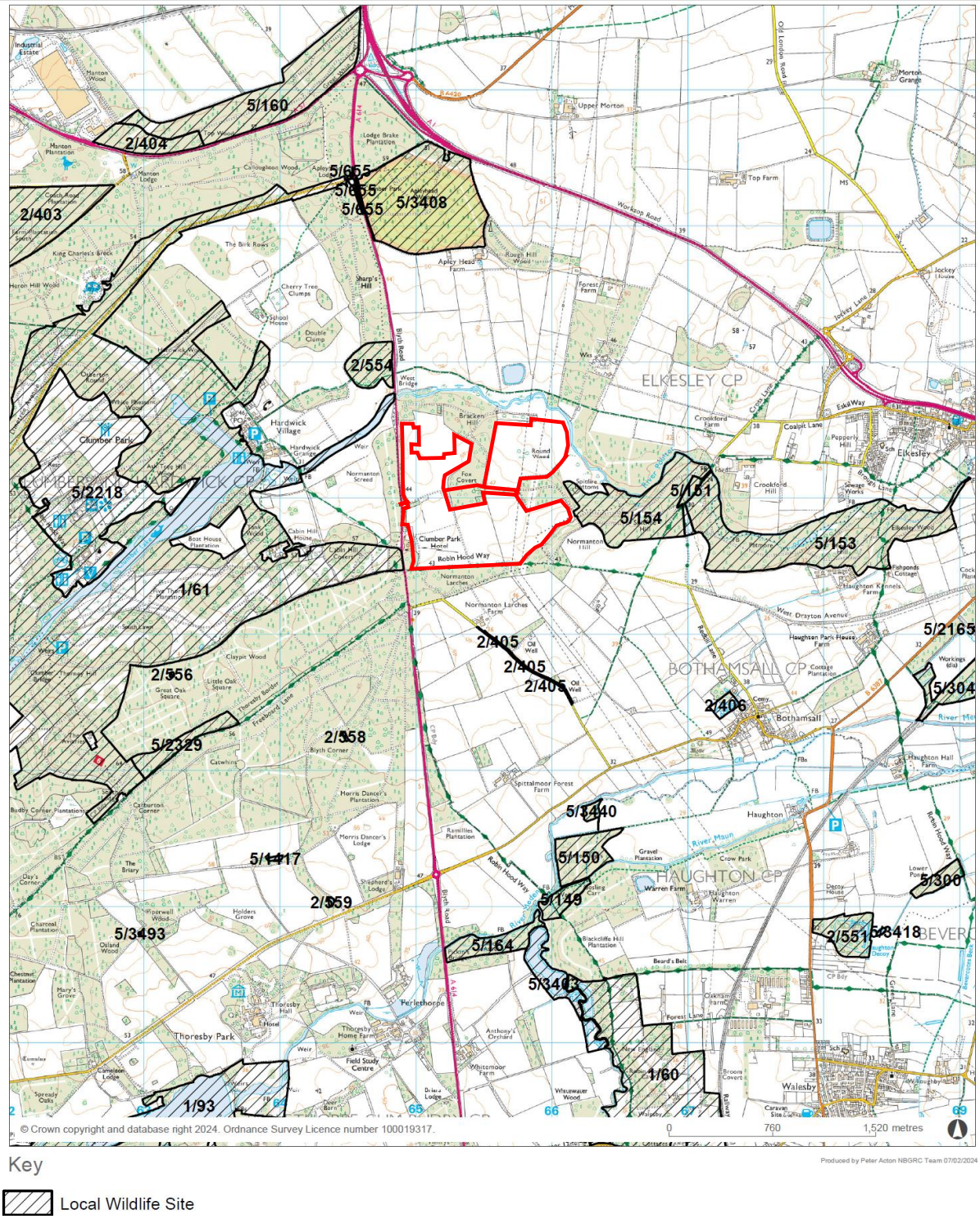

Figure 1. Local Wildlife Sites within a 1km radius of the site (which is outlined in red).

3.1.3 Species Records

The following sections discuss species records that are considered to be relevant, or potentially relevant to the site, given the nature of the habitats that are present within the site and the immediate surrounding area.

3.1.3.1 Amphibians

The Records Centre holds four records of the great crested newt *Triturus cristatus* the most recent of which dates from 2000. There are also records of common toad *Bufo bufo*, common frog *Rana temporaria* and smooth newt *Lissotriton vulgaris*.

3.1.3.2 Reptiles

Records of common reptile species include slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*.

3.1.3.3 Bats

A number of bat species have been recorded from the local area including:

- Common pipistrelle *Pipistrellus pipistrellus*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Noctule *Nyctalus noctula*
- Lesser noctule *Nyctalus leisleri*
- Daubenton's bat *Myotis daubentonii*
- Brown long-eared bat *Plecotus auritus*
- Natterer's bat *Myotis nattereri*
- Brandt's bat *Myotis brandtii*
- Whiskered bat *Myotis mystacinus*

3.1.3.4 Other Mammals

Records of other mammals include water vole *Arvicola amphibius*, water shrew *Neomys fodiens* and otter *Lutra lutra* from the River Poulter, as well as badger *Meles meles*, brown hare *Lepus europaeus* and hedgehog *Erinaceus europaeus*.

3.1.3.5 Birds

Records of farmland and woodland bird species include yellowhammer *Emberiza citrinella*, woodlark *Lullula arborea*, greenfinch *Chloris chloris*, chaffinch *Fringilla coelebs*, cuckoo *Cuculus canorus* and marsh tit *Poecile palustris*. There is one record of the kingfisher *Alcedo atthis* from the River Poulter, dating from 2018.

3.1.3.6 Invertebrates

Records of butterflies include small heath *Coenonympha pamphilus*, small copper *Lycaena phlaeas*, common blue *Polyommatus icarus* and purple emperor *Apatura iris*. There are also numerous records of water beetle species.

3.1.3.7 Fish

Fish species, recorded from the River Poulter, including bullhead *Cottus gobio* and eel *Anguilla anguilla.*

3.1.3.8 Plants

Rare and uncommon plant species records include wood sorrel *Oxalis acetosella*, tormentil *Potentilla erecta*, large-leaved lime *Tilia platyphyllos*, petty whin *Genista anglica* and common valerian *Valeriana officinalis*.

3.2 Habitats

Photographs of the site are presented in Appendix 1. Appendix 2 illustrates the location of the site and provides an aerial photograph of the site within the surrounding landscape.

A Baseline Habitat Map of the site can be found in Appendix 4. The UKHAB codes for the habitats within the site are presented within Table 3.

Table 3. UKHAB habitat codes for the site; habitat baseline.

Primary Code	Secondary Code	Description
c1c	600	Cropland; cereal crops (ploughed)
u1c	-	Urban; artificial unvegetated; unsealed surface
g4	-	Grassland; modified grassland
w2b	29	Woodland & Forest; other Scot's pine woodland (plantation)
h2a6	116	Native hedgerow (other)

3.2.1 Cereal Crops

The majority of the site comprises open, wide arable land (cereal crops) which had recently been ploughed at the time of the survey. The ploughed land extends close to the field edges, with only narrow grassy margins.

Ploughed cereal cropland is considered to be of negligible ecological value.

3.2.2 Artificial Unvegetated; Unsealed Surface

Artificial unvegetated; unsealed surface is present in the form of existing trackways and farm tracks.

These areas are devoid of vegetation and are considered to be of negligible ecological value.

3.2.3 Modified Grassland

There is one small area of modified (agriculturally improved) grassland within the site. The grassland is managed to a short sward and includes perennial rye *Lolium perenne*, cock's-foot *Dactylis glomerata* and false oat *Arrhenatherum elatius*. Herbs are present in low abundance and include creeping buttercup *Ranunculus repens*, white clover *Trifolium repens*, yarrow *Achillea millefolium*, creeping thistle *Cirsium arvense*, dandelion *Taraxacum officinale* and broad-leaved dock *Rumex obtusifolius*.

This area modified grassland is species-poor and has poor structure. The habitat is considered to be of ecological value at the site level only.

The grassland does not meet the criteria for a grassland habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006.

3.2.4 Other Scot's Pine Woodland (plantation)

There is one small area of plantation woodland within the site. The upper canopy is dominated by Scot's pine Pinus sylvestris, with oak *Quercus robur* and silver birch *Betula pendula* in a sub-storey. The ground flora is dominated by bracken *Pteridium aquilinum* and bramble *Rubus fruticosus*.

