



Downing Renewable Developments LLP

# Meerdyke

Breeding Bird Survey Report

Project number 2483625

**AUGUST 2022**

## RSK GENERAL NOTES

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This work has been undertaken in accordance with the quality management system of RSK Biocensus.

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## EXECUTIVE SUMMARY

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This report presents the results of surveys for breeding birds undertaken on land at Meerdyke in Norfolk between March and July 2022 inclusive. These surveys were carried out to inform an assessment of the breeding bird assemblage in connection with the proposed solar renewable development to be constructed within the site. The site predominantly comprises arable fields bordered by ditches, with nearby residential and agricultural buildings, woodland, scrub and an area of orchard.

Background data obtained from the British Trust for Ornithology identified up to 136 bird species breeding within 10km of the site since 2007, including breeding by specially protected and notable species within 1km of the site. The six field survey visits of the site and adjacent land undertaken in 2022 recorded a combined total of 61 species, 38 of which were potentially breeding on site. Based on the species recorded, the breeding bird assemblage on site is assessed as being of district level importance. Regarding individual species, breeding populations of reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*) and yellowhammer (*Emberiza citrinella*) recorded on site are assessed as being of up to district level importance.

The proposed development has the potential to adversely affect breeding birds within and adjacent to the site through impact pathways including the destruction of active nests, disturbance of breeding birds and their young, and the loss or alteration of suitable habitat. These impacts could occur during the construction and operation of the proposed development.

Mitigation measures are therefore recommended in this report to minimise the potential for adverse effects and avoid any offence under current legislation. Habitat creation and enhancement measures are recommended to compensate for any removal or alteration of habitat from the proposed development, and to ensure that the proposed development has a positive effect on breeding birds. These measures should target species of conservation priority identified in this report as being present within the site and the wider area.

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# 1.0 INTRODUCTION

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## 1.1 Purpose of this report

- 1.1.1 This report presents the results of surveys for breeding birds undertaken on land at Meerdyke in Norfolk between March and July 2022 inclusive. These surveys were carried out to inform an assessment of the breeding bird assemblage in connection with the proposed solar renewable development to be constructed within the site (hereafter referred to as the 'proposed development'). RSK Biocensus conducted these surveys on behalf of Downing Renewable Developments LLP.

## 1.2 Ecological context

- 1.2.1 The site comprises two separate areas of farmland either side of Harp's Hall Road, Wisbech, Norfolk, PE14 8ET, covering a combined area of approximately 86 hectares (ha). These eastern and western halves of the site are centred at Ordnance Survey (OS) grid references TF 49903 10689 and TF 50967 09872 respectively. The site lies within a predominantly arable landscape, approximately 1.3 kilometres (km) east of Wisbech and approximately 30km north-east of Peterborough.
- 1.2.2 Arable fields covering the majority of the site are bordered by ditches, and the two halves of the site are separated by residential and agricultural buildings along Harp's Hall Road. Wider land beyond the site boundary predominantly comprises arable fields, along with smaller areas of woodland and scrub. An area of orchard is immediately south of the eastern half of the site. A larger running waterbody, Smeeth Lode, runs immediately outside of the eastern boundary of the eastern half of the site. The site layout is indicated in *Figure 1, Appendix A*.

## 1.3 Project background

- 1.3.1 The current development proposal is for the construction of a new solar renewable development. It is understood that this will involve the removal and/or alteration of arable fields within the site, with potential additional impacts on other habitats within and adjacent to the site such as ditches, tree lines and dense vegetation.

## 1.2 Structure of this report

- 1.4.1 This report is structured as follows:

*Section 2* presents legislation and guidance relevant to breeding birds;

*Section 3* describes the methods adopted for the collection and interpretation of breeding bird data;

*Section 4* presents the results of the desk study and field surveys;

*Section 5* evaluates the results of the desk study and field surveys and assesses the importance of the breeding bird populations recorded;

*Section 6* discusses potential impacts of the proposed development on breeding birds and provides outline mitigation and enhancement recommendations;

*Section 7* summarises the findings of the breeding bird survey report;

*Appendices A-D* provide supplementary figures, desk study data, field survey data and site photographs.

## 2.0 LEGISLATION AND GUIDANCE

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### 2.1 Overview

- 2.1.1 Relevant legislation and guidance relating to breeding birds is summarised below. This legislation and guidance has been used to inform the evaluation of the conservation status of the species recorded during the desk study and field surveys, when assessing the importance of the breeding bird populations present, and when evaluating the potential implications of these breeding bird populations for the proposed development.

### 2.2 Legislation

#### **European Commission Birds Directive (2009/147/EC)**

- 2.2.1 Certain UK bird species (including some breeding species) are protected at an international level under the European Commission (EC) Directive on the Conservation of Wild Birds 2009 (2009/147/EC). These species are afforded enhanced legal protection and European Union member states have a responsibility to maintain populations of these species. This Directive is transposed into English law through the Conservation of Habitats and Species Regulations 2017 (as amended)<sup>1</sup>.
- 2.2.2 Species listed on Annex 1 of the Directive are those for which the UK Government is required to take special conservation measures (including the designation of land as Special Protection Areas (SPAs)) to conserve populations of these species throughout their distributions. These sites form part of the Natura 2000 network of core sites that are protected for rare and threatened species.
- 2.2.3 Bird species listed on Annex 1 of the Directive are those which are deemed to be:
- in danger of extinction;
  - vulnerable to specific changes to their habitats;
  - considered rare due to their small population sizes and/or restricted local distributions; and
  - in need of particular attention due to the specific nature of their habitat requirements.

#### **Wildlife and Countryside Act 1981 (as amended)**

- 2.2.4 Wild birds are protected in the UK under Section 1 of the Wildlife and Countryside Act (WCA) 1981 (as amended). This protection was extended by the Countryside Rights of Way (CRoW) Act 2000. Under this legislation it is an offence to:
- kill, injure or take any wild bird;

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<sup>1</sup> As such, the requirements of the EC Birds Directive (2009/147/EC) still apply despite the UK no longer being a member state of the European Union.



take, damage or destroy the nest of any wild bird while that nest is in use or being built; and

take or destroy an egg of any wild bird.

2.2.5 In addition, certain species are listed on Schedule 1 of the WCA and receive special protection under Sections 1(4) and 1(5), which confer penalties where the above-mentioned offences are committed, in addition to making it an offence to:

disturb any such bird whilst building its nest or whilst it is in or near a nest containing eggs or dependent young; and

disturb the dependent young of such a bird.

### **Natural Environment and Rural Communities Act 2006**

2.2.6 The Natural Environment and Rural Communities (NERC) Act 2006 requires local and governmental authorities and departments to have regard to the conservation of biodiversity and a range of measures associated with public rights of way and other rural affairs.

2.2.7 Forty-nine bird species are listed as being Species of Principal Importance for conservation in England under Section 41 (S41) of the NERC Act 2006, and as such they are a material consideration during the planning process. These Species of Principal Importance are those identified as requiring action under the UK Biodiversity Action Plan (UKBAP), which continue to be regarded as species of conservation priority under the UK Post-2010 Biodiversity Framework (which succeeded the UKBAP in July 2012).

## **2.3 Guidance**

### **National Planning Policy Framework**

2.3.1 The National Planning Policy Framework (NPPF, 2019) sets out the government's planning policies for England and how these are expected to be applied. This includes requirements for the contribution to and enhancement of the natural environment, including habitats and biodiversity. The NPPF specifies the obligations that local authorities and the UK government have regarding statutory designated sites and protected species under UK and international legislation and how these are to be delivered in the planning system.

### **Birds of Conservation Concern**

2.3.2 The Birds of Conservation Concern (BoCC) Red, Amber and Green lists categorise the UK's regularly occurring bird species according to their level of conservation concern (Stanbury *et al.*, 2021). Although these listings confer no legal protection, they are useful in guiding conservation action for individual species when birds may be affected by plans or projects.

***Red list species***

2.3.3 These are species of high conservation concern, including:

species that are globally threatened according to the International Union for the Conservation of Nature (IUCN) criteria;

species with a historical breeding decline that have not shown a substantial recent recovery;

species that have shown a severe breeding decline over the last 25 years or longer term;

species that have shown a severe breeding range decline over the last 25 years or longer term; and

species whose non-breeding populations have declined over the last 25 years or longer term.

***Amber list species***

2.3.4 These are species of medium conservation concern, including:

species of European Conservation Concern;

species whose populations have declined historically but which have made a substantial recent recovery;

species whose breeding populations have declined moderately over the last 25 years or longer term;

species that have shown a moderate breeding range decline over the last 25 years or longer term;

species whose non-breeding populations have declined moderately over the last 25 years or longer term; and

rare breeders or non-breeding rarity species with internationally important or localised populations.

***Green list species***

2.3.5 Green list species fulfil none of the criteria detailed above. As such, they have stable or increasing populations and are not currently of conservation concern.

2.3.6 Non-native species such as Canada goose (*Branta canadensis*) are not afforded Red, Amber or Green list status.

### Norfolk Species Action Plans

2.3.7 The Norfolk Biodiversity Partnership details specific Species Action Plans (SAPs) for bird species of particular conservation value within the county<sup>2</sup>. These SAPs aim to raise awareness of biodiversity issues and provide a mechanism through which conservation targets for these species can be delivered within the county.

