



ARCUS

ORNITHOLOGICAL IMPACT ASSESSMENT

SOAY SOLAR FARM AND GREENER GRID PARK

STATKRAFT UK LTD

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EXECUTIVE SUMMARY

This report has been produced for Statkraft UK LTD in support of a planning application for Soay Solar Park and Greener Grid Project (the Development) on land at Thornton, near York, East Riding of Yorkshire (the Site).

A series of bird surveys were carried out between October 2019 and July 2020 to determine the assemblage and spatial distribution of birds within the Site and immediate surrounds, and to provide a basis on which to assess the potential impacts to birds during the construction, operational and decommissioning phases of the Development.

Based on a review of available data, four features were identified for assessment: features of the Lower Derwent Valley Special Protection Area (SPA), Woodlark, special interest features of Allerthorpe Common Site of Special Scientific Interest (SSSI), and farmland bird species of conservation concern.

The assessment of potential effects of the Development concluded that, subject to appropriate mitigation, compensation and enhancement measures, there would be no significant adverse effects on these features or the wider bird assemblage at the Site.

Compensation and enhancement measures are proposed to improve nesting and foraging resources for birds throughout the year, including both general and species-specific measures. As such, the Development is expected to provide a long-term net gain for ornithology interests within the Site.

1 INTRODUCTION

1.1 Overview

Arcus Consultancy Services Limited (Arcus) has been instructed by Statkraft UK LTD to carry out an Ornithological Impact Assessment (OIA) of land at Thornton, near York, East Riding of Yorkshire (the Site), approximately centred on National Grid Reference SE 76204 46514.

The OIA is submitted as part of a planning application for the proposed Soay Solar Farm and Greener Grid Park development (the Development). The layout and technical details of the Development are provided in the associated Planning, Design and Access Statement (PDAS).

A series of surveys were carried out between October 2019 and July 2020 to provide a robust baseline on which to make the assessment. The aim of the surveys was to determine the assemblage and spatial distribution of birds within the Site and immediate surrounds, and provide a basis on which to assess potential effects during the construction, operational and decommissioning phases of the Development.

This OIA describes the methods and results of these surveys and provides an assessment of potential impacts on the bird interest at the Site, with recommendations for mitigation and/or compensation where necessary.

The report is supported by the following appendices:

- Appendix A – Legislation and policy;
- Appendix B – Bird species names and conservation designations;
- Appendix C – Figures; and
- Appendix D – Field survey details.

1.2 Planning Policy and Legislation

The following planning policy and legislation were consulted during preparation of this report, with a further summary of each provided in Appendix A:

- The Wildlife and Countryside Act 1981 (as amended)¹;
- The Conservation of Habitats and Species Regulations (CSHR) 2017²;
- Natural Environment and Rural Communities (NERC) Act 2006³; and
- The National Planning Policy Framework (NPPF) 2019⁴.

English (British) vernacular and scientific names of bird species follow the British List maintained by the British Ornithologists' Union (BOU)⁵, and a full list of species referred to in this OIA are provided in Appendix B.

¹ UK Government (1981) Wildlife and Countryside Act 1981 [Online] Available at: <https://www.legislation.gov.uk/ukpga/1981/69> (Accessed 07/07/21)

² UK Government (2017) The Conservation of Habitats and Species Regulations 2017 [Online] Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents/made> (Accessed 07/07/21)

³ UK Government (2006) Natural Environment and Rural Communities Act 2006 [Online] Available at: <https://www.legislation.gov.uk/ukpga/2006/16/contents> (Accessed 07/07/21)

⁴ UK Government (2019) National Policy Planning Framework 2019 [Online] Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> (Accessed 07/07/21)

⁵ British Ornithologist Union (2021) The British List [Online] Available at: <https://bou.org.uk/british-list/> (Accessed 07/07/21)

2 METHODS

2.1 Desk Study

A desk study was undertaken as part of the Ecological Impact Assessment (EcIA)⁶ and this was reviewed to inform this OIA. The desk study included a search of designated sites, such as Local Nature Reserves (LNR) and Sites of Special Scientific Interest (SSSI), within 2 kilometres (km) of the Site, and sites within the National Site Network including Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites within 5 km of the Site.

A request was made for species records from the North and East Yorkshire Ecological Data Centre (NEYEDC), including all records within the Site and a 2 km buffer. Records were filtered to include only those recorded since 1st January 2010.

To augment the data received from NEYEDC, a review of York Ornithological Club (YOC) annual reports was carried out to identify relevant records of sensitive species and/or species associated with the nearby designated sites such as nightjar, woodlark, whinchat and tree pipit.

2.2 Field Surveys

All surveys were carried out within the Ornithology Survey Area (OSA), which included the Site and additional 100-meter (m) buffer (Figure 1, Appendix C).

2.2.1 Winter Bird Survey

Winter Bird Surveys (WBS) were carried out between October 2019 and March 2020 to identify the non-breeding season bird interests within the Site and surrounds.

The WBS used a variation of the "look-see" method and involved the surveyor walking the Site and recording all bird species detected (by sight or sound).

Survey efforts focussed on the OSA; however, seasonal flooding in the wider area, which extended outside of the OSA, had the potential to support species associated with the nearby wetland designated sites (as listed in Section 3.1.1). All floods in the area, including within the OSA and beyond, were mapped monthly and waterbird species counted.

Six WBS visits were carried out:

- Visit 1: 18th October 2019;
- Visit 2: 15th November 2019;
- Visit 3: 6th December 2019;
- Visit 4: 23rd January 2020;
- Visit 5: 13th February 2020; and
- Visit 6: 26th March 2020.

Surveys were generally carried out in good weather and lasted for up to seven hours. Further details of the survey times and weather observations during each visit are provided in Appendix D.

2.2.2 Breeding Bird Survey

Breeding Bird Surveys (BBS) were carried out between April and June 2020, to determine the breeding bird assemblage within the Site.

⁶ Arcus (2021) *Soay Solar Farm and Greener Grid Project, Ecological Impact Assessment* [Report]

The BBS followed a reduced version of the British Trust for Ornithology's (BTO) method for the Common Birds Census (CBC)⁷. The surveyor walked slowly around the OSA recording and mapping all species encountered, including behavioural observations where applicable.

Survey efforts focussed on field margins and hedgerows, with open habitats searched using binoculars. This is considered the most appropriate method for the predominantly lowland farmland habitats present in the OSA.

Three BBS visits were carried out:

- Visit 1: 16th April 2020;
- Visit 2: 28th May 2020; and
- Visit 3: 18th June 2020.

Surveys were generally carried out in good weather and lasted for up to seven hours. Further details of the survey times and weather observations during each visit are provided in Appendix D.

2.2.2.1 BBS Data Analysis

Data analysis focussed on identifying breeding territory locations of species of conservation concern, which included any bird species matching one or more of the following criteria:

- Schedule 1-listed species on the Wildlife and Countryside Act 1981 (as amended)¹;
- Annex I-listed species on the CSHR/Birds Directive^{2,8};
- Species of Principal Importance listed on the NERC Act, 2006³;
- Red- and Amber-listed birds of conservation concern⁹; and/or
- Features of the nearby designated sites (see Section 3.1.1).

To analyse the data, all registrations of these species were transferred from the field maps to produce 'species summary maps' from which the number and distribution of likely territories for each species could be determined. The method was based on that described by Bibby *et al.* (2000)¹⁰, with an element of professional judgement.

For most species, a precautionary approach was taken and a bird was deemed to be holding territory if it was recorded singing or exhibiting other behaviour indicative of breeding during just one of the three BBS visits or, in some instances, if a pair was recorded in habitat which had the potential to support breeding birds.

For more mobile species (e.g., waders) a minimum of two registrations in an area, or definitive evidence (e.g., nest or young chicks) was recorded as a territory.

For semi-colonial species (e.g., house sparrow, house martin), analysis was based on Bibby *et al.* (2000)¹⁰, by identifying clusters of observations and taking the second highest count from within each cluster and dividing by two.

To augment the BBS data and provide a more complete picture of the breeding bird interest at the Site, some relevant observations have been incorporated from other surveys; for example, observations of owls during the Nightjar Surveys and territorial birds encountered during the February and March WBS.

⁷ Marchant, J. (1983) *Common Birds Census Instructions*. British Trust for Ornithology, Thetford.

⁸ The Habitats Directive (92/43/EEC). Available from:
https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

⁹ Eaton M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock L., Musgrove A.J., Noble D.G., Stroud D.A. and Gregory R.D. (2015) *Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man*. British Birds 108, 708–746.

¹⁰ Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000) *Bird Census Techniques, 2nd edition*. Academic Press, London

2.2.3 Nightjar Survey

Nightjar Surveys were carried out in June and July 2020 to determine the presence of nightjar within the Site.

Surveys followed an adapted version of the method described in Gilbert *et al.* (1998)¹¹ and focussed on the area in the north of the OSA, closest to Allerthorpe Common Nature Reserve.

Potential nesting habitat within the Site is very limited and sub-optimal compared to habitats within Allerthorpe Common Nature Reserve, and the survey used a combination of listening for singing (“churring”) or calling birds, and occasional sweep of the area using a powerful torch to detect any birds that may be foraging over the farmland and hedgerow habitats within the Site¹².

Two Nightjar visits were carried out:

- Visit 1: 29th June 2020 (pre-dawn); and
- Visit 2: 9th July 2020 (dusk).

Surveys were generally carried out in good weather and lasted for up to three hours. Full details of the survey times and weather observations during each visit are provided in Appendix D.

2.3 Survey Limitations

Outside of the Site, access was restricted to public rights of way; however, these offered good coverage of much of the 100 m buffer area. Where access was not possible, the area was searched from accessible points by listening and scanning the area using binoculars.

Due to the large size of the OSA, some surveys took longer and continued later in the day than would be considered optimal. The Site was prioritised (as opposed to the buffer) and, to minimise any bias, a different route was taken during each visit to sample different areas of the Site at different times of the survey, as per the CBC method.

The weather conditions were generally good; however, some rain showers were encountered on some surveys. The bird breeding season can be protracted and influenced by local and national weather events, species’ ecology, the annual variation in on-site farming practice, and many other factors. It is inevitable that not all birds will be recorded during every visit and as a result some species may be over- or under-recorded. Consideration of all survey data, combined with desk-based resources and a precautionary approach to analysis, aims to provide the most accurate baseline possible.

Despite the limitations identified, the survey results are considered to be an accurate reflection of the ornithology interest at the Site.

¹¹ Gilbert, G., Gibbons, D. W., & Evans, J. (1998) *Bird Monitoring Methods*. RSPB, The Lodge, Sandy.