The plantation woodland is not considered to meet the criteria of a Lowland Mixed Deciduous Woodland of 'principal importance' as listed within Section 41 of the NERC Act 2006. The woodland is considered to be of ecological value at the site level only.

3.2.5 Native Hedgerow

There are two sections of native hedgerow within the site, and both are exclusively hawthorn *Crataegus monogyna*, with some bramble. Both sections of hedgerow are trimmed to a height of less than 1.5m with a flail.

Although species-poor, the hedgerows are considered to meet the criteria of a habitat of 'principal importance' as listed within Section 41 of the NERC Act 2006, namely Hedgerows. The hedgerows are therefore considered to be of ecological value at the local level.

3.2.6 Running Water

The application site (red line boundary) is over 10m from the River Poulter, a watercourse. This habitat is outside of the site boundary and will remain unaffected by the proposals.

3.3 Species

3.3.1.1 Amphibians

There are no ponds or waterbodies within the site that amphibians could use for breeding. The nearest standing waterbody, as shown on Ordnance Survey maps, is located approximately 240m to the north of the site, to the north side of the River Poulter; this appears to be some form of reservoir. There are no other ponds within a 500m radius of the site.

The site is not considered to offer suitable habitat to amphibians whilst on land. The majority of the site comprises ploughed arable farmland, which is considered to be unsuitable terrestrial habitat for amphibians. It is considered very unlikely that amphibians will be dispersing to the site from the pond located approximately 240m to the north, as they would have to cross the River Poulter.

Amphibians, including great crested newts, are considered to be absent from the site.

3.3.1.2 Reptiles

The site is not considered to offer suitable habitat to common reptiles, including slow worm and common lizard. The arable farmland does not provide suitable habitat and the field margins and hedgerows are also considered to be unsuitable, due to lack of species-richness and suitable structure to the ground flora. Similarly, the small area of modified grassland has a short sward and does not provide any suitable cover or shelter to reptiles.

Reptiles are considered to be absent from the site.

3.3.1.3 Bats

There are no structures or trees within the site that could offer shelter to roosting bats. Trees within the small area of plantation woodland exhibit no potential roost features.

The site is considered to be very poor for bat foraging, dispersal and movement. The arable fields are large and open, and the two hedgerows are species-poor and trimmed low. The two small areas of modified grassland and plantation woodland offer no significant habitat to foraging bats.

However, habitats that are adjacent to the site boundary include woodland edges, and woodlands themselves, which are considered to be potentially suitable for bat movement, foraging and behaviour. In addition, woodland is relatively abundant within the wider landscape and other habitat features, such as the River Poulter, also provide potentially suitable habitat for bats.

3.3.1.4 Other Mammals

There are no suitable habitats within the site for otters, water voles or water shrews.

There are no badger setts within the site or within accessible areas within 30m of the site boundary. No evidence of badger activity was noted during the survey.

The site is considered to offer suitable habitat to brown hare, as this is a species of arable farmland (and grassland) habitats.

The site is considered to offer very limited habitat to hedgehogs, in the form of hedgerows and plantation woodland. The arable farmland is considered to be unsuitable habitat for this species.

3.3.1.5 Birds

3.3.2 Birds

The site is considered to offer very limited habitat to most breeding bird species, with trees, shrubs and other woody vegetation limited to a small area of plantation woodland and two sections of hedgerow. The remainder of the site is cultivated arable land which does not offer nesting or breeding habitat to the majority of bird species.

A total of 33 bird species were recorded from the site and adjacent habitats (see Table 4) during the breeding bird survey in 2024. Of these, the majority are not considered to be breeding or nesting within the site, having been seen only within habitats adjacent to the site boundary, outside of the site or flying over the site.

Of the species observed during the survey, only the following 11 species were observed within the site boundary:

- Yellow wagtail
- Yellowhammer
- Skylark
- Dunnock
- Wren
- Robin
- Blackbird
- Pied wagtail
- Chiffchaff
- Whitethroat
- Pheasant

All of the above species are common and widespread. All other species were observed outside of the site or only flying over the site.

Yellow wagtail, yellowhammer, skylark and dunnock are all listed within Section 41 of the NERC Act as species of ‘principal importance’. This is primarily due to population decline caused by modern agricultural practices.

Yellow wagtail and yellowhammer are both on the Red List of Birds of Conservation Concern* (Eaton *et al.,* 2015), whilst skylark and dunnock are on the Amber List.

Of these four species, only skylarks are confirmed as nesting/breeding within the site (due to observation of singing males holding territories within certain arable fields). Three breeding territories (Figure 3) have been confirmed, with male birds seen singing in the same location on two or more occasions. A further three to four breeding territories are possible, but have not been confirmed (males only seen on one occasion in one location).

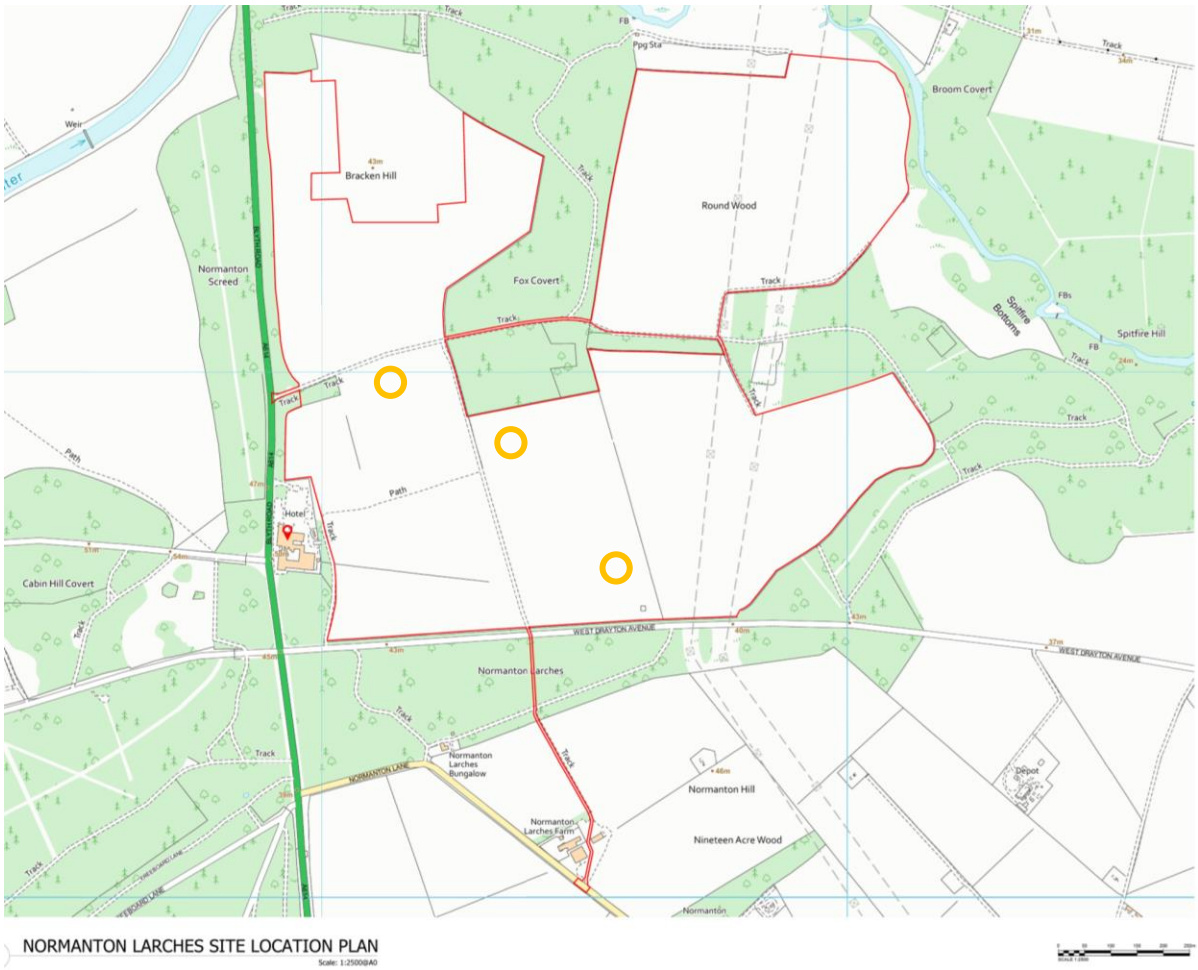

Figure 2. Locations of confirmed skylark breeding territories, indicated by the orange circles.