2.3.8 SAPs are provided for the following species potentially relevant to the habitats present within and adjacent to the site:

- barn owl (*Tyto alba*);
- corn bunting (*Emberiza calandra*);
- grey partridge (*Perdix perdix*);
- reed bunting (*Emberiza schoeniclus*);
- skylark (*Alauda arvensis*);
- song thrush (*Turdus philomelos*);
- spotted flycatcher (*Muscicapa striata*);
- stone curlew (*Burhinus oedichnemos*);
- swift (*Apus apus*);
- tree sparrow (*Passer montanus*); and
- turtle dove (*Streptopelia turtur*).

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<sup>2</sup> Further information is available at: <https://www.norfolkbiodiversity.org/habitats-and-species/> [accessed 11/07/2022].

## 3.0 METHODS

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### 3.1 Desk study

- 3.1.1 To provide supplementary data on the breeding statuses (see *Section 3.3*) of the bird species present in the vicinity of the site, a Data Report was obtained from the British Trust for Ornithology (BTO 2022). This provided records from relevant 1km and 10km grid squares from 2007-2011 and 2018-2022; specifically three 10km grid squares (TF41, TF50 and TF51) and five 1km grid squares (TF4910, TF4911, TF5009, TF5010 and TF5109)
- 3.1.2 For reasons of confidentiality, records for certain rare breeding species (e.g. Montagu's harrier (*Circus pygargus*)) were provided for the nearest 50km grid square.

### 2.3 Field surveys

- 3.2.1 The field surveys for breeding birds were undertaken between March and July 2022 inclusive in accordance with the *Bird Survey Guidelines for Assessing Ecological Impacts* (BSG) (Bird Survey and Assessment Steering Group, 2022). These comprised a series of six survey visits, during which a suitably experienced RSK Biocensus ornithologist walked a pre-determined transect route throughout the site, recording all bird species encountered (either visually or through their vocalisations) onto GIS Field Maps software using standard BTO species codes and behaviour notation (Marchant, 1983).
- 3.2.2 The transect route included all ditches and field margins within the site, with all habitat within the site approached to within 100m. Birds observed within 50m of the site were also recorded, including birds using the nearby Smeeth Lode. The transect route was interspersed with stops, during which the ornithologist scanned for birds using optical equipment. The direction in which the transect route was walked by the ornithologist was alternated between survey visits so that different areas of the site were surveyed at different times of day.
- 3.2.3 In accordance with the BSG, five survey visits were undertaken at dawn, whilst one visit was undertaken at dusk to increase the likelihood of recording species that are more active at dusk (e.g. owls). Surveys were undertaken in suitable weather conditions, avoiding extreme temperatures, heavy rain, snow or fog during which bird activity may be atypical and/or surveying may be impractical. The dates, timings and weather conditions for the six survey visits are indicated in *Table 1* below.

**Table 1 Survey dates and weather conditions**

Survey visit	Date	Timing	Temperature (°C)	Weather conditions
1	29/03/2022	16:10-19:45	13-15	Largely overcast (50-100% cloud cover), very light breeze (BF1), dry
2	20/04/2022	05:20-09:40	7-12	Partial cloud (20-40% cloud cover), light breeze (BF2), light rain from 07:00
3	10/05/2022	04:50-08:30	15-16	Largely overcast (70-80% cloud cover), light to moderate breeze (BF1-3), dry
4	26/05/2022	04:25-07:40	10-15	Initially clear before becoming more overcast (10-60% cloud cover), light breeze (BF2), dry
5	15/06/2022	04:05-07:40	12-17	Largely clear (30-40% cloud cover), light breeze (BF2), dry
6	05/07/2022	04:45-08:15	10-15	Initially clear before becoming more overcast (20-70% cloud cover), light breeze (BF2), dry

## 2.3 Interpretation of survey results

### Assessment of breeding status

3.3.1 The results from the six survey visits were used to assess the breeding statuses of the bird species recorded within the site, in accordance with the criteria presented in Gilbert *et al.* (1998)<sup>3</sup> and taking into consideration understanding of the breeding ecology of the species in question. These criteria are based on the principle that many species are territorial during the breeding season and, as such, observation of certain behaviours (e.g. singing, displaying, aggressive interactions) can be used to infer breeding or likely breeding by a given species.

3.3.2 Breeding by a particular species within the site can be assessed as being 'Confirmed' if:

- a nest or used nest was found;
- a nest with young was seen or heard;

<sup>3</sup> As summarised at: <https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence> [accessed 11/07/2022].

recently-fledged young were seen or heard;

adults were seen entering or leaving a nest site, or an adult was seen incubating;  
or

a territory was positively identified due to the number and type of observations recorded (i.e. a combination of observations of a male singing from the same area of suitable nesting habitat on multiple occasions, adults seen visiting a probable nest site at that location and/or observation of a pair at that location).

- 3.3.3 Breeding by a particular species within the site can be assessed as being 'Probable' if:
- nest-building was observed;
  - a bird was seen visiting a probable nest site on a single occasion;
  - agitated behaviour or alarm calls were observed in or near suitable nesting habitat;
  - a pair was seen in suitable nesting habitat during the breeding season;
  - courtship and/or display were seen; or
  - a male was heard singing in the same location on two or more occasions;
- 3.3.4 Breeding by a particular species within the site can be assessed as being 'Possible' if:
- birds were seen in or near suitable nesting habitat during the breeding season; or
  - a male was heard singing on one occasion during the breeding season.
- 3.3.5 Species not observed exhibiting the behaviours above are assessed as 'Non-breeding'.

### **Conservation status**

- 3.3.6 The assessment of the importance of the breeding bird populations recorded took into consideration the conservation statuses of the species recorded. Species afforded special statutory protection or included on lists of species of conservation interest were evaluated. These included:
- Wildlife and Countryside Act 1981 (as amended) Schedule 1 species;
  - EC Birds Directive (2009/147/EC) Annex 1 species;
  - NERC Act 2006 S41 Species of Principal Importance;
  - BoCC Red and Amber list species; and
  - relevant SAP species for Norfolk.

### **Species abundance**

- 3.3.7 The importance of the breeding bird populations recorded was assessed in the context of the sizes of those populations relative to international, national and regional population estimates for the species in question. National population estimates used for this analysis are as presented by Woodward *et al.* (2020). Assessment of county, district or local

importance was based on professional judgement and using county population estimates where available (as presented in the appropriate county bird report).

**Species diversity**

- 3.3.8 The importance of the breeding bird assemblage recorded within the site was assessed according to its level of species diversity, in reference to the criteria described by Fuller (1980), as indicated in *Table 2* below.
- 3.3.9 It should be recognised that breeding birds have undergone widespread decline since these criteria were devised. As such, the qualifying number of species for a given importance category proposed by Fuller (1980) is now considered to be relatively high. This disparity is taken into account within the adapted importance criteria indicated in *Table 2* below.

**Table 2 Breeding bird assemblage importance criteria**

Breeding bird assemblage importance category	Number of breeding bird species recorded	
	Fuller (1980) criteria	Adapted criteria
National	More than 85	More than 85
Regional	70-84	70-84
County	50-69	50-69
District	-	25-49
Local	25-49	Fewer than 25

- 3.3.10 The breeding bird assemblage was also evaluated in the context of the relevant County Wildlife Site (CWS) selection criteria, which provide a mechanism for the designation and protection of areas of land that are especially important for their wildlife at a county level.
- 3.3.11 The Norfolk Wildlife Trust sets out the criteria for the selection of CWSs within the county<sup>4</sup>. Whilst selection criteria are provided for habitats relevant to the site of the proposed development such as woodland, hedgerows and riverine sites, none of the selection criteria relate specifically to breeding bird populations.

<sup>4</sup> Selection criteria are available at: [http://www.nbis.org.uk/sites/default/files/documents/Habitat\\_selection\\_criteria.pdf](http://www.nbis.org.uk/sites/default/files/documents/Habitat_selection_criteria.pdf) [accessed 12/07/2022].

## 2.3 Limitations

- 3.4.1 Field surveys for breeding birds were undertaken at the appropriate time of year to record the breeding species potentially present on site. All survey visits were undertaken at appropriate times of day and in suitable weather conditions.
- 3.4.2 Whilst desk study data are useful in providing supplementary ecological information for a site, it should be acknowledged that these data are dependent on the submission of records to the relevant organisation (i.e. the BTO). As such, a lack of records for a particular species does not necessarily mean that the species is absent from the site and/or wider search area. Similarly, records of a particular species do not necessarily mean that the species is still present within the site and/or wider search area.
- 3.4.3 It should be noted that ecological features (e.g. bird populations) are transient, and that the distributions of habitats and species may be subject to change. As such, in line with Chartered Institute of Ecology and Environmental Management (CIEEM) guidance, the ecological survey data presented in this report are considered valid for at least two years (CIEEM, 2019), after which it may be necessary for further field surveys to be undertaken.