¹² Note: the torch was used to search the farmland habitats only, to avoid potential disturbance to the nature reserve/SSSI.

3 RESULTS

3.1 Desk Study

3.1.1 Designated Sites

There is one internationally designated site within 5 km of the Site with ornithological interest: The Lower Derwent Valley SAC, SPA, Ramsar site and National Nature Reserve (NNR). Four nationally designated sites as well as 21 non-statutory designated sites are present within 2 km of the Site.

Designated sites with cited ornithological interest are summarised in Table 3.1.

Table 3.1: Nearby Designated Sites with Ornithological Interest

Site	Designation	Minimum Distance and Direction (km) from the Site	Designated/Qualifying and/or special interest features
Allerthorpe Common	SSSI	Adjacent to northern boundary	One of the three remaining heathlands on sandy glacial soils in the Vale of York. Three special interest features listed on the citation include breeding nightjar, tree pipit and whinchat.
Pocklington Canal	SSSI	0.8 km east	The breeding bird assemblage is a notified feature. Pocklington Canal and its margins support a breeding bird community typical of lowland open waters and their margins, including tufted duck, kingfisher, grey wagtail, sedge warbler, reed warbler and reed bunting. Fringing hedges and scrub hold species such as turtle dove and whitethroat.
Lower Derwent Valley	SPA	1.0 km southwest	Six species that are qualifying features: <ul style="list-style-type: none"> • Shoveler (breeding); • Bewick's swan (non-breeding); • Wigeon (non-breeding); • Teal (non-breeding)¹³; • Golden plover (non-breeding); and • Ruff (non-breeding). Additionally, the waterbird assemblage is a qualifying feature. In winter, the area supports 40,616 waterfowl, including Bewick's swan, wigeon, teal, golden plover and ruff.

¹³ Note, there is an apparent error on the Natura 2000 Standard Data Form, that states teal as a wintering interest, but cites a population of 10 breeding females. The 5-year average wintering population is 8,381 birds (2014/15–2018/19, WeBS data).

Site	Designation	Minimum Distance and Direction (km) from the Site	Designated/Qualifying and/or special interest features
Lower Derwent Valley	Ramsar	1.0 km southwest	Assemblage of international importance (winter waterfowl). Qualifying species/populations include: <ul style="list-style-type: none"> • Wigeon (non-breeding); and • Teal (non-breeding). An additional 14 bird species are listed as noteworthy fauna.
Melbourne and Thornton Ings SSSI (Part of the Lower Derwent Valley SPA)	SSSI	1.0 km southwest	Six species that are notified features: <ul style="list-style-type: none"> • Gadwall (breeding); • Garganey (breeding); • Pintail (breeding); • Bewick's swan (non-breeding); • Teal (non-breeding); and • Wigeon (non-breeding). Additionally, other notified features include the variety of breeding bird species, and the variety of wintering bird species.

3.1.2 Existing Records

NEYEDC returned 92 records of 26 bird species within 2 km of the Site. Of these, 80 records related to species of conservation concern (as defined in Section 2.2.2.1).

Some records relate to species that occur within the Site, including skylark, tree sparrow and linnet, whereas for others, such as whimbrel and common tern, the habitats are unsuitable and therefore they are very unlikely to occur within the Site. Many of the species for which suitable habitat is present within the Site were also recorded during the surveys, and, as such, the survey data are considered a more recent and reliable basis for assessment. Where individual NEYEDC records are applicable to the assessment, they are referenced separately, where appropriate.

The review of YOC reports provided several pertinent records indicating either presence or likely absence of some key species, and these are referenced further within the results and/or assessment, where relevant.

3.2 Field Surveys

3.2.1 Winter Bird Survey

3.2.1.1 Species of Conservation Concern

A range of species was recorded during the WBS, all typical of the habitats and geographic location of the Site. A summary of species of conservation concern (as defined in Section 2.2.2.1) is provided in Table 3.2.

Mixed flocks of finches and buntings were present on most survey visits, foraging in the hedgerow and arable habitats. Flocks were mobile and not recorded consistently in any one area, and generally included a mix of common, widespread species such as chaffinch and goldfinch, as well as species of conservation concern including yellowhammer, corn

bunting, reed bunting and linnet. Few wildfowl and no waders were recorded during the WBS.

Table 3.2: Birds of Conservation Concern Recorded during the WBS

Species	High Count	Details
Grey partridge	12	Observed on most surveys, with 1–2 flocks seen within arable farmland habitats throughout the OSA.
Greylag goose	6	A flock few southwest over the OSA in December 2019.
Pink-footed goose	46	A flock flew southwest over the OSA in October 2019.
Shelduck	2	Two flew northeast over the OSA in January 2020.
Mallard	2	Recorded around the ponds adjacent to the OSA during most survey visits, and occasionally foraging within the Site.
Stock dove	20	Small flocks were recorded foraging within the Site and/or OSA on most survey visits.
Woodcock	1	Occasionally flushed from woodland edge or hedgerows, and likely to winter in the area in small numbers.
Kestrel	2	One–two birds observed on most WBS visits.
Marsh tit	2	Regularly recorded from Allerthorpe Common.
Willow tit	2	Occasionally recorded from Allerthorpe Common.
Skylark	50	A single flock recorded on most survey visits, usually in the south of the Site, and peaking at 50 birds in December 2019.
Starling	50	A single flock in the northwest of the OSA in October 2019 and February 2020, but recorded outside the OSA, in fields to the west, during other WBS visits.
Fieldfare	350	Several flocks observed foraging within the OSA on all survey visits from October 2019 –February 2020.
Redwing	170	Flocks recorded irregularly within the OSA.
Tree sparrow	30	A single flock in the west of the OSA during October 2019, but not subsequently.
Grey wagtail	1	Occasionally recorded within or near the OSA.
Meadow pipit	20	Recorded in October and December 2019 only.
Brambling	1	Occasional observations within chaffinch flocks.
Bullfinch	6	Individuals or small flocks seen on most WBS visits.
Linnet	170	Flocks were recorded on all WBS visits, typically in the north of the Site. Numbers peaked December 2019 –January 2020.
Lesser redpoll	110	Recorded on all WBS visits, with almost all observations in the far north, within or close to the adjacent woodland.
Crossbill	2	Two present in the north of the OSA, within Allerthorpe Common, during the December 2019 WBS.
Corn bunting	30	Recorded October 2019 (12 birds), November 2019 (3 birds) and December 2019 (30 birds), but not thereafter until singing birds were on territory in March.
Yellowhammer	100	Flocks observed on all WBS, with numbers peaking in November–December 2019. Recorded from hedgerow and woodland edge throughout the Site.
Reed bunting	40	Recorded only in December 2019, when two separate flocks of approximately 20 birds each were observed.

A selection of common and widespread species were also recorded within OSA.

3.2.1.2 Wetland Species in the Wider Area

At its closest point, the Lower Derwent Valley SPA is located approximately 1 km southwest of the Site at Melbourne and Thornton Ings SSSI, one of several SSSIs that underpin the SPA designation. The sites are designated, in part, for their importance for wildfowl and waterbird species, particularly in winter (see Table 3.1, Section 3.1.1).

No designated or qualifying features of the Lower Derwent Valley SPA or associated SSSIs were recorded within the OSA; however, to the west and southwest of the Site, several areas flooded during the winter (including one area partially within the OSA) and, as such, had potential to support features of the designated sites.

Flooded areas during the 2019–20 winter are shown on Figure 2, Appendix C, using letters to cross-reference with the information in Table 3.3.

One area to the southwest of the Site (Flood B, Table 3.3) included part of Melbourne and Thornton Ings SSSI, and therefore comprises part of the wider SPA. Observations within this area included several features of the SSSI and SPA; however, presence was inconsistent and numbers were variable.

Table 3.3: Details of Seasonal Floods near the Site and Waterbird Observations

Flood	Location & Details	Birds Recorded
A	Approximately 0.3 km west of the Site. Single field flooded in November 2019, increasing to two fields by January 2020, and three fields by February 2020, but dried out before the March 2020 WBS visit.	Flocks of gulls and geese were observed on the flood, but no species associated with the nearby designations were recorded. Black-headed gull was recorded in most months, with a peak count of 200 in January 2020. Common gull was recorded in December 2019 and January 2020, with a peak count of 50. Greylag goose was recorded monthly from November 2019 to February 2020, with a peak count of 18.
B	Approximately 1.1 km southwest of the Site. Part of Melbourne and Thornton Ings SSSI. Flooded consistently October 2019 to February 2020, with waters peaking in February 2020. Mostly dry by March 2020.	Variable numbers of waterbirds were recorded in all months, including several species associated with the SPA and SSSI designations. Wigeon was recorded on three visits, with a peak count of 350 in January 2020. Teal was seen on three visits, with a peak count of 150 during January 2020. Golden plover was recorded in October 2019 only, with a flock of 30 birds. Gadwall and shoveler (breeding season features) were both recorded on a single occasion, and in low numbers. Greylag goose, mute swan and mallard were recorded on most surveys. Lapwing was recorded on all surveys with a peak count of 2140, in February 2020. Oystercatcher, curlew, snipe and redshank were each observed on a single survey visit, and in low numbers. Marsh harrier was recorded on two surveys visits.
C	Approximately 0.2 km west of the Site. Small area, flooded during November 2019 only.	Few waterbirds were observed on the flood and no species associated with the nearby designations were recorded. Eight mallards were observed on the flood.

Flood	Location & Details	Birds Recorded
D	Adjacent, to the west of the Site. Small area, flooded during December 2019 only.	Few waterbirds were observed on the flood and no species associated with the nearby designations were recorded. At least 140 black-headed gulls were observed on and around the flood.
E	Approximately 0.2 km south of the Site. Small area, flooded during February 2020 only.	Few waterbirds were observed on the flood and no species associated with the nearby designations were recorded. Ninety black-headed gulls observed foraging within the flood.

3.2.2 Breeding Bird Survey

A total of 64 species were recorded during the BBS, with a further two included following observations during the Nightjar Survey. Of these, 32 were species of conservation concern (as defined in Section 2.2.2.1) including 22 that showed evidence of breeding or holding territory. Breeding and non-breeding species of conservation concern are summarised in Tables 3.4 and 3.5 respectively.

Approximate territory locations of species of conservation concern are shown in Figure 3, Appendix C. Territory locations are shown as the approximate mid-point of observations that were used to identify the territory. The conservation status of all species recorded are provided in Appendix B.