Whilst it is possible that yellowhammer, dunnock and yellow wagtail are also nesting within the site, habitat for these species is very limited as the majority of the site comprises arable farmland under intensive cultivation. Dunnock was observed only once during the three surveys, and it is considered unlikely that this indicates a breeding pair. Similarly, yellowhammers were only seen on three occasions in total, with no singing males recorded, or any other indication of successful breeding. Yellow wagtails were observed on seven occasions, but these are considered to be foraging individuals only.

All other species of 'principal importance' or species listed as either 'Amber' or 'Red' Birds of Conservation Concern* (Eaton *et al.,* 2015) were recorded off-site and are not considered to be breeding within the site. The observations of these species are as follows:

- Woodlark – one bird observed on one occasion outside of the site boundary
- Song thrush – several observations; all birds were observed outside of the site boundary
- Linnet – observed on two occasions; both birds were observed outside of the site boundary
- Lapwing – a group of 7 birds were seen flying over the site on one occasion

No Cetti's warblers *Cettia cetti* were observed during the survey.

There are considered to be no suitable habitat within the site for breeding woodlark or Cetti's warbler.

With regard to the remaining species that have been observed off-site, the assemblage is typical of lowland England, and typical of woodland, hedgerow and farmland habitats. Potentially valuable habitats that are present off-site include woodland plantation, woodland and the habitats associated with the River Poulter.

Table 4. Birds recorded within the site and within adjacent areas during the breeding bird survey in 2024. N.B. not all of these observations are from within the site boundary.

Common name	Species name	BAP/Section 41*	BCC Status*
Pheasant	*Phasianus colchicus*	No	Introduced
Chiffchaff	*Phylloscopus collybita*	No	Green
Jackdaw	*Corvus monedula*	No	Green
Crow	*Corvus corone*	No	Green
Robin	*Erithacus rubecula*	No	Green
Blackbird	*Turdus merula*	No	Green
Whitethroat	*Curruca communis*	No	Green
Goldfinch	*Carduelis carduelis*	No	Green
Great spotted woodpecker	*Dendrocopos major*	No	Green
Treecreeper	*Certhia familiaris*	No	Green
Pied wagtail	*Motacilla alba*	No	Green
Long-tailed tit	*Aegithalos caudatus*	No	Green
Coal tit	*Periparus ater*	No	Green
House martin	*Delichon urbicum*	No	Green
Swallow	*Hirundo rustica*	No	Green
Nuthatch	*Sitta europaea*	No	Green
Blackcap	*Sylvia atricapilla*	No	Green
Magpie	*Pica pica*	No	Green
Great tit	*Parus major*	No	Green
Blue tit	*Cyanistes caeruleus*	No	Green
Wren	*Troglodytes troglodytes*	No	Green
Raven	*Corvus corax*	No	Green
Wood pigeon	*Columba palumbus*	No	Green
Greenfinch	*Carduelis chloris*	No	Green
Chaffinch	*Fringilla coelebs*	No	Green
Willow warbler	*Phylloscopus trochilus*	No	Green
Buzzard	*Buteo buteo*	No	Green
Woodlark	*Lullula arborea*	**Yes**	Green
Song thrush	*Turdus philomelos*	**Yes**	**Amber**
Dunnock	*Prunella modularis*	**Yes**	**Amber**
Skylark	*Alauda arvensis*	**Yes**	**Red**
Yellowhammer	*Emberiza citrinella*	**Yes**	**Red**
Linnet	*Linaria cannabina*	**Yes**	**Red**
Yellow wagtail	*Motacilla flava*	**Yes**	**Red**
Lapwing	*Vanellus vanellus*	**Yes**	**Red**

** Birds of Conservation Concern (BoCC). The UK's birds have been split in to three categories of conservation importance - Red, Amber and Green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green. Amber list criteria include species with unfavourable conservation status in Europe, historical population decline or documented declines in the UK breeding population in recent decades. In addition, many bird species have been listed within the UK Biodiversity Action Plan in recognition of rarity, distribution and recent population declines*.

Fuller (1980) describes a breeding bird population of between 25-49 species as being of 'local' importance. As there are likely to be far less than this number of species breeding within the site, it is considered unlikely that the site is a key habitat for local bird populations. As previously discussed, intensively farmed arable land offers very limited potential breeding habitat to the majority of bird species.

3.3.2.1 Invertebrates

There are no suitable habitats within the site for small heath, small copper, common blue or purple emperor butterflies as the host plants for these species are not present within the site.

There are no suitable habitats for water beetles within the site.

The invertebrate species assemblage is likely to be very limited, and comprise only common and widespread species that can exist within cultivated cropland. More valuable habitats for invertebrates are plantation woodland, hedgerows and modified grassland. However, these are unlikely to support a rare or uncommon invertebrate assemblage.

3.3.2.2 Fish

There are no habitats within the site for fish species.

3.3.2.3 Plants

No rare or uncommon plant species were noted within the site. No wood sorrel, wild strawberry, tormentil, bluebells *Hyacinthoides non-scripta*, or other woodland species of conservation concern were noted within the woodland or hedgerow habitats.

3.3.3 Other Species

The site is not considered to be suitable for other protected or notable species, such as hazel dormouse *Muscardinus avellanarius* or harvest mouse *Micromys minutus*.

4 Discussion

4.1 Relevant Legislative & Policy Guidance

4.1.1 Nesting Birds

Nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. The nesting season for most species is between March and August inclusive.

4.1.2 The Natural Environment & Rural Communities Act 2006

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on the Secretary of State to publish, review and revise lists of living organisms and types of habitat in England that are of principal importance for the purpose of conserving English biodiversity.

It also requires the Secretary of State to take, and promote the taking of, steps to further the conservation of the listed organisms and habitats. This is important in the context of planning decisions as the National Planning Policy Framework affords planning policy protection to the habitats of species listed by virtue of Section 41.

Habitats listed within Section 41 of the NERC Act 2006 that are considered relevant to the site include:

- Hedgerows

Species listed within Section 41 of the NERC Act 2006 that are relevant to the site, or considered to be potentially relevant include:

- Common bird species such as dunnock, yellowhammer, song thrush etc – hedgerows and plantation woodland offer potential nest sites
- Bat species such as soprano pipistrelle – potential for some foraging and dispersal along site boundaries, particularly woodland edges
- Hedgehogs – hedgerows and plantation woodland offer potential habitat

4.1.3 National Planning Policy Framework (NPPF)

The National Planning Policy Framework was updated on in December 2023 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012, revised in July 2018 and updated in February 2019 and July 2021.

The NPPF states that planning policies and decisions should contribute to and enhance the natural and local environment by:

- 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);
- 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;
- maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- 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
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

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 Framework; 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.

To protect and enhance biodiversity and geodiversity, plans should:

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

When determining planning applications, local planning authorities should apply the following principles:

- 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;
- 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;
- 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
- 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 integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

The following should be given the same protection as habitats sites:

- ❖ Potential Special Protection Areas and possible Special Areas of Conservation;
- ❖ Listed or proposed Ramsar sites; and
- ❖ Sites identified, or required, as compensatory measures for adverse effects on a habitats site, (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitat's site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the site.

4.1.4 Environment Act 2021

The Environment Act 2021 ensures that England maintains and improves its environmental protection. The Act details a legal requirement for all developments to ensure that a minimum of +10% net gain in Biodiversity is delivered.

4.2 Potential Impacts

4.2.1 Sites of Nature Conservation Importance

There are no foreseeable impacts on sites of nature conservation importance as a result of the proposals. The proposals do not fall under 'Operations Requiring Natural England's Consent' within the impact risk zone of Clumber Park SSSI. The SSSI is located far enough away, and on the opposite side of a main road, to remain unaffected by the proposals.

There are no foreseeable direct or indirect impacts on Birklands and Bilhaugh SAC or the habitats and species for which the SAC is designated. The SAC is located approximately 5km from the site and there are no foreseeable impacts on the old acidophilous oak woods or invertebrate fauna that the SAC supports.

There are no foreseeable direct or indirect impacts on Local Wildlife Sites including Poulter Valley Plantation West LWS, Clumber Park LWS and Bothamsall Lane Verges LWS. Both of these sites are outside of the site boundary and will remain unaffected by the proposed works, both during construction and operation.