## 2.3 Quality assurance

- 3.5.1 These surveys and reporting were undertaken by RSK Biocensus ornithologists who are experienced in conducting ornithology work in relevant habitats. These ornithologists are CIEEM members at the appropriate level and follow their code of professional conduct when undertaking ecological work.



## 4.0 RESULTS

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### 4.1 Desk study

- 4.1.1 The BTO Data Report identified breeding by up to 87 species within 10km of the site during 2007-2011, and breeding by up to 136 species within 10km of the site during 2018-2022. Full BTO data are provided in *Appendix B*.
- 4.1.2 Species recorded breeding or potentially breeding within 10km of the site in 2018-2022 included a wide range of specially protected and notable species. These included species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (e.g. avocet (*Recurvirostra avosetta*), Cetti's warbler (*Cettia cetti*) and golden oriole (*Oriolus oriolus*), and BoCC Red list species such as lapwing (*Vanellus vanellus*) and tree sparrow.
- 4.1.3 More species were recorded breeding or potentially breeding within 10km of the site in 2018-2022 than in 2007-2011. Species recorded during both periods included the following (breeding statuses as described in *Section 3.3* are in brackets):
- avocet (Confirmed);
  - cuckoo (*Cuculus canorus*) (Possible);
  - grey partridge (Probable/Possible);
  - lapwing (Confirmed);
  - mistle thrush (*Turdus viscivorus*) (Probable);
  - oystercatcher (*Haematopus ostralegus*) (Probable);
  - rook (*Corvus frugilegus*) (Probable);
  - spotted flycatcher (Confirmed);
  - starling (*Sturnus vulgaris*) (Probable); and
  - tree sparrow (Confirmed).
- 4.1.4 Desk-based scoping identified no designated sites (e.g. SPAs, Ramsar sites, Sites of Special Scientific Interest) relevant to the proposed development with regard to features of ornithological interest.

### 4.2 Field surveys

- 4.2.1 A total of 61 bird species were recorded during the field surveys of the site between March and July 2022 inclusive. The peak counts and breeding statuses of these species are summarised in *Table 3* below, in reference to the assessment criteria described in *Section 3.3*, with descriptions provided where necessary. Full breeding bird survey data from March to July 2022 inclusive are provided in *Appendix C*.

**Table 3 Summary of species recorded during the 2022 surveys**

Species		Peak count	Breeding status	Description
Common name	Scientific name			
Blackbird	<i>Turdus merula</i>	13	Confirmed	Territories near woodland on the north-west and southern boundaries of the site
Blackcap	<i>Sylvia atricapilla</i>	5	Confirmed	Territories in woodland and scrub around the site boundary
Black-headed gull	<i>Chroicocephalus ridibundus</i>	1	Non-breeding	
Blue tit	<i>Cyanistes caeruleus</i>	33	Confirmed	Singing adults and recently fledged young observed in woodland and gardens around the site boundary
Buzzard	<i>Buteo buteo</i>	3	Probable	One territory including woodland north-east of site boundary
Carrion crow	<i>Corvus corone</i>	105	Non-breeding	Flocks feeding within arable fields
Chaffinch	<i>Fringilla coelebs</i>	14	Confirmed	Territories near woodland on the north-west and southern boundaries of the site
Chiffchaff	<i>Phylloscopus collybita</i>	3	Confirmed	Territories in woodland and orchard, largely south-east of the site boundary
Collared dove	<i>Streptopelia decaocto</i>	6	Confirmed	Juveniles observed near buildings along Harp's Hall Road
Common sandpiper	<i>Actitis hypoleucos</i>	1	Non-breeding	One foraging in a drain along Cow Lake Drove
Cormorant	<i>Phalacrocorax carbo</i>	1	Non-breeding	
Cuckoo	<i>Cuculus canorus</i>	1	Possible	One singing from woodland south of the site boundary

Species		Peak count	Breeding status	Description
Common name	Scientific name			
Dunnock	<i>Prunella modularis</i>	6	Probable	Singing from gardens and woodland edges
Fieldfare	<i>Turdus pilaris</i>	15	Non-breeding	Flock observed foraging during survey visit 1
Garden warbler	<i>Sylvia borin</i>	1	Possible	One singing from the orch south of Harp's Hall Road
Goldfinch	<i>Carduelis carduelis</i>	19	Confirmed	Singing from trees and derelict vegetation including scrub on the south-east boundary of the site
Great tit	<i>Parus major</i>	17	Probable	Frequently singing from woodland edges and gardens along site boundaries
Green sandpiper	<i>Tringa ochropus</i>	2	Non-breeding	Two foraging in the drain along Cow Lake Drive during survey visit 1
Green woodpecker	<i>Picus viridis</i>	4	Probable	Male calling during multiple visits in gardens along Harp's Hall Road and Meerdyke Lane
Greenfinch	<i>Chloris chloris</i>	3	Probable	Singing from woodland north-west of the site boundary during multiple visits
Grey heron	<i>Ardea cinerea</i>	2	Non-breeding	
Grey wagtail	<i>Motacilla cinerea</i>	1	Possible	One observed in suitable nesting habitat c.80m north of the site. Suitable nesting habitat preserved along the site boundary
Herring gull	<i>Larus argentus</i>	3	Non-breeding	

Species		Peak count	Breeding status	Description
Common name	Scientific name			
House sparrow	<i>Passer domesticus</i>	59	Confirmed	c.5 colonies, predominantly in the vicinity of houses and farm buildings along Harp's Hall Road
Jackdaw	<i>Coloeus monedula</i>	11	Possible	Small flocks foraging in fields, and low numbers in potential nesting habitat in the orchard south Harp's Hall Road
Jay	<i>Garrulus glandarius</i>	1	Non-breeding	
Kestrel	<i>Falco tinnunculus</i>	1	Non-breeding	
Lapwing	<i>Vanellus vanellus</i>	3	Non-breeding	One small flock flying northwards over the site
Lesser black-backed gull	<i>Larus fuscus</i>	6	Non-breeding	
Lesser whitethroat	<i>Sylvia curruca</i>	2	Possible	Singing from scrub along the site boundary
Linnet	<i>Linaria cannabina</i>	44	Confirmed	c.5 territories in scrub along the south-east boundary of the site. Foraging flocks also recorded in arable fields towards the south east of the site.
Little egret	<i>Egretta garzetta</i>	1	Non-breeding	
Long-tailed tit	<i>Aegithalos caudatus</i>	3	Possible	Calling from dense vegetation along site boundaries
Magpie	<i>Pica pica</i>	5	Probable	Juveniles observed in the orchard south of the site boundary
Mallard	<i>Anas platyrhynchos</i>	17	Probable	Pairs observed around drains on multiple occasions but no nesting evidence or young were recorded

Species		Peak count	Breeding status	Description
Common name	Scientific name			
Meadow pipit	<i>Anthus pratensis</i>	2	Non-breeding	
Moorhen	<i>Gallinula chloropus</i>	2	Non-breeding	
Mute swan	<i>Cygnus olor</i>	2	Non-breeding	
Pheasant	<i>Phasianus colchicus</i>	7	Probable	Males and females frequently calling and foraging throughout the site
Pied wagtail	<i>Motacilla alba</i>	2	Non-breeding	
Red-legged partridge	<i>Alectoris rufa</i>	2	Probable	Pairs recorded within the site, but no nesting evidence or you were observed
Redwing	<i>Turdus iliacus</i>	9	Non-breeding	Foraging during survey visit 1
Reed bunting	<i>Emberiza schoeniclus</i>	13	Confirmed	c.12 territories in drains and ditches within the site and along the site boundary
Reed warbler	<i>Acrocephalus scirpaceus</i>	6	Confirmed	4 territories in drains and ditches within the site and along the site boundary
Robin	<i>Erithacus rubecula</i>	16	Confirmed	Territories in woodland edges and gardens along the site boundary
Rook	<i>Corvus frugilegus</i>	6	Non-breeding	
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	7	Confirmed	c.7 territories in drains and ditches within the site and along the site boundary

Species		Peak count	Breeding status	Description
Common name	Scientific name			
Shelduck	<i>Tadorna tadorna</i>	18	Non-breeding	Flocks observed flying over the western half area of the site
Skylark	<i>Alauda arvensis</i>	14	Confirmed	c.13 territories in fields within and adjacent to the site
Song thrush	<i>Turdus philomelos</i>	4	Confirmed	3 territories in woodland adjacent to the site
Sparrowhawk	<i>Accipiter nisus</i>	1	Non-breeding	
Starling	<i>Sturnus vulgaris</i>	14	Confirmed	Flocks of adults and juveniles observed around houses along Harp's Hall Road
Stock dove	<i>Columba oenas</i>	31	Probable	Males calling in suitable breeding habitat (mainly patches of woodland) during multiple visits
Stonechat	<i>Saxicola rubicola</i>	5	Confirmed	Male calling in suitable breeding habitat and juvenile observed in a field west of Harp's Hall Road
Swallow	<i>Hirundo rustica</i>	1	Non-breeding	
Swift	<i>Apus apus</i>	2	Non-breeding	
Wheatear	<i>Oenanthe oenanthe</i>	1	Possible	One male calling in suitable breeding habitat on a single visit
Whitethroat	<i>Sylvia communis</i>	15	Confirmed	Singing in scrub, hedgerows, drains and woodland edges within and adjacent to the site
Woodpigeon	<i>Columba palumbus</i>	136	Confirmed	Singing in woodland and gardens adjacent to the site on multiple occasions. Also foraging flocks in arable fields throughout the site

Species		Peak count	Breeding status	Description
Common name	Scientific name			
Wren	<i>Troglodytes troglodytes</i>	28	Confirmed	Singing in woodland and gardens along the site boundary on multiple occasions
Yellowhammer	<i>Emberiza citrinella</i>	15	Confirmed	c.15 territories in scrub, hedge and woodland edges within an adjacent to the site

4.2.4 In summary, in reference to the criteria described in *Section 3.3*, the breeding status of the following 21 species was identified as Confirmed:

- blackbird;
- blackcap;
- blue tit;
- chaffinch;
- chiffchaff;
- collared dove;
- goldfinch;
- house sparrow;
- linnet;
- reed bunting;
- reed warbler;
- robin;
- sedge warbler;
- skylark;
- song thrush;
- starling;
- stonechat;
- whitethroat;
- woodpigeon;
- wren; and
- yellowhammer.