Table 3.4: Species of Conservation Concern Breeding or Holding Territory

Species	Number of Territories Within OSA	Details
Shelduck	1	A pair was observed with 8 ducklings in the far southeast of the OSA during June 2020. Two were recorded in fields in the north of the Site on two of the three BBS visits but showed no evidence of breeding.
Grey partridge	1	A pair was recorded in apparently suitable breeding habitat in the east of the Site.
Cuckoo	2	Two singing males were recorded from woodland in the north of the OSA, within Allerthorpe Common.
Oystercatcher	1	A pair was observed with chicks in a field in the north of the Site.
Lapwing	4	There were numerous observations within the OSA, but few were consistently recorded. A pair was regularly present in the northeast of the Site and up to three pairs were present in the west, with chicks observed during the third BBS visit.
Tawny owl	2	Calling birds were recorded from two areas within the OSA during the Nightjar Surveys, although surveys were not targeted toward this species and this may be an underestimation of pairs present.
Marsh tit	1	At least one was recorded singing in woodland of Allerthorpe Common to the north of the Site.
Woodlark	1	See further discussion in Section 3.2.2.1.
Skylark	15	A minimum of 15 territory-holding males were recorded, including 14 in arable habitats within the Site.
Willow warbler	12	Twelve singing males were recorded from hedgerow and woodland habitats throughout the OSA.

Species	Number of Territories Within OSA	Details
Song thrush	5	Five territorial males were recorded, including three in woodland edge in the north of the OSA.
Mistle thrush	3	Three territories/pairs were identified, and an observation of fledged juveniles suggested some bred successfully within the Site.
House sparrow	6+	An estimated six pairs were present around buildings in the south of the Site.
Tree sparrow	3+	A minimum of three pairs were present around farm buildings in the south of the Site, although an observation of a flock of 20 suggests the actual number could be greater.
Dunnock	25	A numerous and widespread species, with a minimum of 25 singing males recorded from hedgerow and woodland habitats throughout.
Yellow wagtail	3	Although not recorded singing, three pairs and/or individuals were observed consistently in apparently suitable breeding habitats.
Tree pipit	1	See further discussion in Section 3.2.2.2.
Bullfinch	2	Two pairs were noted in apparently suitable habitat within the Site during the first and second BBS visits.
Linnet	10	A minimum of 10 singing males were recorded from hedgerow habitats, primarily in the west and south of the OSA. Several flocks and family parties were recorded during the third BBS visit.
Corn bunting	6	Up to six singing males were recorded; however, some records may refer to individuals moving within the OSA during the season. A minimum of three singing males were recorded in the west of the Site early in the spring (April or earlier), with more widespread observations recorded in June.
Yellowhammer	24	A minimum of 24 territorial males were recorded from hedgerow habitats throughout the OSA.
Reed bunting	9	Nine singing males were recorded from ditches and field boundaries, mostly in the east of the OSA.

Table 3.5: Species of Conservation Concern Recorded during the BBS but not Considered to be Holding Territory

Species	Details
Greylag goose	During the first BBS visit, three were present in a field in the north of the Site, and two further birds flew north over the OSA.
Mallard	Scattered observations were made within the OSA on all BBS visits although they were generally not associated with potential breeding habitat.
Stock dove	Small numbers, including individuals, pairs and small flocks, were recorded foraging within the OSA on all BBS visits. No evidence of breeding was recorded but it is possible some pairs nest within the OSA.
Black-headed gull	Four flew north over the OSA during the second BBS visit.
Herring gull	Four flew northwest over the OSA during the first BBS visit.
Lesser black-backed gull	Two were in fields in the northwest of the OSA during the third BBS visit.

Species	Details
Barn owl	A dead bird was found in the north of the Site during the second BBS visit. Three observations of foraging barn owl were made during the Nightjar Surveys. No evidence of breeding was recorded and no potential nest sites were identified during the Phase 1 habitat survey.
Kestrel	Several widespread observations included a bird carrying food in the far south of the OSA. No evidence of breeding was recorded from within the OSA but it is likely they nest in the wider area and forage within the Site.
House martin	Small numbers were recorded foraging over the Site during the second and third BBS. Nesting was not recorded, but some of the buildings within the Site and wider area offer potentially suitable locations.
Meadow pipit	Four were recorded on the first BBS visit but none subsequently and there was no evidence of breeding or territorial behaviour.

A further 34 bird species (not of conservation concern¹⁴) were recorded, many of which were considered likely to be breeding or holding territory within the OSA: red-legged partridge, pheasant, woodpigeon, collared dove, moorhen, grey heron, sparrowhawk, buzzard, great spotted woodpecker, jay, magpie, jackdaw, rook, carrion crow, blue tit, great tit, swallow, long-tailed tit, chiffchaff, sedge warbler¹⁵, blackcap, garden warbler, lesser whitethroat, whitethroat¹⁵, goldcrest, wren, treecreeper, blackbird, robin, pied/white wagtail, chaffinch, greenfinch, goldfinch and siskin.

3.2.2.1 Woodlark

Woodlark is a Schedule 1-listed species¹ and, as such, has a greater degree of legal protection.

Woodlark was recorded on two occasions, both pertaining to singing/displaying males in arable habitats within the north of the Site. Both observations are shown on Figure 4, Appendix C.

Both observations involved male birds in display song flight over the Site. Observation A, south of Blanch Plantation, was in April 2020, and Observation B, in the far northwest of the Site, was recorded in June 2020. There were no records during the May 2020 BBS, or any of the WBS, or Nightjar Surveys. The two observations are approximately 350 m apart and, given the scarcity of the species, are assumed to relate to the same individual.

The woodlark breeding season can be protracted, starting early in the year (with incubation often from mid-March^{11,16}) and lasting through to July/August with more than one brood reared within the season. Woodlark was not recorded during the WBS, which included walkovers of the Site during February and March 2020, when active territorial behaviour may also be expected. As such, it is unclear if these observations represent an active territory, a pair and breeding attempt, or dispersing male from elsewhere in the wider area.

Two records of woodlark were returned in the NEYEDC data request, with one bird at Allerthorpe Common in May 2012, and two birds recorded in February 2017.

A review of YOC reports suggested this species is regular at Allerthorpe Common and recorded in small numbers in most years. Typically, one or two birds are present, although

¹⁴ Green-listed BoCC, not matching the criteria listed in Section 2.2.2.1.

¹⁵ Sedge warbler and whitethroat are interest features of the Pocklington Canal SSSI and listed in the citation as part of the breeding bird assemblage. Sedge warbler was not recorded within the Site, but a single singing male was present by a small wetland to the northeast. Whitethroat was common and widespread within suitable habitat within the Site, with >20 territories recorded. As both species are part of an assemblage, they have not been included in the detailed analysis and are not shown on the figure.

¹⁶ <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/advice/conservation-land-management-advice/woodlarks/>

three were recorded in the area in 2013 (two on Allerthorpe Common and one to the northeast at Frog Hall).

3.2.2.2 Tree Pipit & Whinchat

Tree pipit and whinchat are special interest features of the Allerthorpe Common SSSI. Both are red-listed species of conservation concern⁹, and tree pipit is a Species of Principal Importance³.

A singing tree pipit was recorded within Allerthorpe Common SSSI to the north of the Site, just beyond the 100 m buffer (Figure 3, Appendix C). It is considered likely that the territory included part of the OSA, but unlikely that it extended into the adjacent arable habitats of the Site.

No tree pipit records were returned in the NEYEDC data request. Review of YOC reports provides several records and the species appears occur irregularly at the Site. Singing birds were recorded at Allerthorpe Common in 2013 and 2017.

No whinchat were recorded during the surveys and no local records were returned from any sources during the desk study.

3.2.3 Nightjar Survey

Nightjar is a special interest feature of the Allerthorpe Common SSSI. Additionally, they are Annex I-listed species⁸, and Species of Principal Importance³, and an Amber-listed species of conservation concern⁹.

No nightjar were recorded during the Nightjar Surveys.

No nightjar records were returned in the NEYEDC data request and review of YOC reports provided a single record from Allerthorpe Common, of a bird observed in 2015.

4 ASSESSMENT

4.1 Overview

The species recorded during the Field Surveys are considered to be an accurate reflection of the bird interests at the Site, based on the geographic location and habitats present.

The Development has the potential to impact birds (either positively or negatively) in the following ways:

- Habitat change;
- Direct disturbance during construction; and/or
- Disturbance during operation.

Although direct mortality of birds through collisions with solar panels has been reported, many incidents occur overseas under very different scenarios to solar developments in the UK, both in terms of development scale and surrounding habitat/landscape. There is a general consensus that, within the UK, the risk of harm to birds through collision with panels is very low and this potential effect is not considered further^{17,18}.

A review of the available data, including desk-study and survey data, identified four species, or groups of species, for inclusion in the assessment. These are discussed separately in Sections 4.2 to 4.5.

4.2 Designated features of the Lower Derwent Valley SPA

Qualifying features of the Lower Derwent Valley SPA are considered features of international importance.

No species associated with the Lower Derwent Valley SPA, or associated SSSIs, were recorded within the OSA. With the exception of golden plover, the habitat throughout much of the Site is unsuitable for qualifying features and the likelihood of them occurring is considered very low. Subject to crop types and timings, golden plover could occur within the farmland habitats; however, the lack of observations, both within the OSA and wider area, suggests that they are not used frequently by this species. As such, there will be no adverse effects caused by habitat changes as a result of the Development.

Several ephemeral floods were present to the west, southwest and south of the Site at times during the non-breeding season (Figure 2, Appendix B). The floods closest to the Site each lasted for a very limited time and are considered unlikely to support species associated with the nearby wetland designated sites. The only flooded area with notable numbers of wetland birds was Melbourne and Thornton Ings SSSI, part of the SPA located approximately 1 km southeast of the Site. This flood supported qualifying features of the SPA, notably wigeon and teal, peak counts of which represented >1% of the SPA population.

Given the distance between the Site and Melbourne and Thornton Ings SSSI is 1 km, and the distance to qualifying features is likely to be greater as they are unlikely to occur directly on or close to the site boundary, there will be no adverse effects caused by disturbance during construction or operation. The intervening habitats, including farmland and mature hedgerow, will screen any potential visual stimuli and the distance will ensure aural disturbance will be negligible, and likely to be lower than that caused by roads, residential villages and farming activities, all of which occur substantially closer.

¹⁷ Taylor, R., Conway, J., Gabb, O. & Gillespie, J. (2019) *Potential ecological impacts of ground-mounted photovoltaic solar panels*. Available online at: <https://www.bsg-ecology.com/wp-content/uploads/2019/04/Solar-Panels-and-Wildlife-Review-2019.pdf>

¹⁸ Natural England (2017) *Evidence review of the impact of solar farms on birds, bats and general ecology 2016 (NEER012)* [Online] Available at: <http://publications.naturalengland.org.uk/publication/6384664523046912> (Accessed 07/07/21)

Overall, no adverse effects are predicted and no mitigation measures or enhancements are considered necessary for these species.