4.2.2 Habitats

The proposals will result in the loss of arable land (cropland; cereal crops) and its replacement with grassland habitat between and under the proposed solar panel arrays. There will also be some loss of arable land to new tracks, parking, substation, battery compound and inverters. This will not result in any foreseeable adverse ecological impacts due to the low ecological value of the existing arable land. Existing modified grassland, plantation woodland and hedgerows will be retained. Hedgerows will be enhanced to species-rich native hedgerows. In addition to the creation of grassland, other habitat creation will include woodland and scrub.

The Biodiversity Net Gain Assessment (Section 6) indicates that the proposals will result in a significant gain in biodiversity (habitats and hedgerows).

Total net unit change in habitats: **+333.48 habitat units**
Total net % change in habitats: **+169.89% habitat units**

Total net unit change in hedgerows: **+3.13 hedgerow units**
Total net % change in hedgerows: **+247.99% hedgerow units**

The proposals deliver a demonstrated gain in biodiversity of over +10% for both habitats and hedgerows (see Section 6) through the Statutory Biodiversity Metric.

4.2.3 Species

4.2.3.1 Amphibians

There are no foreseeable impacts on great crested newts or other amphibians.

4.2.3.2 Reptiles

There are no foreseeable impacts on reptiles.

4.2.3.3 Bats

There are no foreseeable impacts on roosting bats or structures/trees that bats could use for roosting.

External lighting associated with the proposed development could have an impact on bats by affecting their activity and behaviour. In that certain species of bat have been shown to be attracted to mercury vapour lamps which emit light over a very broad-spectrum including UV light to which insects are particularly sensitive.

Furthermore, insects can be attracted in large numbers to mercury lamps and so can bats of the genera *Nyctalus* and *Pipistrellus*, including noctules *N. noctula* and common pipistrelles *P. pipistrellus* (Rydell and Racey 1993). Lighting has shown to have an opposite effect on certain other species, such as the lesser horseshoe bat *Rhinolophus hipposideros*, which have been shown to avoid areas of artificial light (Stone et al. 2009).

With an appropriate lighting strategy in place, there are no foreseeable impacts on bat activity, movement or foraging.

The proposed landscaping, including habitats enhancement and creation, is likely to result in an enhancement for bat species.

4.2.3.4 Other Mammals

There are no foreseeable impacts on otters, badgers or water voles.

With the retention of the existing woodland plantation and hedgerows (which will also be enhanced), there are no foreseeable impacts on hedgehogs or potential habitats for this species.

Whilst arable land may provide habitat for brown hare, grassland is also a suitable habitat for this species. The conversion of arable land to grassland is therefore unlikely to result in a significant impact, or habitat loss, for brown hares.

4.2.3.5 Birds

Removal of trees, shrubs or other woody species during the bird breeding period (March to August, inclusive) may result in the damage or destruction of active nests, and the killing or injury of young and eggs.

Although possibly absent within the site, the construction of a solar array may temporarily displace breeding skylark pairs within the site. However, research indicates that the species can nest and forage within solar farms (Montag, 2016). Monitoring of existing solar farms has shown that breeding skylarks recolonise the grassland habitats between the panel arrays after construction, and behaviour indicates successful breeding within solar farms by skylarks, with singing males holding territories over solar farms.

A survey supported by Solar Energy UK has found that solar farms deliver significant biodiversity gains and have the potential to offer even more. Conducted in collaboration with ecological consultancies Clarkson & Woods and Wychwood Biodiversity, the 'Solar Habitat 2024: Ecological trends on solar farms in the UK' study found that solar farms can become "safe havens for biodiversity" and play an "important role" in nature restoration.

The study analysed a total of 87 solar sites in 2023 employing a standardised methodology, which Solar Energy UK helped develop alongside Lancaster University in 2022.

Their findings revealed that vulnerable and red-listed species, including skylarks, are among the most common wildlife present on UK solar farms. Yellowhammers, linnets and starlings, all red-listed bird species, were also present at the observed solar sites.

Therefore, post-construction, it is considered that ground-nesting species, such as the skylark, will be able to continue to use the site for nesting, and that the proposed grassland habitat between the panel arrays will provide potential nesting and foraging opportunities to this species, as well as other birds.

More generally, solar farms are known to support a greater abundance and diversity of bird species, and disproportionately benefit BoCC species (Montag, 2016; Shotton, 2020). The introduction of an array will diversify the homogenous arable habitats of the site, by providing perches and foraging habitat (grassland) within previously homogenous arable habitats. The conversion of arable land to grassland is also likely to increase the bird biodiversity of the site as a whole.

The proposed scrub and woodland planting is likely to result in a significant ecological enhancement for several bird species, including species such as dunnock, song thrush and yellowhammer.

4.2.3.6 Invertebrates

There are no foreseeable impacts on rare or uncommon butterfly species or water beetle species. The conversion of arable land to grassland is unlikely to result in any significant impacts on invertebrate species.

Indeed, it is considered likely that there will be an overall enhancement for invertebrates. Grassland, enhanced hedgerows, scrub and woodland will all diversify the habitat availability for invertebrates and the creation of species-rich grassland may provide habitat for small heath, common blue and small copper butterflies.

4.2.3.7 Fish

There are no foreseeable impacts on fish species.

4.2.3.8 Plants

There are no foreseeable impacts on protected or rare plant species. The creation of grassland, scrub and woodland habitats are likely to deliver a significant enhancement for plant species.

4.2.4 Other Species

There are no foreseeable impacts on other species of conservation concern.

5 Biodiversity Net Gain Assessment

5.1 Overview

The NPPF (revised December 2023) states that planning policies and decisions should contribute to and enhance the natural and local environment by minimising impacts to existing habitats and providing net gains for biodiversity.

A biodiversity net gain assessment has been undertaken using Statutory Biodiversity Metric. The full calculation can be found in Appendix 7 (appended Excel Spreadsheet).

The result of the calculation predicts a **net gain in biodiversity.** The predicted net percentage change is **+169.89% habitat units; an increase of +333.48 habitat units.** There is also a **+3.13 unit increase in hedgerow units**, **an increase of +247.99%**.

The calculation is based on the habitats present on site before development (please see Appendix 4 for a Baseline Habitat Map) and the habitats after development has taken place (please see the Appendix 5 for a UKHAB proposed habitat plan showing the habitats after development). Appendix 6 presents habitat change plan.

5.2 Habitat Status Before Development

Each of the habitats discussed within Section 3 of this report were inputted into the Statutory Biodiversity Metric using UK Habitat Classification (UKHAB). The existing habitats are presented in Table 5 below (also please refer to Section 3 for a full description of habitats).

Table 5. UKHAB baseline habitats and hedgerows.

Habitat UKHAB	Total Area (ha)/Length (km)
Cropland; cereal crops (ploughed)	87.5055 ha
Urban; artificial unvegetated; unsealed surface	0.6659 ha
Grassland; modified grassland	0.16 ha
Woodland & Forest; other Scot's pine woodland (plantation)	0.3886 ha
Native hedgerow (other)	0.573 km

5.2.1 Habitat Condition Assessment

Habitat condition was assessed according to the criteria given within the Statutory Biodiversity Metric User Guide. The summary condition assessments for the habitats within the baseline can be found in Table 6. The details of the habitat condition assessment can be found within the Habitat Condition Assessment Sheets in Appendix 8 of this report (separate Excel spreadsheet).

Table 6. UKHAB habitats and condition assessment before development.

UKHab	Condition	Rationale
Cropland; cereal crops (ploughed)	N/A	N/A
Artificial unvegetated; unsealed surface	N/A	N/A
Grassland; modified grassland	Poor	Passes 4 criteria, but not essential criterion A
Woodland & Forest; other Scot's pine woodland (plantation)	Moderate	Score of 30 out of 39
Native hedgerow (other)	Moderate	Fails less than 4 criteria. Does not fail both attributes in more than one functional group

5.2.2 Habitat Strategic Significance

The site is not located within an area of strategic significance for nature conservation.

5.3 Habitat Status After Development

The proposals are for a solar farm with solar panel arrays within areas of created grassland (other lowland acid grassland). Other created habitats will include mixed scrub, willow scrub (riparian edge) and woodland (other woodland; mixed). Existing native (species-poor) hedgerows will be retained and enhanced to species-rich hedgerows through additional planting. The existing small areas of other Scot's pine woodland and modified grassland will be retained as they area, with no proposed enhancement.