4.2.5 The breeding status of the following 10 species was identified as Probable:

buzzard;  
dunnock;  
great tit;  
green woodpecker;  
greenfinch;  
magpie;  
mallard;  
pheasant;  
red-legged partridge; and  
stock dove.

4.2.6 The breeding status of the following seven species was identified as Possible:

cuckoo;  
garden warbler;  
grey wagtail;  
jackdaw;  
lesser whitethroat;  
long-tailed tit; and  
wheatear.

4.2.7 The other 23 species recorded were assessed as Non-breeding.

#### **Other species**

4.2.8 Active badger (*Meles meles*) setts and pathways were recorded within the site. Badgers and their setts are protected under The Protection of Badgers Act 1992.

4.2.9 Brown hares (*Lepus europaeus*) were observed foraging in arable fields on site, with a peak count of three recorded during a single visit. Brown hare is listed as a Species of Principal Importance under S41 of the NERC Act 2006.



## 5.0 EVALUATION

### 3.1 Overview

5.1.1 The assessment of the importance of the breeding bird populations recorded within the site during the field surveys undertaken between March and July 2022 inclusive is provided below, taking into consideration:

the conservation statuses of the species recorded (i.e. their inclusion on the legislation and guidance described in *Section 2* of this report);

the sizes of the populations of the species recorded (i.e. species abundance);

the overall diversity of the breeding bird assemblage (i.e. species diversity); and

the spatial patterns of breeding bird usage of the site, including any areas of particular importance to breeding bird populations.

### 2.3 Conservation status

5.2.1 Of the 61 species recorded during the 2022 field surveys for breeding birds, 33 are included on the legislation and guidance described in *Section 2* of this report (as indicated in *Table 4* below).

**Table 4 Specially protected and notable species recorded during the 2022 surveys**

Species	Breeding status	Conservation status category					
		Schedule 1	Annex 1	S41	Red	Amber	SAP
Black-headed gull	Non-breeding	-	-	-	-		-
Common sandpiper	Non-breeding	-	-	-	-		-
Cuckoo	Possible	-	-			-	-
Dunnock	Probable	-	-		-		-
Fieldfare	Non-breeding		-	-		-	-
Green sandpiper	Non-breeding		-	-	-		-
Greenfinch	Probable	-	-	-		-	-

Species	Breeding status	Conservation status category					
		Schedule 1	Annex 1	S41	Red	Amber	SAP
Grey wagtail	Possible	-	-	-	-		-
Herring gull	Non-breeding	-	-			-	-
House sparrow	Confirmed	-	-			-	-
Kestrel	Non-breeding	-	-	-	-		-
Lapwing	Non-breeding	-	-			-	-
Lesser black-backed gull	Non-breeding	-	-	-	-		-
Linnet	Confirmed	-	-			-	-
Little egret	Non-breeding	-		-	-	-	-
Mallard	Probable	-	-	-	-		-
Meadow pipit	Non-breeding	-	-	-	-		-
Moorhen	Non-breeding	-	-		-		-
Redwing	Non-breeding		-	-	-		-
Reed bunting	Confirmed	-	-		-		
Rook	Non-breeding	-	-	-	-		-
Sedge warbler	Confirmed	-	-	-	-		-
Shelduck	Non-breeding	-	-	-	-		-

Species	Breeding status	Conservation status category					
		Schedule 1	Annex 1	S41	Red	Amber	SAP
Skylark	Confirmed	-	-			-	
Song thrush	Confirmed	-	-		-		
Sparrowhawk	Non-breeding	-	-	-	-		-
Starling	Confirmed	-	-			-	-
Stock dove	Probable	-	-	-	-		-
Swift	Non-breeding	-	-	-	-		
Whitethroat	Confirmed	-	-	-	-		-
Woodpigeon	Confirmed	-	-	-	-		-
Wren	Confirmed	-	-	-	-		-
Yellowhammer	Confirmed	-	-			-	-
<b>Schedule 1:</b> Wildlife and Countryside Act 1981 (as amended) Schedule 1 species <b>Annex 1:</b> EC Birds Directive (2009/147/EC) Annex 1 species <b>S41:</b> NERC Act 2006 S41 Species of Principal Importance <b>Red:</b> BoCC Red list species <b>Amber:</b> BoCC Amber list species <b>SAP:</b> species subject to Species Action Plans for Norfolk							

5.2.2 In summary, the 38 species recorded breeding or potentially breeding included the following:

- no WCA Schedule 1 species;
- no EC Birds Directive Annex 1 species;
- nine NERC S41 Species of Principal Importance;
- seven BoCC Red list species;
- nine BoCC Amber list species; and
- four SAP bird species for Norfolk.

## 2.3 Species abundance

- 5.3.1 Based on the peak counts and the number of territories recorded for the species encountered during the 2022 field surveys, no species are assessed as being present in numbers of international or national importance.
- 5.3.2 The following species were present in numbers that are considered to be of up to district level importance:
- reed bunting: peak count of 13, with c.12 territories recorded;
  - skylark: peak count of 14, with c.13 territories recorded; and
  - yellowhammer: peak count of 15, with c.15 territories recorded.
- 5.3.3 All other species are considered to have been present in numbers of no more than local importance.

## 2.2 Species diversity

- 5.4.1 A total of 38 species were recorded breeding or potentially breeding during the 2022 field surveys. In line with the guidance described in *Sections 3.3.8 and 3.3.9*, the breeding bird assemblage is therefore considered to be of district level importance.

## 2.2 Site usage by breeding birds

- 5.5.1 Habitats of particular value to the breeding bird populations recorded during the 2022 field surveys are indicated in *Figure 2, Appendix A*. Photographs of these habitats are provided in *Appendix D*.
- 5.5.2 Ditches and drains bisecting the site and running along site margins were of particular value to breeding birds including notable species. Breeding species of reed-dominated ditches included reed bunting, reed warbler and sedge warbler. Trees and shrubs along ditches were favoured by yellowhammer as song posts, whilst the adjacent arable fields provided suitable foraging habitat for these species.
- 5.5.3 Breeding bird activity within the arable fields was generally lower than at field margins, although nesting skylark (c.13 territories) were observed in these fields, along with foraging corvids, linnet and stock dove.
- 5.5.4 Habitats present adjacent to the site boundary included arable fields consistent with those on site, as well as small patches of woodland, residential gardens and areas of scrub. Woodlands and the orchard south of the site were used by various breeding species including chaffinch, chiffchaff, song thrush and potentially buzzard and cuckoo, whilst scrub and hedgerows (notably scrub south of the eastern half of the site) was favoured by breeding goldfinch, linnet and whitethroat. Gardens and buildings along Harp's Hall Lane were used by up to four house sparrow colonies, as well as green woodpecker, starling and yellowhammer.

- 5.5.5 Habitats within the site were generally of relatively low suitability for foraging barn owl, and no barn owls were recorded during the field surveys. Rough grassland field margins alongside ditches provided linear tracts of foraging habitat. Suitable nesting habitat (i.e. potential nest sites) was potentially present in the form of a brick building approximately 65m north of the site and agricultural buildings within farm complexes along Harp's Hall Road (between the two halves of the site, as near as approximately 30m from the site boundary).

## 6.0 POTENTIAL IMPACTS AND MITIGATION MEASURES

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### 3.1 Potential impacts of the proposed development

6.1.1 Potential development impacts and outline mitigation recommendations are provided in *Sections 6.1* and *6.2* respectively. These are likely to need revisiting in light of emerging design information for the proposed development.

6.1.2 It is understood that the construction of the new solar renewable development at the Meerdyke site will involve the removal and/or alteration of arable field habitat within the site, as well as the potential removal and/or alteration of other habitats within the site such as ditches and dense vegetation. In addition, the construction of the proposed development would involve increased human activity at the site and would be likely to generate noise, vibration and dust in excess of current (i.e. baseline) levels. Increased human activity and generation of additional noise and light spill on site may also occur during the operation of the proposed development, and the operation of the proposed development may require periodic removal or alteration of habitats (e.g. vegetation management) as part of ongoing maintenance.