4.3 Woodlark

Woodlark is a Schedule 1-listed species¹, an Annex I-listed species⁸, a Species of Principal Importance³. It is a green-listed bird of conservation concern⁹.

Woodlark is considered a rare breeding bird in the UK. In 2016, 1,030 singing males were recorded nationally, including 27 in northern England (all in Yorkshire)¹⁹ and in 2017, 974 singing males were recorded, including 15 in Yorkshire^{20,21}. As such, woodlark is considered a feature of regional importance and, as a Schedule 1-listed species, they are afforded additional protection from disturbance when breeding.

A singing bird was recorded on two occasions during the BBS, which suggested that part of the Site fell within a woodlark territory although only a single bird was seen and breeding was not proven. Based on results of the desk study, there has been a near-annual presence within adjacent habitats to the north for at least the last 10 years, and it is likely that woodlark will be present within, or close to the Site in future years.

The local population is small, with the Site and nearby habitats supporting between one and three territory-holding males annually. It is not certain if any woodlark actively breed within the Site, but based on observations during the BBS, the Site is used on occasion during the breeding season by at least one bird.

Habitat loss/changes as a result of the Development may impact woodlark (either positively or negatively) by altering the resources available. It is possible that the general habitat improvements proposed for the Site will benefit woodlark; however, for the avoidance of doubt, a field in the north of the Site will be used for habitat improvements, in part to benefit woodlark as part of enhancement measures within the Site. The field lies adjacent to the Allerthorpe Common SSSI and, as such, will help to provide a buffer between the SSSI and the Development both physically and visually. Further details of measures are provided in Section 5.1.

Construction activities may disturb breeding woodlark which, as a Schedule 1-listed species, may constitute a legal offence. The woodlark breeding season lasts from approximately March to July (but may last longer subject to weather conditions and the number of breeding attempts with a season)^{11,16,22}. To avoid disturbance during the breeding season, surveys to monitor presence of woodlarks within the Site are proposed, with reactive avoidance if necessary. Subject to the results of the surveys and the status of woodlark, construction activities may be permitted, with restrictions and/or reactive mitigation as required. Further details of measures are provided in Section 5.1.

There may be adverse impacts to woodlark during the operational phase of the Development. Notwithstanding the habitat management for this species, the long-term change of land use and cessation of farming practice (e.g., fertiliser/pesticide use) may offer benefits.

With implementation of the mitigation measures proposed, there will be no significant adverse impacts on woodlark as a result of the Development. With the compensatory measures designed for woodlark and biodiversity enhancements throughout the Site, any long-term effects are expected to be neutral or positive.

¹⁹ Holling, M., et al. (2018) *Rare breeding birds in the UK in 2016*. British Birds 111, 644 – 694. November 2018.

²⁰ Holling, M., et al. (2018) *Rare breeding birds in the UK in 2017*. British Birds 112, 706 – 758. December 2019.

²¹ Both reports available online at: <https://rbbp.org.uk/annual-reports/>

²² Mallord, J.W., Dolman, P.M., Brown, A. & Sutherland, W.J. (2007) *Nest-site characteristics of Woodlarks *Lullula arborea* breeding on heathlands in southern England: are there consequences for nest survival and productivity?* Bird Study, 54:3, 307-314

4.4 Special Interest Features of the Allerthorpe Common SSSI

Special interest features of Allerthorpe Common SSSI, a nationally designated site, are considered a feature of local importance; however, since notification in 1984 the bird assemblage at the site has changed and two listed species (of three), no longer occur as breeding species.

4.4.1 Nightjar

Nightjar was not recorded during the surveys and only a single record was returned during the desk study. It is considered likely that this species no longer breeds at the Allerthorpe Common SSSI, but may occur on occasion, likely when passing through on passage. Nightjar does occur in the wider YOC recording area²³ in fluctuating numbers and, as the habitat appears to be suitable, this species may breed at Allerthorpe Common again in the future.

Habitats within the Site are unsuitable for breeding nightjar and are unlikely to be used by roosting birds; however, they are potentially suitable for foraging nightjar that may breed or occur within the adjacent SSSI and nature reserve. Nightjar forage on the wing and eat predominantly flying insects. As such, the proposed habitat improvements within the Site, including provision of species-rich grassland, are likely to increase local invertebrate populations and consequently offer improved foraging resources for nightjar, should they occur at Allerthorpe Common in the future.

4.4.2 Tree Pipit

A single singing tree pipit was recorded during the BBS, holding territory on Allerthorpe Common to the north of the Site. Results of the desk study suggest this species is present irregularly on the common and likely breeds in some years.

There were no records of tree pipit within the Site during the BBS, but it is feasible that tree pipit may forage within the Site on occasion; however, the current agricultural habitats are suboptimal and the species' use of the Site, if any, is expected to be very infrequent.

4.4.3 Whinchat

Whinchat was not recorded during the surveys and no records were returned during the desk study. There is no evidence to suggest this species still breeds at the Allerthorpe Common SSSI or in any other comparable habitats within the wider YOC recording area²³.

4.4.4 Summary

Of the three special interest features, tree pipit is the only species recorded during the surveys or with any regularity since 2010. Habitat within the Site is suboptimal for all species and there will be no adverse effects from habitat loss/change.

As the field immediately adjacent to the Allerthorpe Common SSSI will not be developed, this will help to provide a physical and visual buffer between the Development. As such, no adverse effects as a result of disturbance are predicted.

With the proposed habitat enhancements throughout the Site, as well as cessation of potentially damaging farming practice (e.g., use of pesticides), long-term impacts on special interest features of the SSSI are expected to be neutral or positive.

4.5 Farmland Species of Conservation Concern

Excluding those species assessed previously, other species of conservation concern (as defined in Section 2.2.2.1) were recorded within the Site and OSA, during both the non-

²³ <http://yorkbirding.org.uk/about-us/>

breeding and breeding seasons. These included priority farmland bird species, such as grey partridge, skylark, corn bunting and yellowhammer. Other bird species of conservation concern occurring regularly within the Site, in any season, are considered of local importance.

Habitat loss/change has the potential to affect farmland bird species through loss and/or change of resources available for activities such as nesting, foraging or roosting. Wherever possible, field boundary, hedgerow and woodland habitats will be retained, with compensation and/or enhancement measures offsetting any losses and improving existing habitats. However, many farmland species, such as dunnock, yellowhammer and reed bunting, use a mix of habitats, and some of those likely to be used by these species will be subject to change.

The loss of arable fields will be compensated in the breeding season through enhancements, including areas of managed habitat within the Site and the creation of a diverse species-rich grassland between and beneath the panels, offering continued suitable foraging habitats; however, the change of use from arable farmland may cause a loss of winter foraging opportunities, particularly for granivorous species often found in retained winter stubble. A series of managed cover strips, further detailed in Section 5.2, are proposed to provide enhanced foraging resources throughout the year, including compensation for any loss of winter stubble.

The impact of solar farms on skylark is not fully understood, although the creation of improved grassland habitats beneath and between the solar panels has the potential to provide good habitat for nesting and foraging, even if current evidence of use is mixed²⁴.

The study by Montag *et al.* (2016)²⁵ is widely cited as evidence that skylark do not nest in solar sites; however, this unpublished study is not peer-reviewed and is subject to a range of methodological and analytical limitations. As such, the conclusions regarding skylark are unsupported by the evidence presented, and potentially misleading as skylark were recorded in comparable densities in both the solar and control plots.

In our experience, skylark can nest within solar sites and there is evidence to show that skylark can be accommodated if habitats are maintained appropriately. Recent research funded by the RSPB has suggested that skylark hold territory and likely nest within solar developments²⁶, highlighting the skylark as one of the most frequently observed species:

"Prior to the study we didn't think that we'd see many skylarks, as we know they like big open spaces. However, we now know they're using the solar panel arrays to sing from: flying high and then parachuting down between the rows. They were present on eight out of my nine study sites..."

Skylarks readily nest in arable habitats; however, these are often suboptimal and the increasing density of autumn or winter-sown crops have an adverse effect on breeding success, often forcing skylark to forage outside of their nesting fields, which may involve a long commute in expansive areas of similar habitat²⁷. The creation and management of suitable habitat beneath the solar panels has the potential to provide a more consistent, undisturbed habitat and provide good habitat not just for skylark that nest within the Site, but also foraging opportunities for birds breeding in the wider area.

The Greener Grid Park element of the Development will permanently displace some birds due to the loss of habitat within its footprint; however, very few birds of conservation

²⁴ Natural England (2016) *Evidence review of the impact of solar farms on birds, bats and general ecology* [Online] Available at: <http://publications.naturalengland.org.uk/publication/6384664523046912> (Accessed 07/07/21)

²⁵ Montag, H., Parker, G., & Clarkson, T. (2016) *The Effects of Solar Farms on Local Biodiversity; A Comparative Study*. Clarkson and Woods and Wychwood Biodiversity

²⁶ <https://community.rspb.org.uk/ourwork/b/biodiversity/posts/bird-use-of-solar-farms-interim-results>

²⁷ <https://farmwildlife.info/how-to-do-it/farmed-area/skylark-plots/>

concern were recorded in this area. A single skylark territory fell partly within the Greener Grid Park footprint, and very small numbers of other species were recorded around the boundaries. Given the small number of birds affected, the impacts of the construction and operation of the Greener Grid Park are considered negligible.

To minimise the potential loss of nests of ground-nesting species, it is recommended that clearance of ground vegetation, including arable crops, set aside or tall ruderal vegetation, is carried out outside the breeding season, where possible (see Section 5.3).

There is the potential for disturbance to nesting birds during the construction phase of the Development. Given the scale of the Development, it is likely that some construction works will occur within the breeding season (approximately March to August) and may cause disturbance to nesting birds. This will be a temporary effect, and compensated for by the enhancement of habitats that will last for the lifetime of the Development, improving long-term foraging and nesting resources. Mitigation is proposed to safeguard breeding birds from direct loss or harm of active nests, which could constitute an offence.

Barn owl was recorded foraging within the Site; however, there was no evidence of breeding or any likely nesting location identified. As a Schedule 1-listed species, barn owl is afforded additional protection from disturbance when nesting. If a possible barn owl nest location is identified, either during subsequent planned ecology surveys, or during construction, mitigation will be required.