The target habitat condition of enhanced and created habitats is discussed further below.

5.3.1 Other Scot's Pine Woodland (retained)

The existing area of Scot's pine woodland plantation will be retained. The woodland will be retained as moderate condition, with no proposed enhancement.

5.3.2 Modified Grassland (retained)

The existing area of modified grassland (pumping station) will be retained. The grassland will be retained as poor condition, with no proposed enhancement.

5.3.3 Artificial Unvegetated; Unsealed Surface (retained)

Existing tracks will be retained.

5.3.4 Artificial Unvegetated; Unsealed Surface (created)

New tracks.

5.3.5 Developed Land; Sealed Surface (created)

New areas of developed land; sealed surface will be created in the form of parking, substation, battery compound and inverters.

5.3.6 Other Lowland Acid Grassland (created)

The aim will be to create 'other lowland acid grassland' under and between the solar panel arrays and within the proposed woodland and scrub areas. This will be achieved through the

sowing of an appropriate native species mix, such as Landlife wildflower seed mix for Dry, Sandy and Loam Soils Wildflower Seeds LW3M, or similar.

5.3.7 Mixed Scrub (created)

Native scrub will be created. The native, mixed scrub will include the following species:

- Field maple *Acer campestre*
- Dogwood *Cornus sanguinea*
- Hazel *Corylus avellana*
- Hawthorn *Crataegus monogyna*
- Holly *Ilex aquifolium*
- Wild privet *Ligustrum vulgare*
- Blackthorn *Prunus spinosa*
- Wild rose *Rosa canina*
- Buckthorn *Rhamnus cathartica*
- Rowan *Sorbus aucuparia*
- Gorse *Ulex europaea*

It is considered that moderate condition can be achieved through the following:

- 100% of scrub is native,
- There are at least three native woody species
- No single species comprises more than 75% of the cover
- Seedlings, saplings, young shrubs and mature shrubs are all present
- There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA5) and species indicative of suboptimal condition6 make up less than 5% of ground cover.
- The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat

5.3.8 Willow Scrub (created)

Willow scrub will be created with the 'riparian edge' zone close to the River Poulter.

- Goat willow *Salix caprea*
- Osier *Salix viminalis*
- Rowan *Sorbus aucuparia*
- Dogwood *Cornus sanguinea*
- Wild rose *Rosa canina*
- Buckthorn *Rhamnus cathartica*

This area of willow scrub will also be seeded with Emorsgate Tussock Mix EM10, or similar. As above, it is considered that moderate condition can be achieved within this habitat.

5.3.9 Other Woodland, Mixed (created)

Woodland planting, with shrub understorey, is proposed using the following species mix:

- Field maple *Acer campestre*
- Norway maple *Acer platanoides*
- Silver birch *Betula pendula*
- Hawthorn *Crataegus monogyna*
- Hazel *Corylus avellana*

- Beech *Fagus sylvatica*
- Holly *Ilex aquifolium*
- Scot's pine *Pinus sylvestris*
- English oak *Quercus robur*

New woodland planting will be of mixed, native, broadleaved species, with a target condition of 'moderate' in 30 years. This is considered to be achievable through the following elements being included within the woodland areas:

- Creation of deadwood habitats
- Varied vertical structure
- Maintaining tree health and regeneration
- Five or more native species within tree and shrub planting
- At least 80% native species
- No invasive species, e.g. cherry laurel

5.3.10 Native Hedgerow (enhanced)

The existing (species-poor) native hedgerows will be retained, with the loss of only one small section of approximately 4 metres. The hedgerows will be enhanced from 'native hedgerow' to 'species-rich native hedgerow' through parallel planting of a species-rich mix, which will include:

- Dogwood *Cornus sanguinea*
- Hazel *Corylus avellana*
- Holly *Ilex aquifolium*
- Blackthorn *Prunus spinosa*
- Wild rose *Rosa canina*
- Gorse *Ulex europaeus*

This planting will enhance the existing native hedgerow into a species-rich native hedgerow. The existing hedgerow is of 'moderate' condition, and it is considered that this condition can be maintained within the enhanced hedgerow.

Please refer to Appendix 5 which contains a UKHAB habitat plan of the proposed habitats showing all of these elements and to Appendix 3 for a proposal and landscape plan. Appendix 6 presents a plan that depicts areas of habitat that will be lost and retained.

Table 7. UKHAB habitats retained and enhanced, and target condition assessment after development.

On-Site Habitat Retention & Enhancement			
Habitat	**Area (ha) or Length (km) retained**	**Area (ha) or Length (km) enhanced**	**Target Habitat & Condition**
Modified grassland (poor)	0.16 ha	-	Modified grassland (poor)
Artificial unvegetated; unsealed surface (N/A)	0.6659 ha	-	Artificial unvegetated; unsealed surface (N/A)
Other Scot's pine woodland (moderate)	0.3886 ha	-	Woodland & Forest; other Scot's pine

			woodland (moderate)
Native hedgerow (moderate)	-	0.568 km	Species-rich native hedgerow (moderate)

Table 8. UKHAB habitats created and target condition assessment after development.

On-Site Habitat Creation		
Habitat	**Area (ha) or Length (km)**	**Target Condition**
Grassland; other lowland acid grassland	81.9056	Moderate
Heathland & Shrub; mixed scrub	2.373	Moderate
Heathland & Shrub: willow scrub	0.24	Moderate
Woodland & Forest; other woodland; mixed	0.92	Moderate
Urban; artificial unvegetated; unsealed surface	1.145	N/A
Urban; developed land; sealed surface	0.9219	N/A

5.4 Biodiversity Metric Calculation Summary

The result of the calculation is:

Total net unit change in habitats: **+333.48 habitat units**
Total net % change in habitats: **+169.89% habitat units**

Total net unit change in hedgerows: **+3.13 hedgerow units**
Total net % change in hedgerows: **+247.99% hedgerow units**

The results of the Statutory Biodiversity Metric show that the development will result in an overall net gain in biodiversity of greater than +10%; both habitats and hedgerows.

The Trading Rules are also satisfied.

Please refer to Appendix 7 (separate document) for full details of the Metric calculation.

6 Recommendations

6.1 Further Surveys

No further surveys for are considered necessary.

6.2 Bats

It is recommended that any new lighting should be minimised, so that dark corridors are created around and through the site in order to facilitate the movement of bats, as well as other nocturnal wildlife. Where lighting is required, it should be kept at low level and at low

intensity (Bat Conservation Trust, 2023 and Emery, 2008) and in accordance with Institution of Lighting Professionals (ILP) Guidance Note GN08/23.

It is recommended that bat boxes are erected on mature trees within the existing plantation woodland.

6.3 Birds

It is recommended that the proposed grassland habitat is managed so that the habitat is suitable for ground-nesting bird species including skylarks.

6.4 Brown Hares

It is recommended that the proposed grassland habitat is also managed so that the habitat is suitable for brown hares. It is recommended that any proposed fencing is made permeable to brown hares.

7 References

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8 Appendix 1. Photographs

Photograph 1. Arable land (left) and native hedgerow (right) looking north.