6.1.3 As such, the proposed development has the potential to result in the following impacts on the breeding bird populations using the site and adjacent land:

destruction of active nests during habitat clearance to facilitate the construction and operational maintenance of the proposed development;

disturbance of nesting, sheltering and foraging birds during the construction and operation of the proposed development, potentially including disturbance of breeding species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), specifically barn owl;

a temporary and/or permanent reduction in the extent, quality and connectivity of the habitats present for breeding birds to enable the construction of the proposed development; and

temporary and/or permanent removal or alteration of breeding bird habitat to facilitate the operational maintenance of the proposed development.

### 2.3 Outline mitigation and enhancement measures

6.2.1 In the absence of mitigation measures, the proposed development is likely to result in adverse effects on the breeding bird populations using the site and adjacent land through one or more of the impact pathways listed above. As such, mitigation measures are likely to be required to ensure that such adverse effects on breeding birds remain insignificant. Outline mitigation measures are therefore provided below.

### Mitigation during construction

- 6.2.2 As described in *Section 2.2*, Section 1 of the Wildlife and Countryside Act 1981 (as amended) prohibits the damage or destruction of any active bird nest. In addition, ecological best practice dictates that disturbance of nesting birds should be minimised so as to avoid adversely affecting breeding success; particularly with regard to species of conservation concern.
- 6.2.3 As such, removal or alteration of suitable nesting habitat (e.g. arable fields, ditches, dense vegetation) should be undertaken outside of the peak breeding season (i.e. outside of the period March to early September inclusive). Similarly, works with the potential to cause significant disturbance to breeding birds (e.g. through the generation of noise, dust, vibration and/or light spill, or through increased human activity) should also be undertaken outside of the peak breeding season where possible. It should be recognised that whilst undertaking works in late September to February inclusive minimises the likelihood of effects on breeding birds, certain species may nest during this period.
- 6.2.4 If suitable nesting habitat needs to be removed or altered during the peak breeding season, works to the habitat should be preceded by a nesting bird check, during which a suitably experienced ornithologist would check the affected habitat for any active nests. This check should be undertaken within 48 hours prior to the commencement of the works. If an active nest is encountered, an exclusion zone should be established within which works would be suspended until the nest is no longer active (to be confirmed by a suitably experienced ornithologist through ongoing monitoring of the nest). The size of the exclusion zone would be dependent on the species affected, the level of disturbance caused by the works relative to baseline disturbance levels on site, and the extent to which the nest site is screened from disturbance (e.g. by adjacent dense vegetation). Exclusion zones may range from 5m to several hundred metres (e.g. in the case of nesting raptors).
- 6.2.5 As described in *Section 2.2*, species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are afforded additional protection against disturbance when nesting or rearing dependent young. Whilst no barn owls were recorded during the field surveys undertaken in 2022, potential barn owl nesting habitat was identified as near as approximately 30m from the site boundary (as indicated in *Figure 2.1, Appendix A*). In accordance with best practice guidance (Ruddock & Whitfield, 2007; Shawyer, 2011), works with the potential to cause disturbance of barn owls nesting at these locations should be preceded by a nest check by a licensed barn owl ecologist to ascertain whether any occupied breeding sites are present. If occupied breeding sites are identified within 200m of works locations, an appropriate exclusion zone should be established within which works would be suspended until the nest is no longer active (to be confirmed by a suitably experienced ornithologist through ongoing monitoring of the nest).
- 6.2.6 Best practice construction measures should be adopted to minimise potential construction impacts on breeding birds. These should be detailed within a Construction Environmental Management Plan (CEMP) and include measures to minimise working areas to avoid unnecessary habitat removal/alteration and disturbance, and measures to avoid/minimise the generation of additional noise, dust, light spill and vibration. The

CEMP should also include measures to avoid pollution of waterbodies within and adjacent to the site.

- 6.2.7 Removal or alteration of breeding bird habitat should be minimised where possible within the design of the proposed development. Where a reduction in the extent, quality and/or connectivity of existing breeding bird habitat is required to facilitate the proposed development, compensation in the form of replacement habitat should be delivered to avoid significant adverse effects on breeding bird populations. Replacement habitat should ideally be delivered on site. If this is not possible due to the development design, replacement habitat should be delivered off site (as near to the site as possible, subject to landowner consent). Replacement habitat should be suitable for the breeding bird species previously using the habitat to be removed or altered (as identified in this report), as well as other species of particular conservation priority such as species subject to SAPs in Norfolk. Details of habitat creation measures for focal species are provided under *Enhancement measures* below.

#### **Mitigation during operation**

- 6.2.8 It is anticipated that periodic management of vegetation will be required to facilitate the operation of the proposed development. This should be undertaken in accordance with the procedure described in *Sections 6.2.2-6.2.5* above, with works with the potential to cause destruction or damage to active nests or significant disturbance of nesting birds (notably barn owl) ideally undertaken outside of the peak breeding season. If such works must be undertaken within the peak breeding season, these should be preceded by a nesting bird check by a suitably experienced ornithologist.
- 6.2.9 The proposed development should be designed so as to minimise disturbance of breeding birds during its operation, which could occur through additional light spill and generation of noise and vibration. Any lighting should be designed in accordance with best practice guidance to avoid impacts on birds (notably crepuscular species such as barn owl) and other wildlife such as bats and badger.

#### **Enhancement measures**

- 6.2.10 In accordance with best practice guidance, developments should seek to achieve overall benefits for biodiversity. As such, the design of the proposed development should include measures to enhance the site for breeding birds. If it is not possible to deliver enhancements on site due to the development design, enhancements should be delivered off site (as near to the site as possible, subject to landowner consent). Guidance for delivering enhancements for birds and other wildlife within solar developments is provided in *Biodiversity Guidance Advice for Solar Developments* (BRE, 2014).
- 6.2.11 Enhancement measures should focus on the species identified within this report, with emphasis on species subject to SAPs in Norfolk, NERC S41 Species of Principle Importance and BoCC Red and Amber listed species; notably cuckoo, lapwing, linnet, reed bunting, skylark and yellowhammer. In addition, enhancement measures should target priority species identified as being present within the wider landscape (as described



in the BTO Data Report); such species include barn owl, grey partridge<sup>5</sup>, tree sparrow, turtle dove<sup>6</sup> and yellow wagtail. Guidance on specific habitat creation and enhancement measures for these species is provided on the RSPB website<sup>7</sup>.

- 6.2.12 The following measures should be considered to compensate for any habitat loss or alteration resulting from the development, and to enhance the site and/or adjacent land for breeding birds (including the species listed in *Section 6.2.11* above)<sup>8</sup>. The creation of these features should be accompanied by a management strategy to ensure that they establish successfully and deliver long-term benefits to breeding birds and other wildlife.

Creation of **grass margins** adjacent to boundary features such as hedgerows and ditches to provide nesting, foraging and sheltering habitat and to improve habitat connectivity. Grass margins over 10m wide are more likely to be used by nesting corn bunting, whilst flower-rich margins typically support a more diverse invertebrate assemblage, providing food for a range of breeding bird species. Use of wild bird seed planting mixtures can be adopted to provide a food source, particularly during winter for species such as corn bunting and yellowhammer;

Creation of **beetle banks** (i.e. grass strips at least 2m wide through the middle of fields) in fields exceeding 16ha to provide nesting cover (e.g. for corn bunting) and over-wintering habitat for invertebrates;

**Hedge and scrub** planting to provide nesting, foraging and sheltering habitat for a range of species; particularly grey partridge, linnet, tree sparrow, turtle dove and yellowhammer. Hedge and scrub planting should use native plant species of known value to birds and other wildlife, whilst rotational management regimes should be adopted to create hedges and scrub of varying structures which would be favoured by different bird species and at different times of year<sup>9</sup>. Hedges suitable for nesting turtle dove should be at least 4m high and 4m wide. Hedge and scrub creation should be avoided within or in close proximity to any areas aimed at providing suitable lapwing nesting habitat;

Creation and/or enhancement of waterbodies such as **ditches and ponds**. Open canopy farmland ponds dominated by aquatic macrophytes are known to be positively associated with many farmland bird species including turtle dove, whilst

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<sup>5</sup> Further information is available at: <https://www.gwct.org.uk/media/208610/Conserving-the-Grey-Partridge.pdf> [accessed 11/07/2022].

<sup>6</sup> Further information is available at: <https://www.operationturtledove.org/get-involved/habitat/do-you-manage-land/establishing-feeding-and-nesting-habitat/> [accessed 11/07/2022].

<sup>7</sup> Further information is available at: <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/> [accessed 11/07/2022].

<sup>8</sup> Further information is provided in the Advice Notes published on the RSPB website at: <https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/managing-habitats/> [accessed 11/07/2022].