Overall, adverse impacts to birds of conservation concern through habitat loss/change and direct disturbance at all stages of the Development are expected to be low and not significant. Standard mitigation and best practice measures are proposed to minimise any potential effects, and implementation of habitat compensation and enhancements are expected to offer long-term benefits to farmland birds, including species of conservation concern.

4.6 Future Baseline and Decommissioning

It is understood that the arable farmland habitats within the Site will be maintained between completion of the surveys and the start of construction. As such, the baseline condition at the Site is not expected to change substantially.

Following the operational phase of the Development, anticipated to be 37 years, the Development will be decommissioned, including the removal of the site infrastructure.

Potential impacts of decommissioning work on ornithology interests at the Site are likely similar to those during construction. Prior to decommissioning, it is recommended that the Site is assessed by an ecologist to identify the need for any mitigation or best practice measures, in accordance with prevailing guidance and legislation.

5 MITIGATION, COMPENSATION AND ENHANCEMENT

A Biodiversity Enhancement Management Plan (BEMP) has been developed to detail measures relating to birds and other ecological and landscape features. This will include all mitigation, compensation and enhancement recommendations outlined within this OIA.

5.1 Woodlark

As a regionally important feature, and a Schedule 1-listed species, the following measures are proposed to safeguard woodlark during the construction phase of the Development, and to provide enhanced habitats for foraging birds, including those within the Site and commuting from the adjacent SSSI.

- Mitigation to safeguard territory-holding or breeding woodlark include:
 - No potentially disturbing construction activities will take place in the north of the Site (the fields surrounding Blanch Plantation) between March and August without first establishing the present status of woodlark through pre-construction surveys. Prohibited activities include, but are not limited to: vegetation clearance, site investigation works, ground preparation, construction of infrastructure, installation of panels; and
 - Seasonal restrictions may be lifted if pre-construction surveys can demonstrate that woodlark is not present or holding territory within or immediately adjacent to the Site. If woodlark is found to be present within the Site during the breeding season, an appropriate exclusion buffer will be agreed with consultees, and implemented to prevent disturbance.
- Habitat improvements to benefit woodlark will include:
 - The field in the north of the Site will be managed, in part, for woodlark including creation of a diverse semi-natural grassland, maintained with varied sward height (e.g., through initial seeding and long-term sheep grazing with an appropriate stocking rate or, should sheep not be used, an appropriate cutting regime); and
 - Maintenance of patches of bare/disturbed ground through intermittent physical disturbance techniques (e.g., rotovating, ploughing or turf-stripping, to provide enhanced foraging areas^{28,29}). Patches will be varied in location from year-to-year, within a pre-agreed area that minimises potential impacts to other ecology interests within the Site, such as great crested newt (*Triturus cristatus*).

5.2 Priority Farmland Bird Species

Due to the presence of farmland bird species within the Site, some of which are priority targets for conservation, compensation and enhancement measures are proposed. These include:

- Creation of species-rich grassland or meadow habitat beneath or below the panels will provide nesting opportunities for some species, and increased foraging resources for many others;
- If grazing is to be implemented, use of appropriate grazing regime and stocking rates to manage the grassland for biodiversity value;
- If grazing is not to be used, then grassland will be cut/managed sensitively to maintain its biodiversity value and minimise adverse effects on nesting birds;
- Provision of managed set-aside strips along the edges of some fields will benefit a range of farmland species throughout the year. The strips will offer nesting and

²⁸ Hawkes, R.W., Smart, J., Brown, A., Jones, H. and Dolman, P.M. (2019), *Experimental evidence that ground-disturbance benefits Woodlark Lullula arborea*. Ibis, 161: 447-452. <https://doi.org/10.1111/ibi.12696>

²⁹ Natural England (2019) *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features. Breckland Special Protection Area (SPA)*

foraging resources in the breeding season, and foraging resources in the non-breeding season, particularly for granivorous species such as finches; and

- Provision of nest boxes will be targeted toward species of conservation concern, such as sparrows. Larger boxes will also be provided for kestrel and barn owl. Further details are provided in Section 5.4.

5.3 General Mitigation

Birds are subject to varying levels of legal protection. Therefore, to adhere to good practice guidelines and ensure compliance with the Wildlife and Countryside Act 1981 (as amended)¹, avoidance and/or mitigation measures will be required.

Some vegetation removal is required to facilitate the Development; which will be subject to the following best practice measures.

Mitigation will include the following:

- To ensure compliance with the Wildlife and Countryside Act 1981 (as amended)³³, any work involving vegetation clearance (including any tall vegetation, scrub, hedgerows, or trees) during the peak bird nesting season (March to September, or earlier/later if weather conditions are particularly mild) must be avoided where possible;
- If any clearance works to nesting habitats are required during the peak bird nesting season, then pre-construction checks for nesting birds would need to be carried out by a suitably experienced ecologist no more than 48 hours prior to the works commencing;
- If any nesting birds are found to be present, an appropriate buffer zone would be implemented, within which works are excluded, for the duration of the breeding attempt. Any active nests will need to be left *in situ* until a suitably experienced ecologist confirms that the nesting attempt has reached a natural conclusion;
- In the unlikely event that any Schedule 1-listed bird species³⁰ are found to be nesting within or close to the Site, an ecologist will need to be contacted for further advice;
- If barn owl (a Schedule 1-listed species recorded in the Site) is identified as breeding within or close to any planned or active construction areas, then a temporary exclusion buffer of 150 m will be applied to the suspected nest site until the status of barn owl is confirmed and a site-/situation-specific buffer can be recommended;
- Due to difficulties in locating nests of some species, any clearance of grassland and/or crops will be carried out during the non-breeding season, and the vegetation will be maintained at a height of less than 10 cm where applicable during the breeding season (a condition unfavourable to ground-nesting species, such as skylark) until construction is complete. If habitat within the Site is suitable for ground nesting birds, e.g. skylark, it is highly likely they will attempt to nest within the Site; however, due to the difficulties in finding exact nest locations, avoidance buffers will be site- or situation-specific may be need to be precautionary; and
- Consideration will be given to mitigation measures for other ecological interests, such as those required to safeguard herptiles. If any potential conflict is identified, works/situation-specific advice can be provided on-site by an appropriately qualified and experienced Ecological Clerk of Works (ECoW).

5.4 General Enhancements

In order to increase the biodiversity value of the Site, and to adhere to Government guidance set out in the NPPF⁴, a range of enhancement measures have been incorporated into the Development design.

These will include retention and strengthening of hedgerow habitats within the Site, including the use of evergreen and fruit-bearing species beneficial to birds, such as rowan

³⁰ <https://www.rspb.org.uk/birds-and-wildlife/advice/wildlife-and-the-law/wildlife-and-countryside-act/schedules/>

(*Sorbus aucuparia*), hawthorn (*Crataegus monogyna*), and holly (*Ilex aquifolium*), among others.

Nest boxes will be provided to increase the opportunities for breeding birds. These will be placed in strategic locations around the Site and targeted toward species of conservation concern to increase their conservation value. All boxes will be tree-mounted, and (excluding the barn owl box) will be made of woodcrete, or similar material, to ensure durability. As a minimum, nest boxes will include:

- Two tree-mounted barn owl boxes, one in the north of the Site and one in the south (locations to be confirmed but placed following best practice guidance³¹);
- Two kestrel boxes, one in the north of the Site and one in the south (locations to be confirmed);
- Twenty tree sparrow boxes (28 mm hole) will be placed in two areas following best practice guidance on siting of individual boxes³²;
- Five starling boxes will be placed in suitable locations throughout the Site; and
- Ten further boxes for hole nesting species (five with 28 mm hole, five with 32 mm hole) will be scattered in suitable locations throughout the Site.

Approximate locations of small nest boxes are provided in the BEMP, and siting of individual boxes will be directed by an ECoW. Siting of barn owl and kestrel boxes will be directed on-site by an ECoW.

³¹ Guidance on siting boxes for barn owl available from: <https://www.barnowltrust.org.uk/barn-owl-nestbox/owl-boxes-for-trees/>.

³² Guidance on siting boxes for tree sparrow available from: <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/tree-sparrow/>.

6 CONCLUSION

Bird surveys and a desk study have been carried out to determine the baseline conditions at the Site and to inform an assessment of the potential impacts of the development on birds.

Surveys included monthly visits during the winter, a three-visit BBS and Nightjar surveys. Based on a review of available data, four features were identified as important and potential impacts on them have been assessed.

With the implementation of appropriate and reactive mitigation, impacts of the Development on the bird assemblage will be negligible.

Compensation and enhancement measures are included in the Development design that will offer long-term benefits for ornithology interests at the Site, including improved nesting and foraging resources to numerous species of conservation concern.

APPENDIX A – LEGISLATION AND POLICY

The Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981³³, as amended by the Countryside and Rights of Way Act (CROW) 2000³⁴ and the Natural Environment and Rural Communities Act (NERC) 2006³⁵, is the main legislation that protects wildlife in Great Britain, and is the mechanism for defining and protecting nationally important Sites of Special Scientific Interest (SSSI).

The legislation makes it offence to intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;

The Conservation of Habitats and Species a Regulations 2017

The Conservation of Habitats and Species a Regulations 2017³⁶ (the 'Habitat Regulations'), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019³⁷, transposes elements of the Habitats Directive (92/43/EEC)³⁸ and the Birds Directive (2009/147/EC)³⁹ into domestic UK legislation. It establishes the requirements for protecting sites that are internationally important for threatened habitats and species – the National Site Network – and thus the requirement for a 'Habitat Regulations Assessment' of plans or developments with potential to affect them.

Natural Environment and Rural Communities (NERC) Act 2006

The NERC Act 2006³⁵ places a duty on local planning authorities to have due regard for biodiversity and nature conservation during the course of their operations, and thus ensures that biodiversity is a key consideration in the planning process. The Act also establishes a list of species and habitats of principal importance for the conservation of biodiversity.

National Planning Policy Framework 2019

The National Planning Policy Framework (NPPF) 2019⁴⁰ sets out the Government's requirement for the planning system in England and in doing so establishes the framework within which local planning authorities can develop their own planning policies. The NPPF explicitly addresses the conservation and enhancement of the natural environment, including biodiversity, through paragraphs 174–177.

³³ Wildlife and Countryside Act 1981. Available from: <https://www.legislation.gov.uk/ukpga/1981/69>

³⁴ The Countryside and Rights of Way Act 2000. Available from: <https://www.legislation.gov.uk/ukpga/2000/37/contents>

³⁵ Natural Environment and Rural Communities Act 2006. Available from: <https://www.legislation.gov.uk/ukpga/2006/16/contents>

³⁶ The Conservation of Habitats and Species Regulations 2017. Available from: <https://www.legislation.gov.uk/uksi/2017/1012/contents/made>

³⁷ The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 Available from: <https://www.legislation.gov.uk/ukdsi/2019/9780111179512/contents>

³⁸ The Habitats Directive (92/43/EEC). Available from: https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

³⁹ The Birds Directive (2009/147/EC). Available from: https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm

⁴⁰ National Policy Planning Framework 2019. Available from: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

APPENDIX B – BIRD SPECIES NAMES AND CONSERVATION DESIGNATIONS

Table A1 list provides English vernacular and scientific names for all bird species mentioned in this report.