Photograph 2. Arable land, looking north,

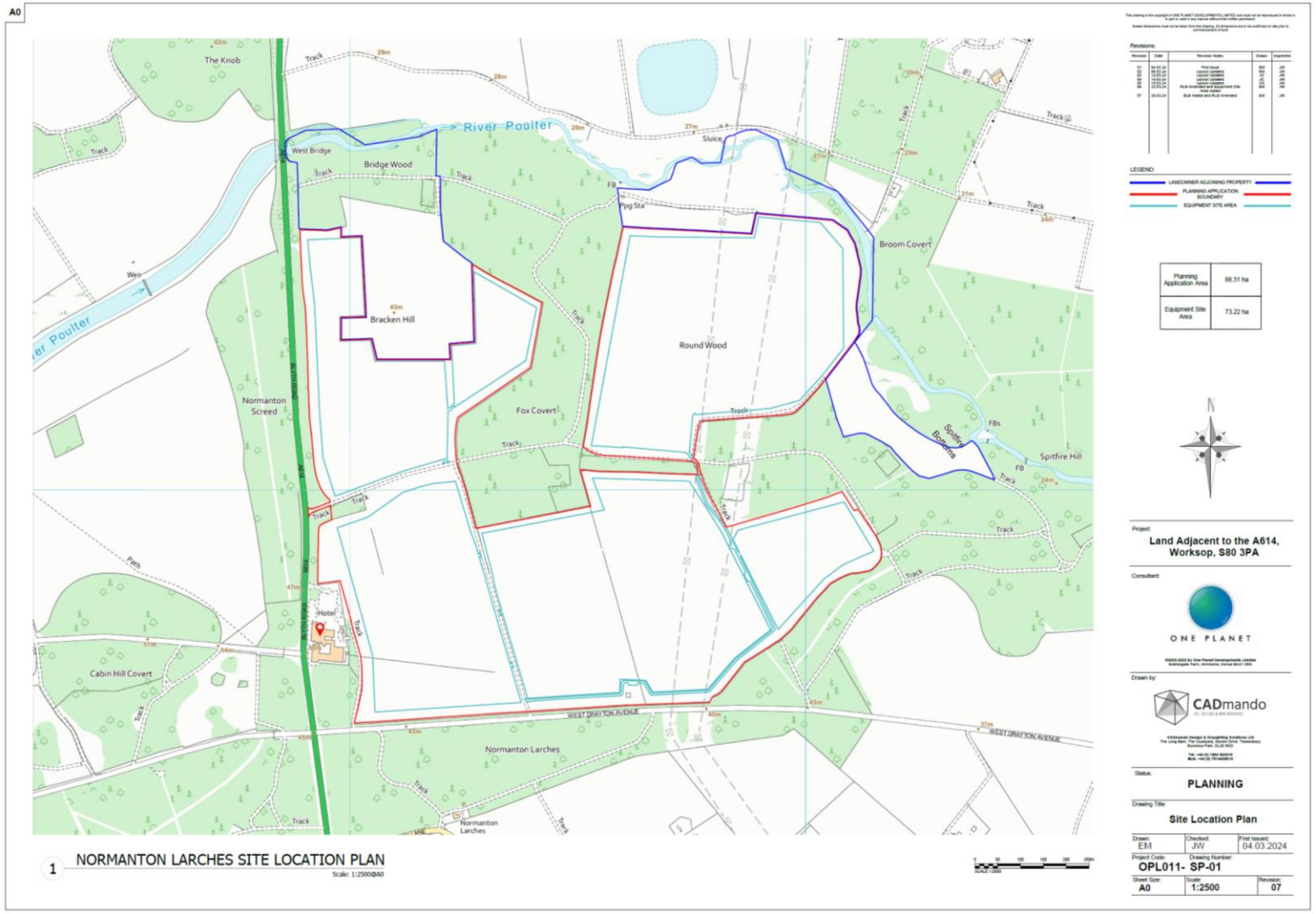
Photograph 3. Arable land and woodland edge.

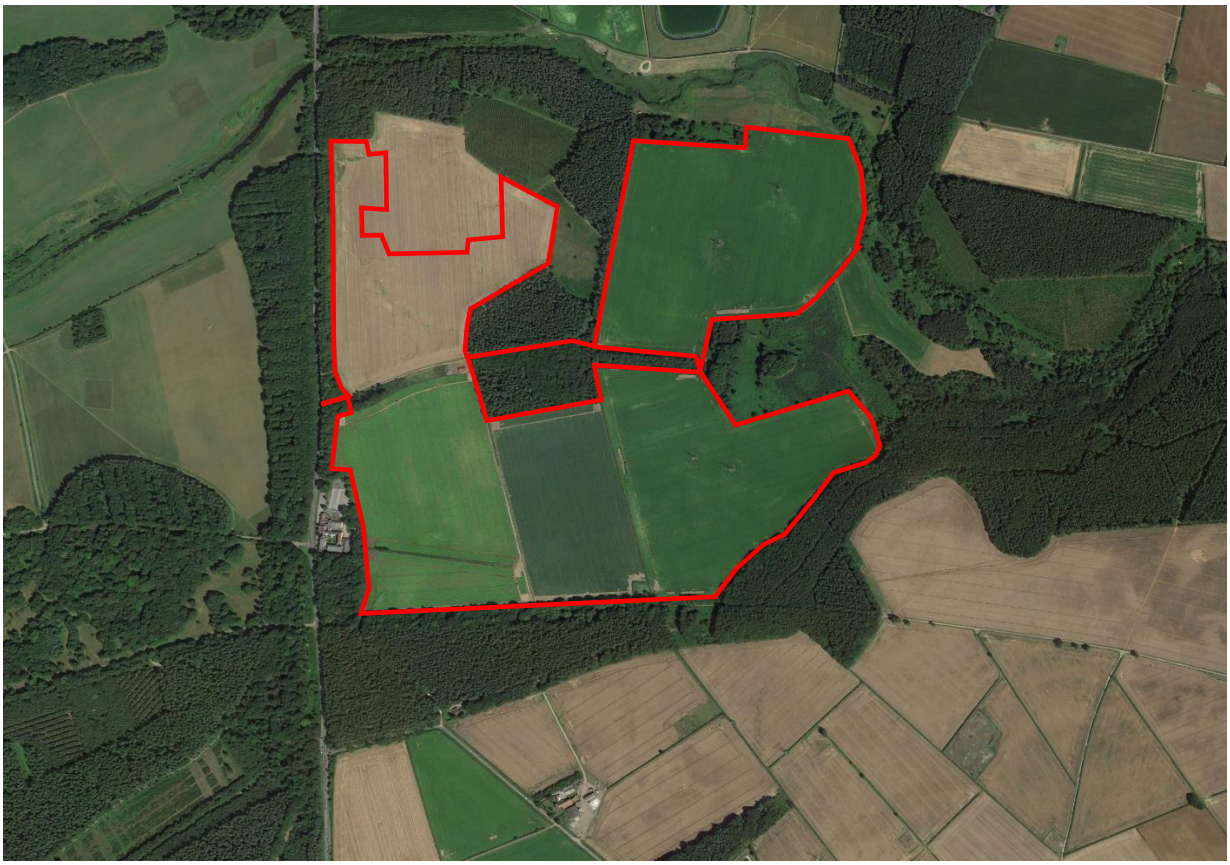
Photograph 4. Ploughed arable land.

Photograph 5. Ploughed arable land and plantation woodland.

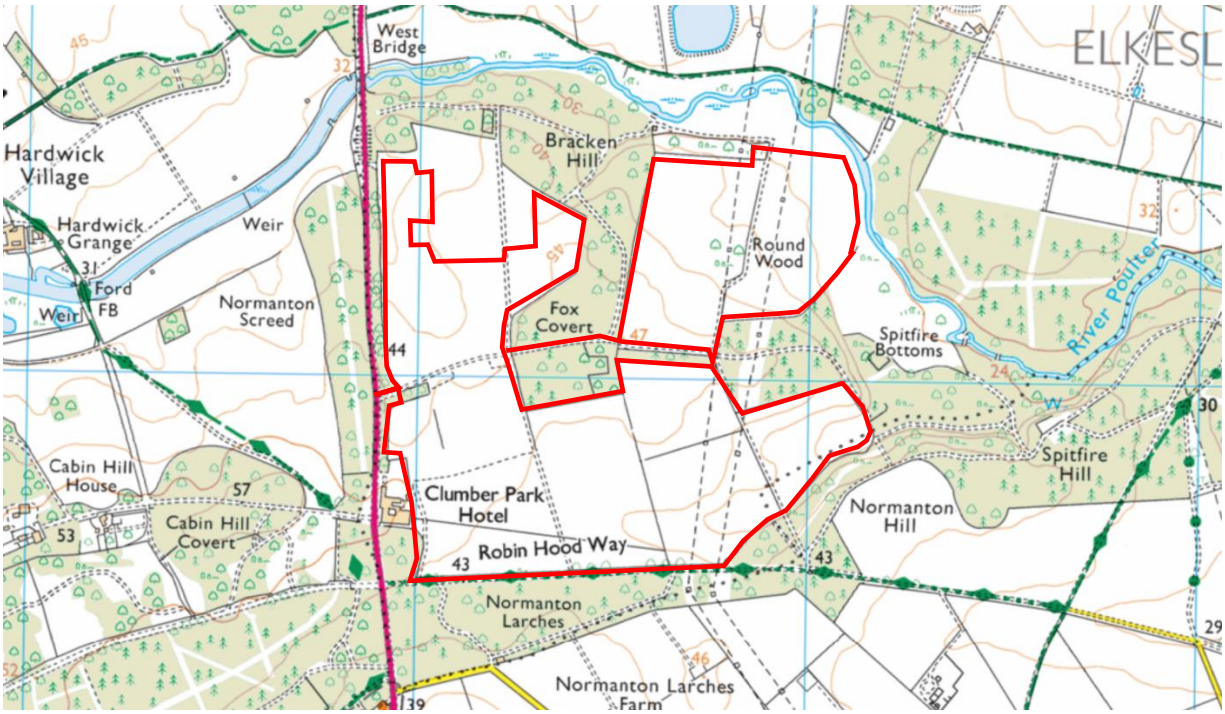
Photograph 6. Ploughed arable land, grassy margin and plantation woodland.