<sup>9</sup> Further information is available at: [https://hedgelink.org.uk/cms/cms\\_content/files/31\\_complete\\_hedge\\_management\\_guide\\_for\\_farmland\\_birds\\_leaflet.pdf](https://hedgelink.org.uk/cms/cms_content/files/31_complete_hedge_management_guide_for_farmland_birds_leaflet.pdf) [accessed 11/07/2022].

ditches are of particular value to breeding warblers, reed bunting and waders such as lapwing and snipe (Davies *et al.*, 2016); and

Provision of **nest boxes** suitable for focal species such as barn owl, swift and tree sparrow. Any buildings constructed as part of the proposed development could incorporate features to increase their value to breeding birds.

## 7.0 CONCLUSIONS

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- 7.1.1 The field surveys undertaken in March to July 2022 inclusive to inform the proposed development at Meerdyke recorded a total of 61 bird species, 38 of which were breeding or potentially breeding within or in close proximity to the site. These included notable species such as NERC S41 Species of Principal Importance and species subject to SAPs in Norfolk. Whilst no WCA Schedule 1 species were recorded breeding in 2022, potentially suitable habitat for barn owl was identified as near as 30m from the site.
- 7.1.2 Based on the diversity of the breeding bird assemblage recorded, and sizes of the breeding populations of reed bunting, skylark and yellowhammer recorded, the breeding bird populations within and in close proximity to the site are considered to be of district level importance. Ditches, hedges, woodland and scrub were of greatest value to breeding birds, whilst arable fields were used by nesting skylark.
- 7.1.3 The proposed development has the potential to adversely affect breeding birds within and adjacent to the site through the destruction of active nests, disturbance of nesting birds and the loss or alteration of suitable habitat, both during its construction and operation. Mitigation measures are therefore recommended in this report to minimise the potential for adverse effects and avoid any offence under current legislation.
- 7.1.4 Habitat creation and enhancement measures are recommended in this report to compensate for any removal or alteration of habitat, and to ensure that the proposed development has a positive impact on breeding birds; notably for focal species such as those subject to SAPs in Norfolk. These measures include the creation and/or enhancement of grass margins, beetle banks, hedge and scrub, and ponds and ditches, as well as the installation of nest boxes.
- 7.1.5 No further surveys for breeding birds are required at this stage. Regarding suitability for wintering birds, habitats within and adjacent to the site are considered suitable for a relatively narrow assemblage of wintering birds, although arable fields and adjoining scrub and hedgerows are suitable for use by wintering wader flocks (e.g. lapwing, golden plover (*Pluvialis apricaria*)) and foraging flocks of other notable species (e.g. stock dove, finches, thrushes). As such, wintering bird surveys comprising a series of three survey visits (i.e. one per month from December to February inclusive) are recommended to record the wintering bird populations present and identify any potential development impacts and mitigation requirements.
- 7.1.6 As stated in *Section 4.2.8*, active badger setts were recorded within the site during the 2022 surveys for breeding birds. As badgers and their setts are protected under The Protection of Badgers Act 1992, this should be taken into consideration within the proposed development.

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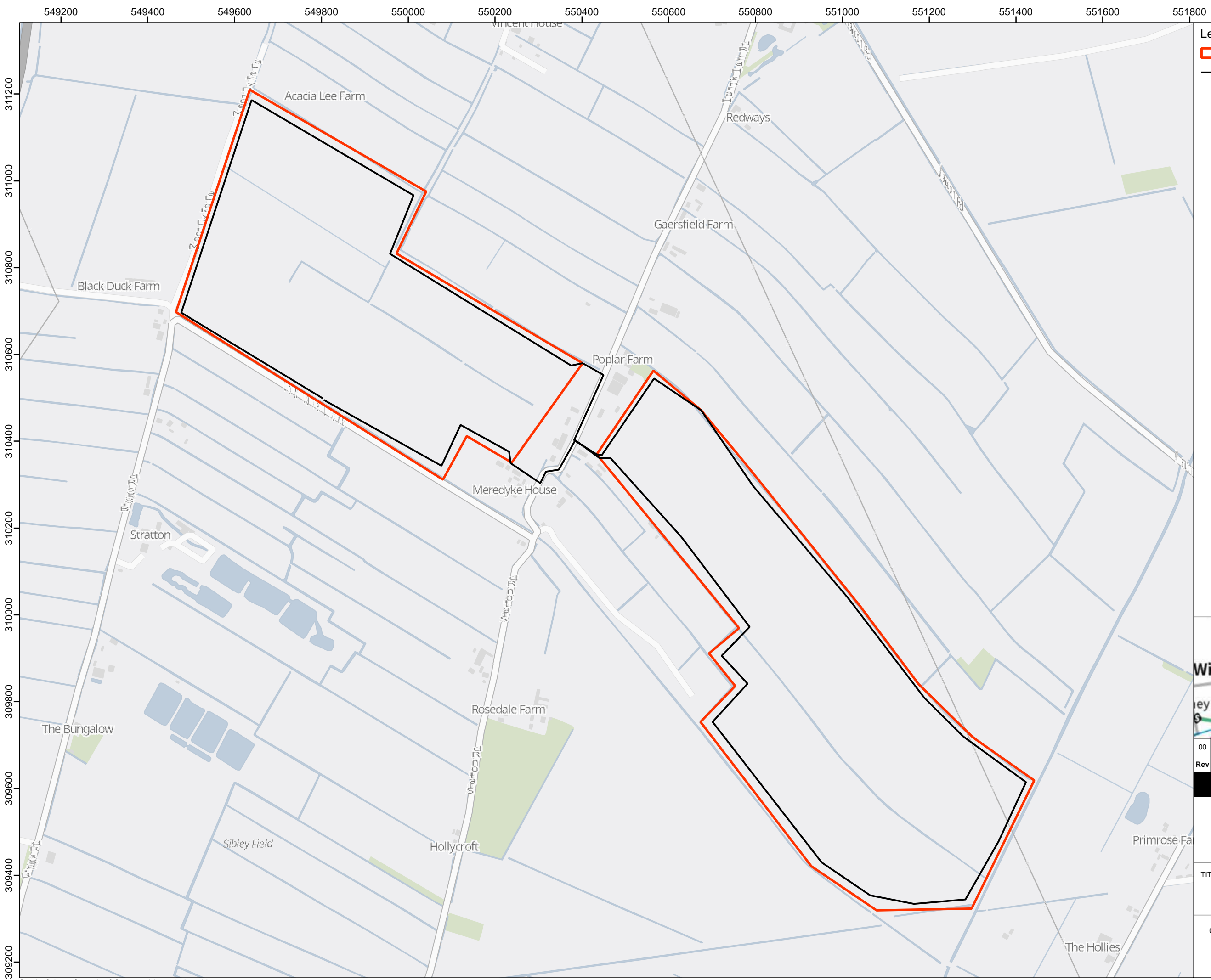
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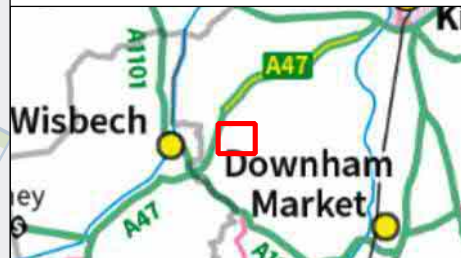
## APPENDIX A – FIGURES

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Figure 1 Site layout



**Legend:**  
 Site boundary  
 Transect

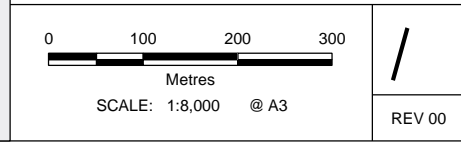


Rev	Date	Description	Drn	Chk	App
00	06/07/2022	2483625	SW	RH	GW

**Downing Renewable Developments**



TITLE: Figure 1:  
 Site layout



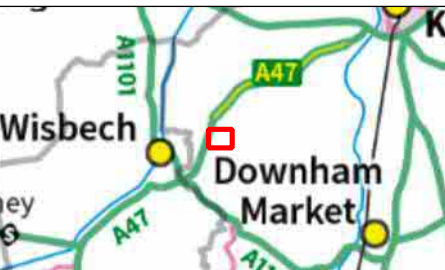
Contains Ordnance Survey data © Crown copyright and database right 2022  
 GB Background: Contains OS data © Crown Copyright and database right 2020  
 Contains data from OS Zoomstack  
 OS Open Rasters: Contains OS data © Crown Copyright and database right 2020

**Figure 2 Summary of 2022 survey results**





- Legend:**
- Site boundary
  - Breeding areas for focal species**
  - Species**
  - Greenfinch
  - House sparrow
  - Linnet
  - Reed bunting
  - Sedge warbler
  - Potential barn owl nest site



Rev	Date	Description	Drn	Chk	App
00	26/07/2022	2483625	SW	RH	GW

Downing Renewable Developments



TITLE: Figure 2.1:  
Summary of 2022 survey results  
Page 1 of 2

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REV 00





- Legend:**
- Site boundary
  - Breeding areas for focal species**
  - Species**
  - Greenfinch
  - House sparrow
  - Linnet
  - Reed bunting
  - Sedge warbler
  - Potential barn owl nest site