Nomenclature and taxonomic order are based on the BOU 'British List'⁵.

Table A1: List of English vernacular and scientific names of bird species

Species		Schedule 1/ Annex I Listings	SPI and/or BoCC Listing*
English (British) Vernacular Name	Scientific Name		
Greylag goose	<i>Anser anser</i>		Amber
Pink-footed goose	<i>Anser brachyrhynchus</i>		Amber
Mute Swan	<i>Cygnus olor</i>		Amber
Bewick's Swan	<i>Cygnus columbianus bewicki</i>		SPI, Amber
Shelduck	<i>Tadorna tadorna</i>		Amber
Garganey	<i>Spatula querquedula</i>	Schedule 1	Amber
Shoveler	<i>Spatula clypeata</i>		Amber
Gadwall	<i>Mareca strepera</i>		Amber
Wigeon	<i>Mareca penelope</i>		Amber
Pintail	<i>Anas acuta</i>		Amber
Mallard	<i>Anas platyrhynchos</i>		Amber
Teal	<i>Anas crecca</i>		Amber
Tufted duck	<i>Aythya fuligula</i>		
Red-legged partridge	<i>Alectoris rufa</i>		
Grey partridge	<i>Perdix perdix</i>		SPI, Red
Pheasant	<i>Phasianus colchicus</i>		
Nightjar	<i>Caprimulgus europaeus</i>	Annex I	SPI, Amber
Cuckoo	<i>Cuculus canorus</i>		SPI, Red
Stock dove	<i>Columba oenas</i>		Amber
Woodpigeon	<i>Columba palumbus</i>		
Turtle dove	<i>Streptopelia turtur</i>		SPI, Red
Collared dove	<i>Streptopelia decaocto</i>		
Moorhen	<i>Gallinula chloropus</i>		
Oystercatcher	<i>Haematopus ostralegus</i>		Amber
Lapwing	<i>Vanellus vanellus</i>		SPI, Red
Golden plover	<i>Pluvialis apricaria</i>	Annex I	
Curlew	<i>Numenius arquata</i>		SPI, Red
Ruff	<i>Calidris pugnax</i>	Schedule 1, Annex I	Red
Woodcock	<i>Scolopax rusticola</i>		Red
Snipe	<i>Gallinago gallinago</i>		Amber
Redshank	<i>Tringa totanus</i>		Amber
Black-headed gull	<i>Chroicocephalus ridibundus</i>		Amber
Common gull	<i>Larus canus</i>		Amber

Species		Schedule 1/ Annex I Listings	SPI and/or BoCC Listing*
English (British) Vernacular Name	Scientific Name		
Herring gull	<i>Larus argentatus</i>		SPI, Red
Lesser black-backed gull	<i>Larus fuscus</i>		Amber
Grey heron	<i>Ardea cinerea</i>		
Sparrowhawk	<i>Accipiter nisus</i>		
Marsh Harrier	<i>Circus aeruginosus</i>	Schedule 1, Annex I	Amber
Buzzard	<i>Buteo buteo</i>		
Barn owl	<i>Tyto alba</i>	Schedule 1	
Tawny owl	<i>Strix aluco</i>		Amber
Kingfisher	<i>Alcedo atthis</i>	Schedule 1, Annex I	Amber
Great spotted woodpecker	<i>Dendrocopos major</i>		
Kestrel	<i>Falco tinnunculus</i>		Amber
Jay	<i>Garrulus glandarius</i>		
Magpie	<i>Pica pica</i>		
Jackdaw	<i>Corvus monedula</i>		
Rook	<i>Corvus frugilegus</i>		
Carrion crow	<i>Corvus corone</i>		
Raven	<i>Corvus corax</i>		
Marsh tit	<i>Poecile palustris</i>		SPI, Red
Willow tit	<i>Poecile montana</i>		SPI, Red
Blue tit	<i>Cyanistes caeruleus</i>		
Great tit	<i>Parus major</i>		
Woodlark	<i>Lullula arborea</i>	Schedule 1, Annex I	SPI
Skylark	<i>Alauda arvensis</i>		SPI, Red
Swallow	<i>Hirundo rustica</i>		
House martin	<i>Delichon urbicum</i>		Amber
Long-tailed tit	<i>Aegithalos caudatus</i>		
Willow warbler	<i>Phylloscopus trochilus</i>		Amber
Chiffchaff	<i>Phylloscopus collybita</i>		
Sedge warbler	<i>Acrocephalus schoenobaenus</i>		
Reed warbler	<i>Acrocephalus scirpaceus</i>		
Blackcap	<i>Sylvia atricapilla</i>		
Garden warbler	<i>Sylvia borin</i>		
Lesser whitethroat	<i>Sylvia curruca</i>		
Whitethroat	<i>Sylvia communis</i>		
Goldcrest	<i>Regulus regulus</i>		
Wren	<i>Troglodytes troglodytes</i>		
Treecreeper	<i>Certhia familiaris</i>		
Starling	<i>Sturnus vulgaris</i>		SPI, Red

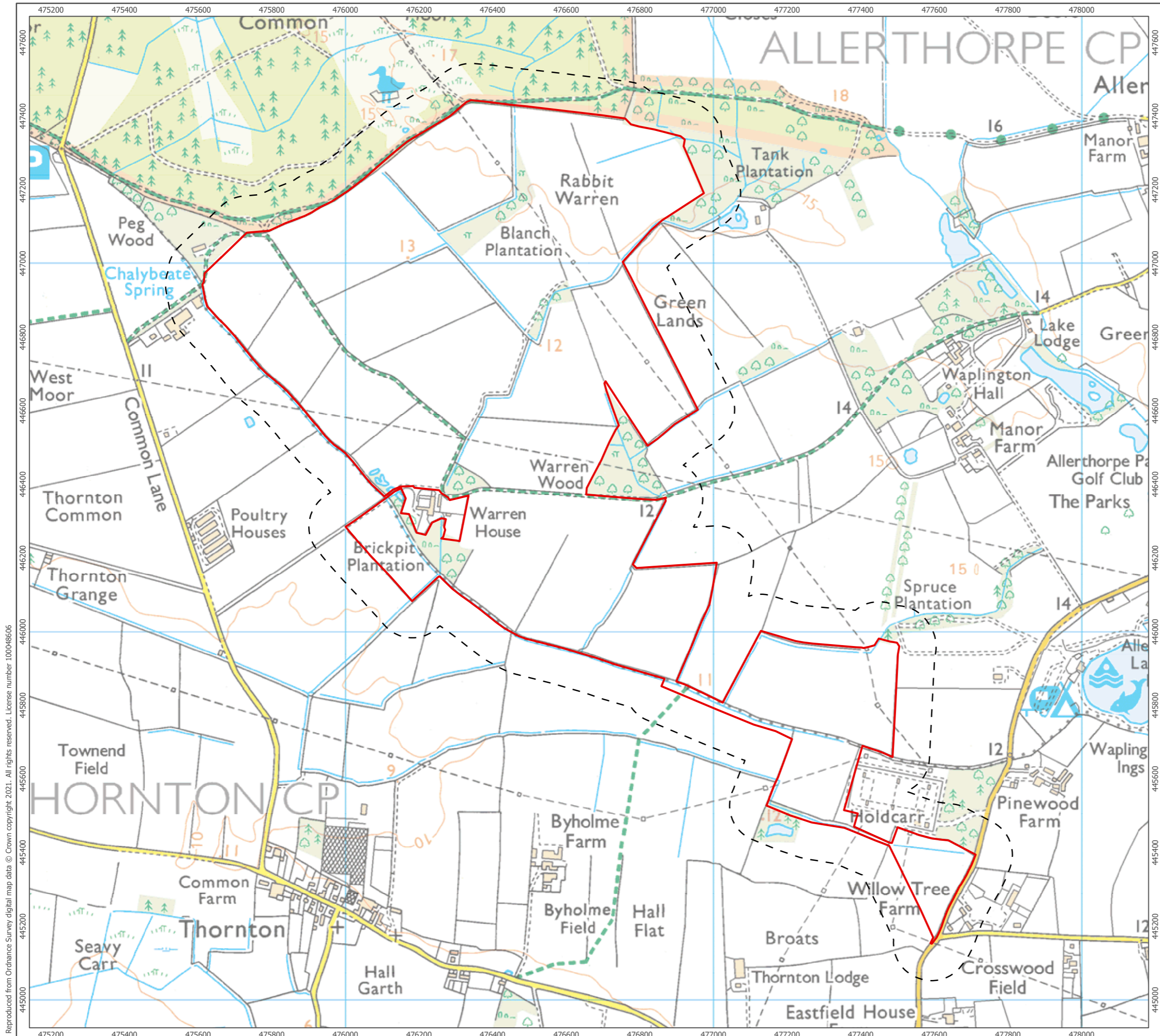
Species		Schedule 1/ Annex I Listings	SPI and/or BoCC Listing*
English (British) Vernacular Name	Scientific Name		
Blackbird	<i>Turdus merula</i>		
Fieldfare	<i>Turdus pilaris</i>	Schedule 1**	Red
Redwing	<i>Turdus iliacus</i>	Schedule 1**	Red
Song thrush	<i>Turdus philomelos</i>		SPI, Red
Mistle thrush	<i>Turdus viscivorus</i>		Red
Robin	<i>Erithacus rubecula</i>		
House sparrow	<i>Passer domesticus</i>		SPI, Red
Tree sparrow	<i>Passer montanus</i>		SPI, Red
Dunnock	<i>Prunella modularis</i>		SPI, Amber
Yellow wagtail	<i>Motacilla flava</i>		SPI, Red
Grey wagtail	<i>Motacilla cinerea</i>		Red
Pied/White wagtail	<i>Motacilla alba</i> ⁴¹		
Meadow pipit	<i>Anthus pratensis</i>		Amber
Tree pipit	<i>Anthus trivialis</i>		SPI, Red
Chaffinch	<i>Fringilla coelebs</i>		
Brambling	<i>Fringilla montifringilla</i>	Schedule 1**	
Bullfinch	<i>Pyrrhula pyrrhula</i>		SPI, Amber
Greenfinch	<i>Chloris chloris</i>		
Linnet	<i>Linaria cannabina</i>		SPI, Red
Lesser redpoll	<i>Acanthis cabaret</i>		SPI, Red
Crossbill	<i>Loxia curvirostra</i>	Schedule 1	
Goldfinch	<i>Carduelis carduelis</i>		
Siskin	<i>Spinus spinus</i>		
Corn bunting	<i>Emberiza calandra</i>		SPI, Red
Yellowhammer	<i>Emberiza citrinella</i>		SPI, Red
Reed bunting	<i>Emberiza schoeniclus</i>		SPI, Amber

* Where no BoCC listing is shown, species are Green-listed.