9 Appendix 2. Site Location Plans



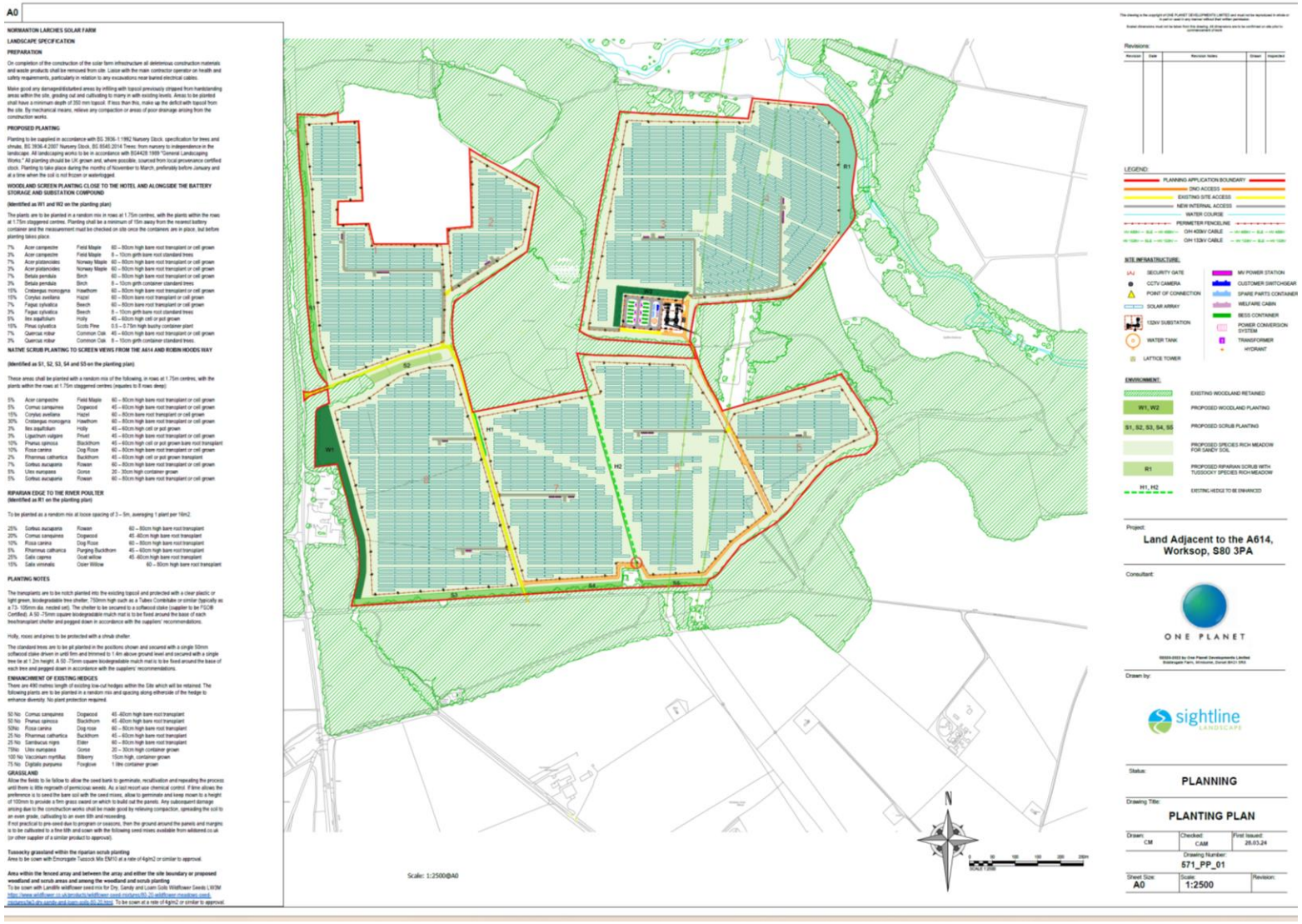


Aerial photograph showing the location of the site (outline in red). Source: Google Earth Pro.

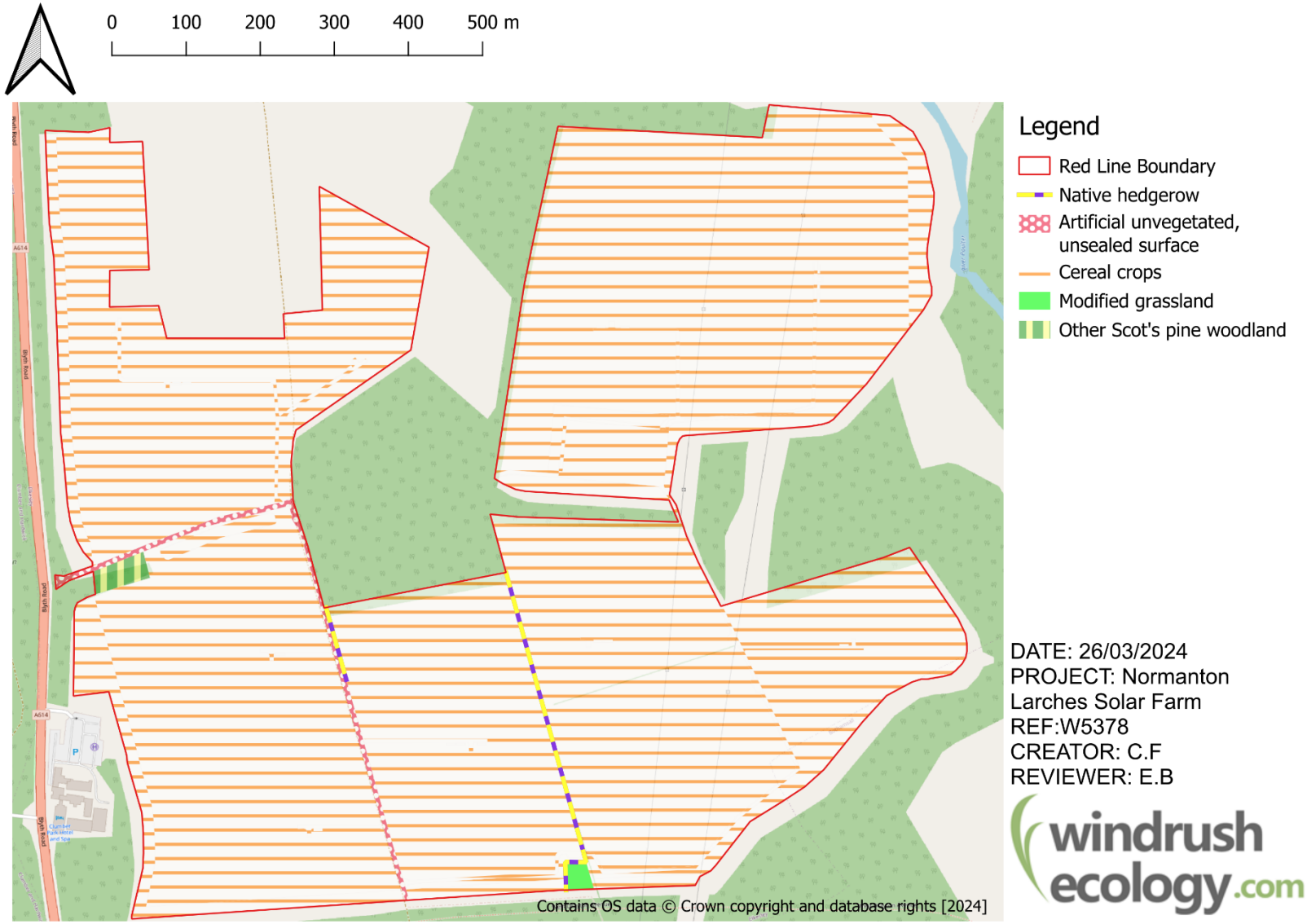


Ordnance Survey map showing the location of the site within the local area (indicated by the red outline). Source: http://www.bing.com/maps/