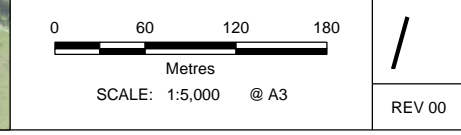


Rev	Date	Description	Drn	Chk	App
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Downing Renewable Developments



TITLE: Figure 2.1:  
Summary of 2022 survey results  
Page 2 of 2

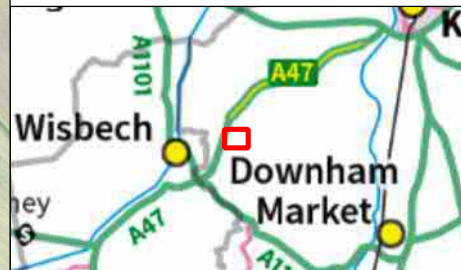






**Legend:**

- Site boundary
- Breeding areas for focal species**
- Species**
- Skylark
- Song thrush
- Starling
- Yellowhammer



Rev	Date	Description	Drn	Chk	App
00	25/07/2022	2483625	SW	RH	GW

Downing Renewable Developments



TITLE: Figure 2.2:  
Summary of 2022 survey results (2)  
Page 1 of 2

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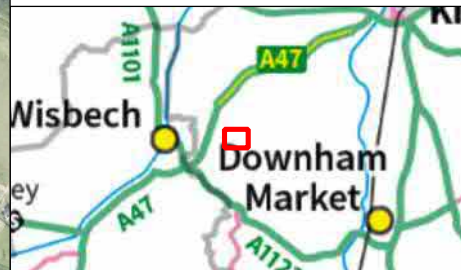
REV 00





**Legend:**

- Site boundary
- Breeding areas for focal species
- Species
- Skylark
- Song thrush
- Starling
- Yellowhammer

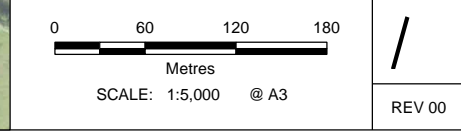


Rev	Date	Description	Drn	Chk	App
00	25/07/2022	2483625	SW	RH	GW

Downing Renewable Developments



TITLE: Figure 2.2:  
Summary of 2022 survey results (2)  
Page 2 of 2





## APPENDIX B – BTO DATA REPORT DATA

Full BTO Data Report data obtained in 2022 for specially protected and notable species recorded breeding or potentially breeding within 1km and 10km of the site in 2007-2011 and 2018-2022 are provided below.

Species		Breeding status				
Common name	Scientific name	Conservation status	2007-2011		2018-2022	
			1km	10km	1km	10km
Avocet	<i>Recurvirostra avosetta</i>	Schedule 1, Annex 1, Amber	-	Confirmed	-	Confirmed
Barn owl	<i>Tyto alba</i>	Schedule 1, Green, SAP	Confirmed	Confirmed	-	-
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Amber	-	-	-	Confirmed
Black-winged stilt	<i>Himantopus himantopus</i>	Annex 1, Amber	-	-	-	Probable
Bullfinch	<i>Pyrrhula pyrrhula</i>	S41, Amber	Possible	Confirmed	-	-
Cetti's warbler	<i>Cettia cetti</i>	Schedule 1, Green	-	Possible	-	-
Common tern	<i>Sterna hirundo</i>	Annex 1, Amber	-	-	-	Possible
Corn bunting	<i>Miliaria calandra</i>	S41, Red, SAP	-	Probable	-	-
Crane*	<i>Grus grus</i>	Annex 1, Amber	-	Confirmed	-	-
Cuckoo	<i>Cuculus canorus</i>	S41, Red	-	Probable	-	Possible
Dunnock	<i>Prunella modularis</i>	S41, Amber	Probable	Confirmed	-	-

Species			Breeding status			
Common name	Scientific name	Conservation status	2007-2011		2018-2022	
			1km	10km	1km	10km
Golden oriole	<i>Oriolus oriolus</i>	Annex 1	-	-	-	Possible
Grasshopper warbler	<i>Locustella naevia</i>	S41, Red	-	-	-	Possible
Greenfinch	<i>Chloris chloris</i>	Red	Probable	Confirmed	-	-
Grey partridge	<i>Perdix perdix</i>	S41, Red, SAP	-	Probable	-	Possible
Grey wagtail	<i>Motacilla cinerea</i>	Amber	-	-	-	Probable
Greylag goose	<i>Anser anser</i>	Amber	-	Confirmed	-	-
Herring gull	<i>Larus argentatus</i>	S41, Red	-	Confirmed	-	-
Hobby	<i>Falco subbuteo</i>	Schedule 1, Green	-	Probable	-	-
Honey-buzzard*	<i>Pernis apivorus</i>	Schedule 1, Annex 1, Amber	-	Confirmed	-	-
House martin	<i>Delichon urbicum</i>	Red	-	Confirmed	-	-
House sparrow	<i>Passer domesticus</i>	S41, Red	Confirmed	Confirmed	-	-
Kestrel	<i>Falco tinnunculus</i>	Amber	Possible	Confirmed	-	-
Lapwing	<i>Vanellus vanellus</i>	S41, Red	-	Confirmed	-	Confirmed
Lesser black-backed gull	<i>Larus fuscus</i>	Amber	-	Confirmed	-	-
Linnet	<i>Linaria cannabina</i>	S41, Red	Probable	Confirmed	-	-
Little ringed plover	<i>Charadrius dubius</i>	Schedule 1, Green	-	-	-	Probable
Mallard	<i>Anas platyrhynchos</i>	Amber	Confirmed	Confirmed	-	-

Species		Breeding status				
Common name	Scientific name	Conservation status	2007-2011		2018-2022	
			1km	10km	1km	10km
Marsh harrier	<i>Circus aeruginosus</i>	Schedule 1, Annex 1, Amber	-	Possible	-	-
Meadow pipit	<i>Anthus pratensis</i>	Amber	Probable	Confirmed	-	-
Mistle thrush	<i>Turdus viscivorus</i>	Red	Possible	Confirmed	-	Confirmed
Montagu's harrier*	<i>Circus pygargus</i>	Schedule 1, Annex 1, Red	-	Confirmed	-	-
Moorhen	<i>Gallinula chloropus</i>	Amber	Confirmed	Confirmed	-	-
Nightingale	<i>Luscinia megarhynchos</i>	Red	-	Probable	-	-
Oystercatcher	<i>Haematopus ostralegus</i>	Amber	-	Confirmed	-	-
Redshank	<i>Tringa totanus</i>	Amber	-	Possible	-	Possible
Reed bunting	<i>Emberiza schoeniclus</i>	S41, Amber, SAP	Probable	Confirmed	-	-
Rook	<i>Corvus frugilegus</i>	Amber	Confirmed	Confirmed	-	Probable
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	Amber	Probable	Confirmed	-	-
Shelduck	<i>Tadorna tadorna</i>	Amber	-	Confirmed	-	Probable
Shoveler	<i>Spatula clypeata</i>	Amber	-	Confirmed	-	Probable
Skylark	<i>Alauda arvensis</i>	S41, Red	Probable	Confirmed	-	-
Song thrush	<i>Turdus philomelos</i>	S41, Amber, SAP	Possible	Confirmed	-	-
Sparrowhawk	<i>Accipiter nisus</i>	Amber	-	Probable	-	-
Spotted flycatcher	<i>Muscicapa striata</i>	S41, Red, SAP	-	Confirmed	-	Confirmed

Species			Breeding status			
Common name	Scientific name	Conservation status	2007-2011		2018-2022	
			1km	10km	1km	10km
Stock dove	<i>Columba oenas</i>	Amber	Probable	Confirmed	-	-
Starling	<i>Sturnus vulgaris</i>	S41, Red,	Confirmed	Confirmed	-	Probable
Swift	<i>Apus apus</i>	Red, SAP	Possible	Confirmed	-	-
Tawny owl	<i>Strix aluco</i>	Amber	-	Probable	-	-
Tree sparrow	<i>Passer montanus</i>	S41, Red, SAP	-	Confirmed	-	Confirmed
Turtle dove	<i>Streptopelia turtur</i>	S41, Red, SAP	Possible	Confirmed	-	-
Whitethroat	<i>Sylvia communis</i>	Amber	Confirmed	Confirmed	-	-
Willow warbler	<i>Phylloscopus trochilus</i>	Amber	-	Probable	-	-
Woodpigeon	<i>Columba palumbus</i>	Amber	Confirmed	Confirmed	-	-
Wren	<i>Troglodytes troglodytes</i>	Amber	Confirmed	Confirmed	-	-
Yellow wagtail	<i>Motacilla cinerea</i>	S41, Red	Possible	Confirmed	-	-
Yellowhammer	<i>Emberiza citrinella</i>	S41, Red	Probable	Confirmed	-	-

**Schedule 1:** Wildlife and Countryside Act 1981 (as amended) Schedule 1 species  
**Annex 1:** EC Birds Directive (2009/147/EC) Annex 1 species  
**S41:** NERC Act 2006 S41 Species of Principal Importance  
**Red:** BoCC Red list species  
**Amber:** BoCC Amber list species  
**Green:** BoCC Green list species



Species			Breeding status			
Common name	Scientific name	Conservation status	2007-2011		2018-2022	
			1km	10km	1km	10km
<p><b>SAP:</b> species subject to Species Action Plans for Norfolk</p> <p>*For reasons of confidentiality, locations of certain rare breeding species were provided for the relevant 50km grid square. These records may therefore be from further than 10km from the site.</p>						

## APPENDIX C – SURVEY DATA

Full breeding bird survey data for the transect surveys of the site undertaken between March and July 2022 inclusive are provided below.