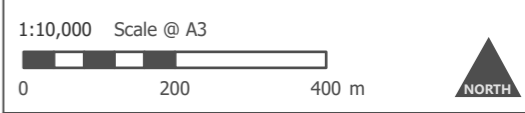
** Schedule 1 listed species have a greater level of protection during the breeding season; however, in this instance this designation is unlikely to be relevant to these species which are widespread and expected within the in the non-breeding season.

⁴¹ The subspecies typically found in the UK, *Motacilla alba yarellii*, is an Amber-listed species of conservation concern

APPENDIX C – FIGURES



- Site Boundary
- Ornithology Survey Area

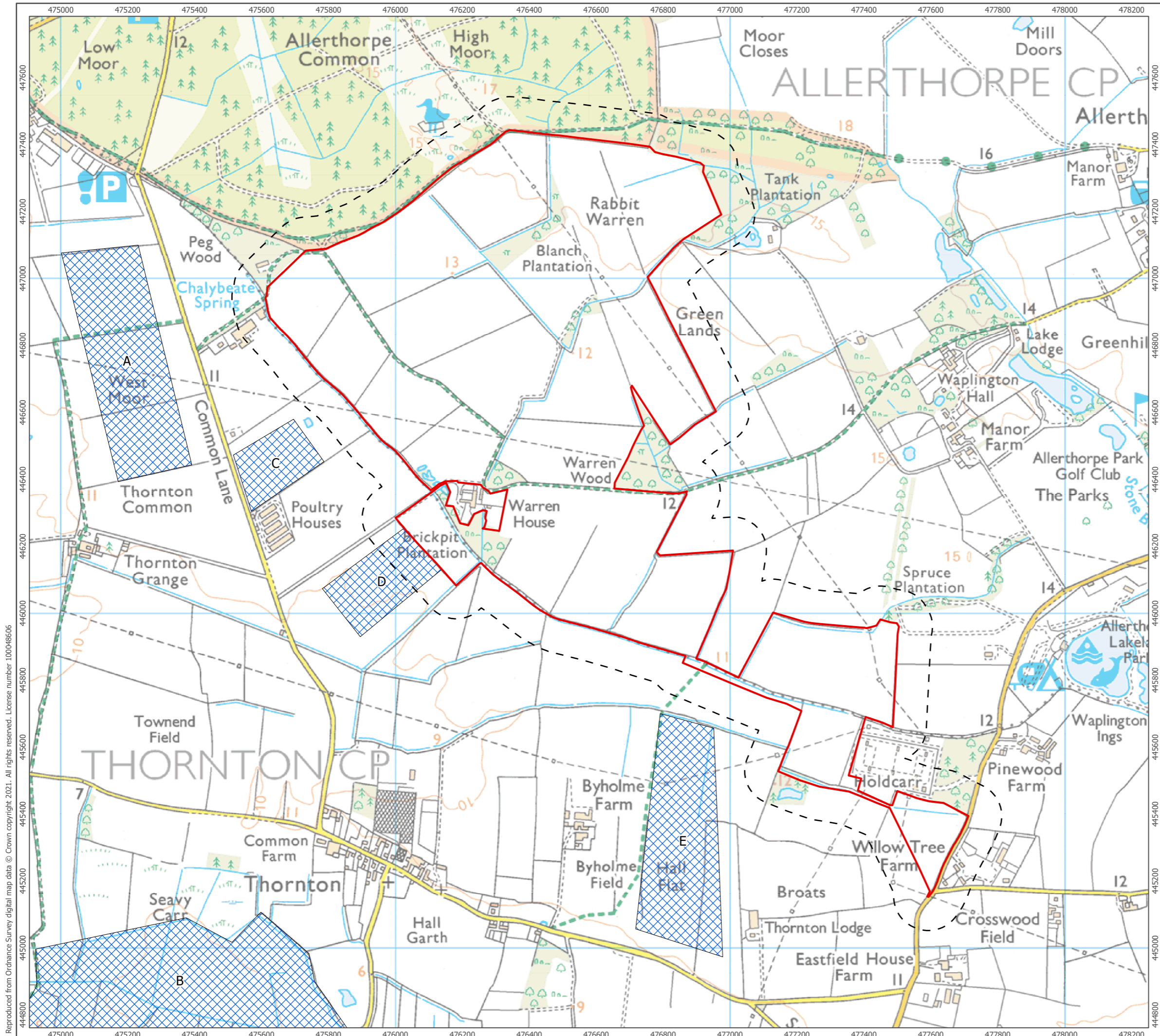


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Checked By: MS	Date: 08/07/2021

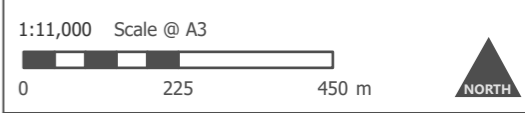
Ornithology Survey Area
Figure 1

**Soay Solar Farm
and Greener Grid Project
Ornithology Impact Assessment**

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- Site Boundary
- Ornithology Survey Area
- Flooding

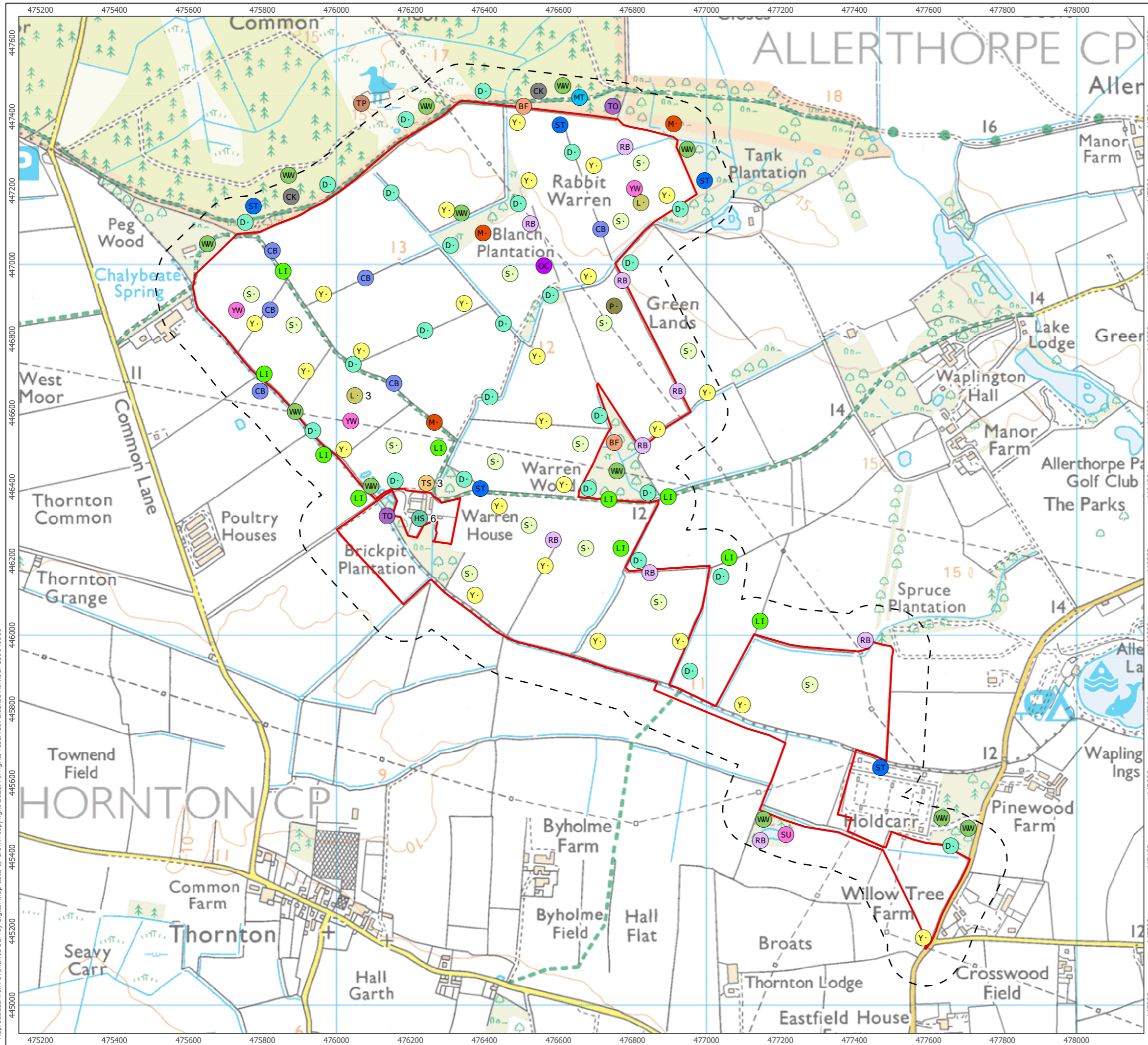


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Non-Breeding Season Floods
Figure 2

**Soay Solar Farm
and Greener Grid Project
Ornithology Impact Assessment**

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 P:\GIS\Ornithology\Projects\3404 Soay Solar Farm\3404 Thornton Solar.aprx\3404-REP-048 Fig 2 Non-Breeding Season Floods



Site Boundary
 Ornithology Survey Area

- Species
- BF Bullfinch
 - CB Corn Bunting
 - CK Cuckoo
 - D- Dunnock
 - P- Grey Partridge
 - HS House Sparrow
 - L- Lapwing
 - LI Linnet
 - MT Marsh Tit
 - M- Mistle Thrush
 - OC Oystercatcher
 - RB Reed Bunting
 - SU Shelduck
 - S- Skylark
 - ST Song Thrush
 - TO Tawny Owl
 - TP Tree Pipit
 - TS Tree Sparrow
 - WW Willow Warbler
 - YW Yellow Wagtail
 - Y- Yellowhammer