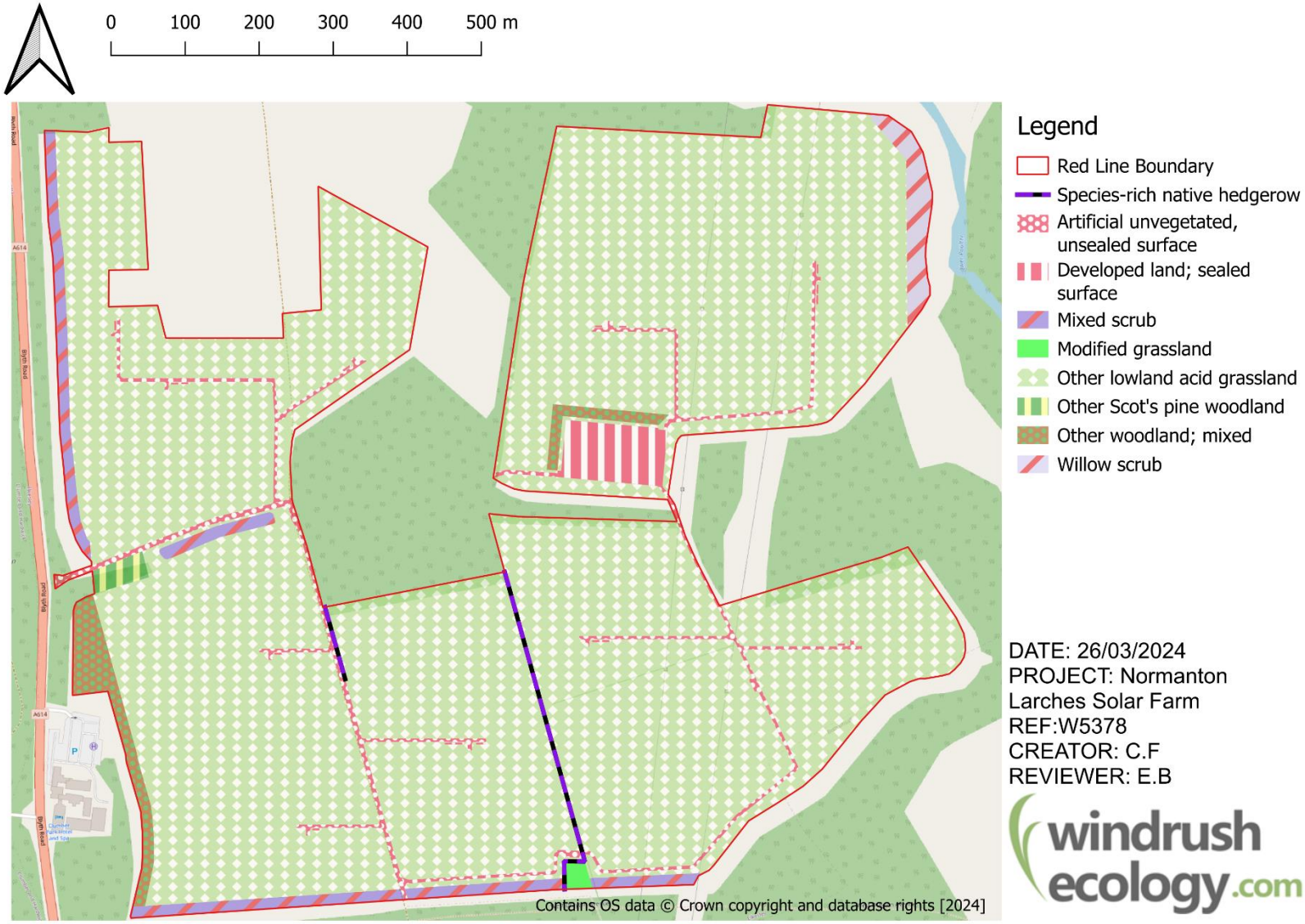
10 Appendix 3. Planting Plan



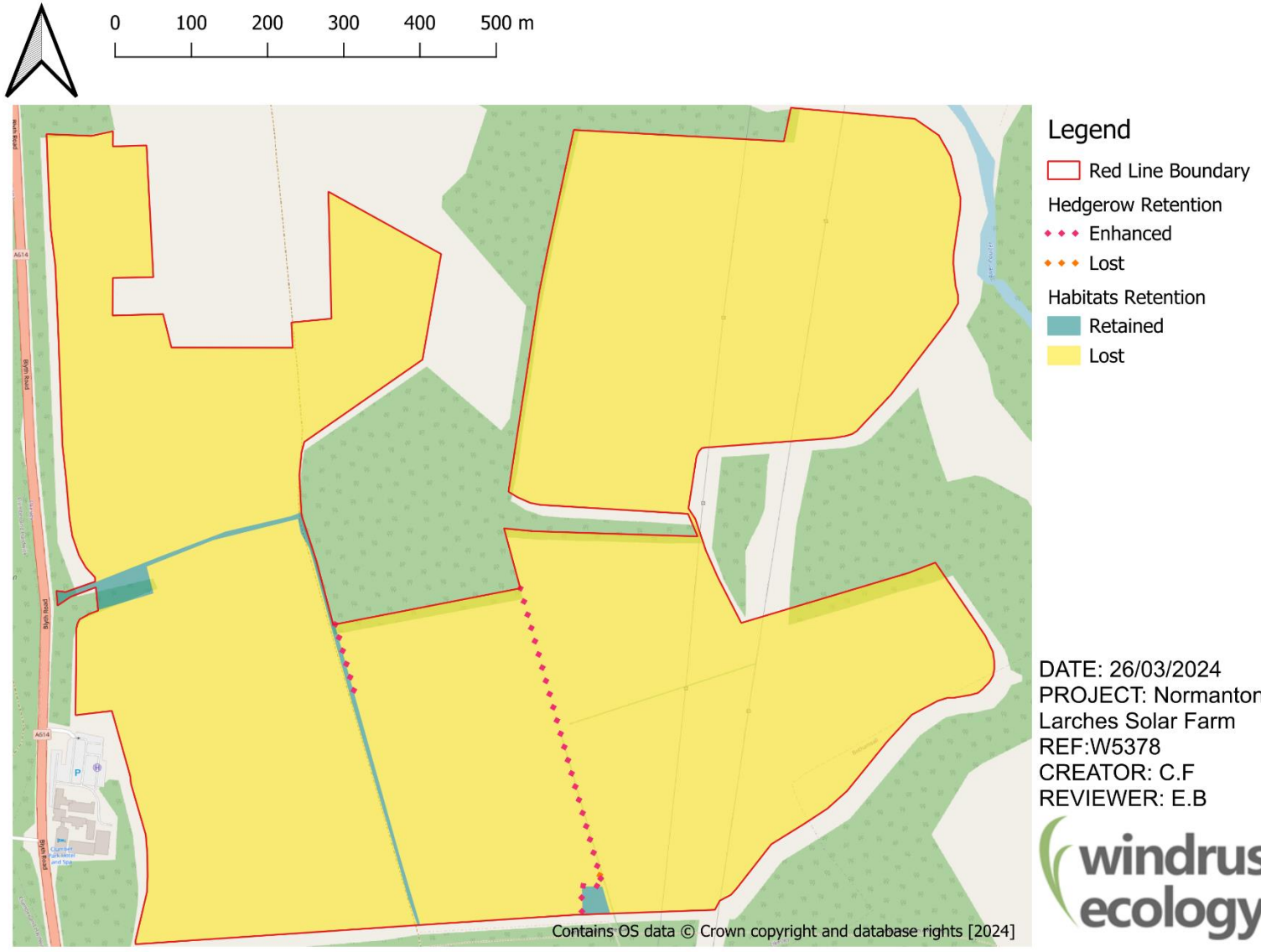
11 Appendix 4. Baseline Habitat Map



12 Appendix 5. Post-development Habitat Map



13 Appendix 6. Habitat Change Map



14 Appendix 7. Statutory Biodiversity Metric

Please refer to separate Excel spreadsheet.

15 Appendix 8. Condition Assessment Sheets

Please refer to separate Excel spreadsheet.