Species				Number of individuals recorded					
Common name	Scientific name	BTO species code	Conservation status	Visit 1 (28/03/22)	Visit 2 (20/04/22)	Visit 3 (10/05/22)	Visit 4 (24/05/22)	Visit 5 (15/06/22)	Visit 6 (05/07/22)
Blackbird	<i>Turdus merula</i>	B.	Green	11	10	13	7	9	10
Blackcap	<i>Sylvia atricapilla</i>	BC	Green	1	4	5	0	2	4
Black-headed gull	<i>Chroicocephalus ridibundus</i>	BH	Amber	0	0	0	1	0	0
Blue tit	<i>Cyanistes caeruleus</i>	BT	Green	1	19	4	0	16	33
Buzzard	<i>Buteo buteo</i>	BZ	Green	3	2	0	0	1	1
Carrion crow	<i>Corvus corone</i>	C.	Green	105	36	4	11	10	3
Chaffinch	<i>Fringilla coelebs</i>	CH	Green	12	14	8	2	7	7
Chiffchaff	<i>Phylloscopus collybita</i>	CC	Green	2	3	1	0	2	3
Collared dove	<i>Streptopelia decaocto</i>	CD	Green	2	3	1	6	0	4
Common sandpiper	<i>Actitis hypoleucos</i>	CS	Amber	0	0	0	0	0	1
Cormorant	<i>Phalacrocorax carbo</i>	CA	Green	0	1	0	0	0	1
Cuckoo	<i>Cuculus canorus</i>	CK	S41, Red	0	0	0	1	0	0

Species				Number of individuals recorded					
Common name	Scientific name	BTO species code	Conservation status	Visit 1 (28/03/22)	Visit 2 (20/04/22)	Visit 3 (10/05/22)	Visit 4 (24/05/22)	Visit 5 (15/06/22)	Visit 6 (05/07/22)
Dunnock	<i>Prunella modularis</i>	D.	S41, Amber	6	1	1	2	6	2
Fieldfare	<i>Turdus pilaris</i>	FF	Schedule 1, Red	15	0	0	0	0	0
Garden warbler	<i>Sylvia borin</i>	GW	Green	0	0	1	0	0	0
Goldfinch	<i>Carduelis carduelis</i>	GO	Green	10	19	5	17	11	16
Great tit	<i>Parus major</i>	GT	Green	17	8	2	1	0	0
Green sandpiper	<i>Tringa ochropus</i>	CS	Schedule 1, Amber	2	0	0	0	0	0
Green woodpecker	<i>Picus viridis</i>	G.	Green	2	4	2	0	2	2
Greenfinch	<i>Chloris chloris</i>	GR	Red	0	2	0	1	3	0
Grey heron	<i>Ardea cinerea</i>	H.	Green	0	0	0	0	0	2
Grey wagtail	<i>Motacilla cinerea</i>	GL	Amber	1	0	0	0	0	0
Herring gull	<i>Larus argentus</i>	HG	S41, Red	3	0	0	0	0	0
House sparrow	<i>Passer domesticus</i>	HS	S41, Red	46	38	29	24	39	59
Jackdaw	<i>Coloeus monedula</i>	JD	Green	1	11	0	0	3	0
Jay	<i>Garrulus glandarius</i>	J.	Green	0	1	0	0	0	0
Kestrel	<i>Falco tinnunculus</i>	K	Amber	0	0	1	0	0	0

Species				Number of individuals recorded					
Common name	Scientific name	BTO species code	Conservation status	Visit 1 (28/03/22)	Visit 2 (20/04/22)	Visit 3 (10/05/22)	Visit 4 (24/05/22)	Visit 5 (15/06/22)	Visit 6 (05/07/22)
Lapwing	<i>Vanellus vanellus</i>	L.	S41, Red	0	0	0	0	0	3
Lesser black-backed gull	<i>Larus fuscus</i>	LB	Amber	0	1	4	0	0	6
Lesser whitethroat	<i>Sylvia curruca</i>	LW	Green	0	0	2	1	0	0
Linnet	<i>Linaria cannabina</i>	LI	S41, Red,	44	14	0	4	16	7
Little egret	<i>Egretta garzetta</i>	ET	Annex 1, Green	0	0	0	1	0	0
Long-tailed tit	<i>Aegithalos caudatus</i>	LT	Green	3	0	1	0	0	0
Magpie	<i>Pica pica</i>	MG	Green	4	1	1	2	3	5
Mallard	<i>Anas platyrhynchos</i>	MA	Amber	17	16	6	0	2	0
Meadow pipit	<i>Anthus pratensis</i>	MP	Amber	2	0	0	0	0	0
Moorhen	<i>Gallinula chloropus</i>	MH	Amber	2	0	0	0	0	0
Mute swan	<i>Cygnus olor</i>	MS	Green	0	0	0	0	2	0
Pheasant	<i>Phasianus colchicus</i>	PH	-	5	7	3	0	0	0
Pied wagtail	<i>Motacilla alba</i>	PW	Green	0	2	1	0	2	0
Red-legged partridge	<i>Alectoris rufa</i>	RL	-	2	0	0	2	2	2
Redwing	<i>Turdus iliacus</i>	RE	Schedule 1, Amber	9	0	0	0	0	0

Species				Number of individuals recorded					
Common name	Scientific name	BTO species code	Conservation status	Visit 1 (28/03/22)	Visit 2 (20/04/22)	Visit 3 (10/05/22)	Visit 4 (24/05/22)	Visit 5 (15/06/22)	Visit 6 (05/07/22)
Reed bunting	<i>Emberiza schoeniclus</i>	RB	S41, Amber, SAP	0	13	3	10	3	10
Reed warbler	<i>Acrocephalus scirpaceus</i>	RW	Green	0	0	0	3	6	5
Robin	<i>Erithacus rubecula</i>	R.	Green	16	8	12	10	10	3
Rook	<i>Corvus frugilegus</i>	RO	Amber	6	0	0	0	0	0
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	SW	Amber	0	0	5	7	4	3
Shelduck	<i>Tadorna tadorna</i>	SU	Amber	0	18	8	4	0	0
Skylark	<i>Alauda arvensis</i>	S.	S41, Red, SAP	7	11	6	9	10	14
Song thrush	<i>Turdus philomelos</i>	ST	S41, Amber, SAP	0	3	2	4	3	2
Sparrowhawk	<i>Accipiter nisus</i>	SH	Amber	0	1	0	0	0	0
Starling	<i>Sturnus vulgaris</i>	SG	S41, Red	14	4	6	9	7	13
Stock dove	<i>Columba oenas</i>	SD	Amber	8	0	31	10	2	0
Stonechat	<i>Saxicola rubicola</i>	SC	Green	0	2	5	0	1	0
Swallow	<i>Hirundo rustica</i>	SL	Green	0	0	1	0	0	0
Swift	<i>Apus apus</i>	SI	Red, SAP	0	0	0	0	0	2
Wheatear	<i>Oenanthe oenanthe</i>	W.	Amber	0	1	0	0	0	0

Species				Number of individuals recorded					
Common name	Scientific name	BTO species code	Conservation status	Visit 1 (28/03/22)	Visit 2 (20/04/22)	Visit 3 (10/05/22)	Visit 4 (24/05/22)	Visit 5 (15/06/22)	Visit 6 (05/07/22)
Whitethroat	<i>Sylvia communis</i>	WH	Amber	0	2	12	15	8	5
Woodpigeon	<i>Columba palumbus</i>	WP	Amber	88	136	25	40	33	26
Wren	<i>Troglodytes troglodytes</i>	WR	Amber	18	28	15	18	17	18
Yellowhammer	<i>Emberiza citrinella</i>	Y.	S41, Red	15	14	7	6	7	12

**Schedule 1:** Wildlife and Countryside Act 1981 (as amended) Schedule 1 species

**Annex 1:** EC Birds Directive (2009/147/EC) Annex 1 species

**S41:** NERC Act 2006 S41 Species of Principal Importance

**Red:** BoCC Red list species

**Amber:** BoCC Amber list species

**Green:** BoCC Green list species

**SAP:** species subject to Species Action Plans for Norfolk

- None of the above conservation status categories apply

## APPENDIX D – SITE PHOTOGRAPHS

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**Photograph 1** Densely vegetated ditch used by sedge warbler and adjoining scrub used by yellowhammer (photographed 05/07/2022).



**Photograph 2** Arable field used by nesting skylark (photographed 05/07/2022).



**Photograph 3** Residential and agricultural buildings and gardens along Harp's Hall Road used by starling and house sparrow (photographed 05/07/2022).



**Photograph 4** Orchard west of site used by cuckoo, chiffchaff, and song thrush (photographed 05/07/2022).