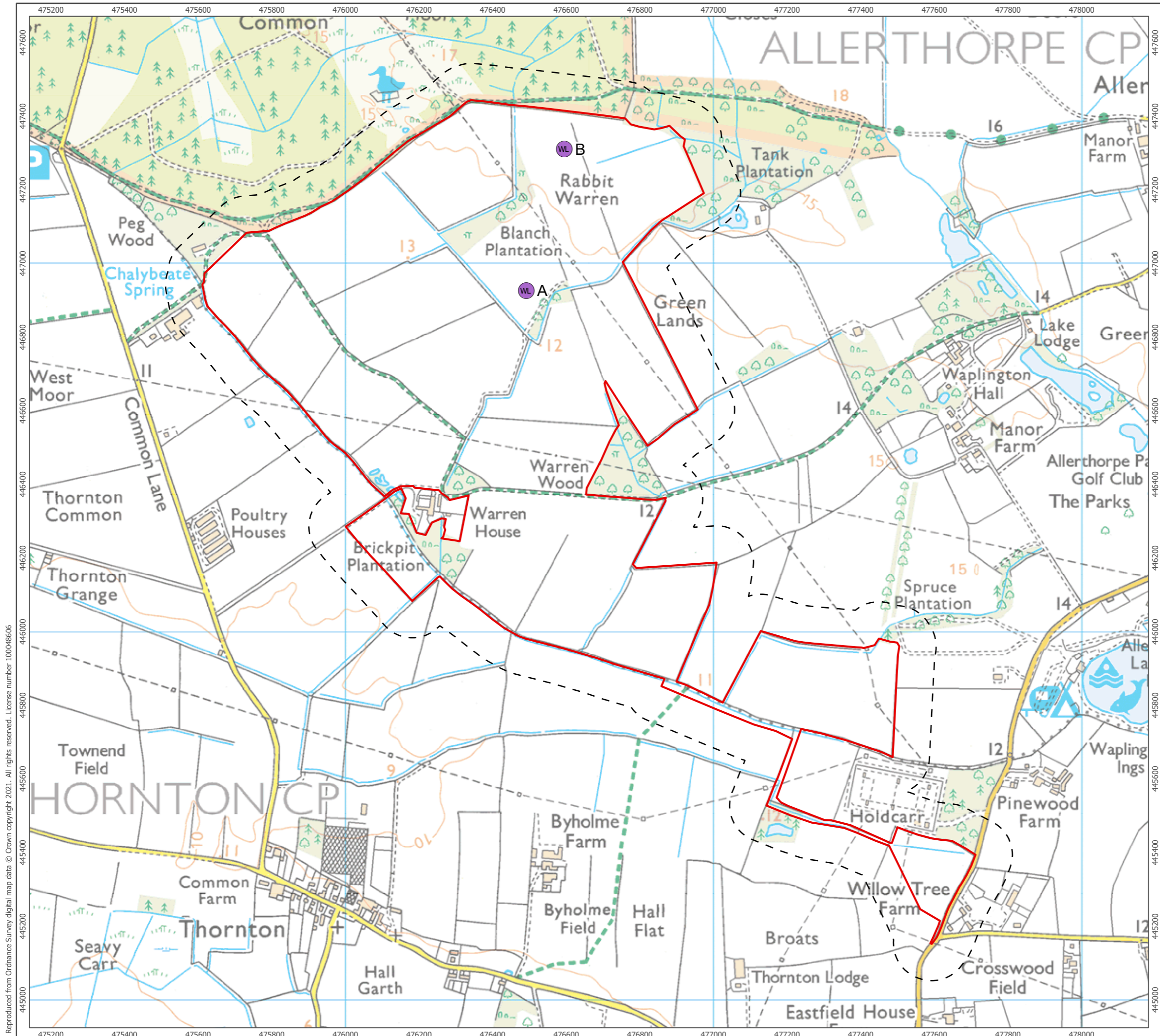
1:10,000 Scale @ A3

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Checked By: MS	Date: 08/07/2021

Breeding Bird Survey Results
Figure 3

**Soay Solar Farm
and Greener Grid Project
Ornithology Impact Assessment**

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- Site Boundary
- Ornithology Survey Area
- Species
- WL Woodlark

1:10,000 Scale @ A3
 0 200 400 m ▲ NORTH

Produced By: CW	Ref: 3404-REP-036
Checked By: MS	Date: 09/07/2021

Woodlark Observations
Figure 4

**Soay Solar Farm
and Greener Grid Project
Ornithology Impact Assessment**

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APPENDIX D – FIELD SURVEY DETAILS

Tables A2–A4 provides details of survey times and weather conditions.

Table A2: Survey times and weather conditions for all Winter Bird Surveys

Date	Start of Survey	End of Survey	Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow	Temperature
18.10.2019	07:15	13:45	1	3	S	4	8	1	1	0	0	9°C
18.10.2019	07:15	13:45	2	2	S	0	6	2	2	0	0	9°C
18.10.2019	07:15	13:45	3	3	S	1	6	2	2	0	0	9°C
18.10.2019	07:15	13:45	4	3	S	2	7	2	2	0	0	9°C
18.10.2019	07:15	13:45	5	3	S	0	8	2	2	0	0	11°C
18.10.2019	07:15	13:45	6	2	S	0	6	2	2	0	0	11°C
18.10.2019	07:15	13:45	7	2	S	0	4	2	2	0	0	11°C
15.11.2019	07:00	13:00	1	2	N	4	8	2	1	0	0	6°C
15.11.2019	07:00	13:00	2	2	N	0	6	2	2	0	0	6°C
15.11.2019	07:00	13:00	3	2	NE	4	8	2	2	0	0	6°C
15.11.2019	07:00	13:00	4	2	NE	2	7	2	2	0	0	6°C
15.11.2019	07:00	13:00	5	3	NE	5	8	1	1	0	0	6°C
15.11.2019	07:00	13:00	6	3	NE	5	8	1	1	0	0	6°C
06.12.2020	07:30	13:30	1	3	SSW	4	8	1	1	0	0	10°C
06.12.2020	07:30	13:30	2	2	SSW	1	8	2	2	0	0	10°C
06.12.2020	07:30	13:30	3	2	SSW	3	8	2	2	0	0	10°C
06.12.2020	07:30	13:30	4	2	SSW	0	8	2	2	0	0	10°C
06.12.2020	07:30	13:30	5	3	SSW	0	7	2	2	0	0	10°C
06.12.2020	07:30	13:30	6	3	SSW	2	7	2	2	0	0	10°C
23.01.2020	07:30	13:30	1	1	W	0	8	0	0	1	0	2°C
23.01.2020	07:30	13:30	2	1	W	0	8	0	0	1	0	2°C
23.01.2020	07:30	13:30	3	1	W	0	8	0	0	1	0	2°C
23.01.2020	07:30	13:30	4	2	SW	0	8	1	2	0	0	3°C
23.01.2020	07:30	13:30	5	2	SW	0	6	2	2	0	0	4°C
23.01.2020	07:30	13:30	6	2	SW	0	6	2	2	0	0	4°C
13.02.2020	07:10	13:10	1	3	SE	5	8	1	0	0	0	3°C
13.02.2020	07:10	13:10	2	3	SE	5	8	1	1	0	0	3°C
13.02.2020	07:10	13:10	3	3	SE	0	6	2	2	0	0	4°C
13.02.2020	07:10	13:10	4	2	SE	0	6	2	2	0	0	4°C
13.02.2020	07:10	13:10	5	2	SE	0	4	2	2	0	0	4°C
13.02.2020	07:10	13:10	6	2	SE	0	3	2	2	0	0	4°C
26.03.2020	05:50	12:30	1	1	NE	0	0	0	1	1	0	1°C
26.03.2020	05:50	12:30	2	1	NE	0	1	0	1	1	0	1°C
26.03.2020	05:50	12:30	3	1	NE	0	1	0	1	1	0	2°C
26.03.2020	05:50	12:30	4	1	NE	0	2	0	1	1	0	2°C
26.03.2020	05:50	12:30	5	1	NE	0	2	0	1	1	0	5°C
26.03.2020	05:50	12:30	6	1	NE	0	2	0	1	1	0	8°C
26.03.2020	05:50	12:30	7	2	NE	0	2	0	1	1	0	10°C

Table A3: Survey times and weather conditions for all Breeding Bird Surveys

Date	Start of Survey	End of Survey	Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow	Temperature
16.04.2020	05:45	11:45	1	1	NNW	0	1	2	1	0	0	3°C
16.04.2020	05:45	11:45	2	1	NNW	0	3	2	2	0	0	3°C
16.04.2020	05:45	11:45	3	1	NNW	0	3	2	2	0	0	3°C
16.04.2020	05:45	11:45	4	1	N	0	2	2	2	0	0	3°C
16.04.2020	05:45	11:45	5	2	N	0	2	2	2	0	0	3°C
16.04.2020	05:45	11:45	6	2	N	0	2	2	2	0	0	3°C
28.05.2020	04:30	11:00	1	1	SE	0	8	1	1	0	0	10°C
28.05.2020	04:30	11:00	2	1	SE	0	8	2	2	0	0	10°C
28.05.2020	04:30	11:00	3	1	SE	0	8	2	2	0	0	10°C
28.05.2020	04:30	11:00	4	2	SE	0	7	2	2	0	0	12°C
28.05.2020	04:30	11:00	5	2	S	0	4	2	2	0	0	15°C
28.05.2020	04:30	11:00	6	2	S	0	3	2	2	0	0	17°C
18.06.2020	04:20	11:00	1	2	NNE	1	8	2	1	0	0	12°C
18.06.2020	04:20	11:00	2	2	NNE	1	8	2	2	0	0	12°C
18.06.2020	04:20	11:00	3	3	NNE	1	8	2	2	0	0	13°C
18.06.2020	04:20	11:00	4	3	NE	0	8	2	2	0	0	15°C
18.06.2020	04:20	11:00	5	3	NE	0	8	2	2	0	0	16°C
18.06.2020	04:20	11:00	6	3	NE	0	8	2	2	0	0	17°C

Table A4: Survey times and weather conditions for all Nightjar Surveys

Date	Start of Survey	End of Survey	Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow	Temperature
29.06.2020	03:00	06:00	1	3	SW	0	8	1	0	0	0	12°C
29.06.2020	03:00	06:00	2	3	SW	0	8	1	1	0	0	12°C
29.06.2020	03:00	06:00	3	3	SW	0	8	1	2	0	0	13°C
09.07.2020	20:45	00:00	1	1	ENE	2	8	1	2	0	0	13°C
09.07.2020	20:45	00:00	2	1	NE	2	8	1	0	0	0	12°C
09.07.2020	20:45	00:00	3	1	NE	4	8	1	0	0	0	11°C
09.07.2020	20:45	00:00	4	1	NE	0	8	1	0	0	0	11°C