

Bicker Fen Solar Farm Wintering Bird Report

Low Carbon

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Bicker Fen Solar Farm: Wintering Bird Report

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1. Introduction

1.1 Background

1.1.1 AECOM was instructed by Low Carbon to undertake a survey of wintering birds for the proposed Bicker Fen Solar Farm (hereafter referred to as the 'Scheme'). As part of the Preliminary Ecological Appraisal, a review of Ordnance Survey (OS) mapping of the Scheme identified that the habitat within the Scheme boundary was suitable to support birds during the non-breeding (wintering) season and that surveys were required to determine the presence and any assemblages of protected or notable wintering bird species within the Scheme boundary. Therefore, AECOM was instructed to undertake surveys of wintering birds within the main sites, proposed for solar photo-voltaic (PV) panels and an appropriate survey buffer to record the species, distributions and numbers of wintering birds within these areas.

1.2 The Scheme

1.2.1 The Bicker Fen Solar Farm (see Figures 1.1 to 1.3, Annex B) is a proposed new solar energy farm, co-located with battery storage. The Proposed Scheme would export or import up to 500MW of electricity to and from the National Grid. The proposed generation capacity of the Proposed Scheme means it is a Nationally Significant Infrastructure Project (NSIP) and as such would require a Development Consent Order (DCO).

1.3 Site Description

- 1.3.1 The Scheme is located on two sites (termed the 'northern site' and 'southern site' hereafter, where referring to specific locations and collectively as 'the Site'). The northern site is located to the east of the villages of Howell and Ewerby Thorpe (Ordnance Survey (OS) grid reference TF145474) and the southern site is located in the vicinity of Thorpe Latimer (OS grid reference at TF122404). The location of the Scheme is presented in Figures 1.1 to 1.3 (Annex B). Both sites are within the district of North Kesteven.
- 1.3.2 Both sites are dominated by arable fields with game crop strips, hedgerows, woodland blocks, numerous mature trees and plantation woodland. The Site is surrounded by mainly arable and improved grassland livestock fields.
- 1.3.3 Details of any grid connections between sites and to substations were unknown at the time of undertaking the surveys for wintering birds and therefore, the assessment within these areas does not form part of the commissioned scope reported in this document.

1.4 Scope of the Report

- 1.4.1 The objective of the wintering bird survey, reported in this document, is to determine the presence and any assemblages of wintering bird species, including notable species, within the Site.
- 1.4.2 This report includes the following information:
 - Relevant legislation and policy;
 - Methods for desk and field-based assessments undertaken in 2022:
 - Limitations to the surveys undertaken and any assumptions made; and
 - · Survey results.

2. Legislation and Planning Policy

2.1 Legislation

Directive of the Conservation of Wild Birds

- 2.1.1 A number of bird species recorded within the UK (including those that are resident, overwintering and migratory) are protected under European legislation through the Directive of the Conservation of Wild Birds (Ref 5-1), which lists 193 species, or sub-species, of birds in Annex 1 which are:
 - In danger of extinction;
 - Are rare, or have restricted local distribution;
 - · Are vulnerable to specific changes in their habitat; or
 - Require particular attention for reasons of the specific nature of habitat.
- 2.1.2 This Directive is reflected in English law by the Conservation of Habitats and Species Regulations 2017 (as amended) (Ref 5-2). Although the UK is no longer a member state of the European Union, the 2019 amendments to the Conservation of Habitats and Species Regulations 2017 (Ref 5-3) make it clear that provisions regarding the protection and designation of Special Protection Areas (SPAs) are maintained. Species listed on Annex 1 are those for which the UK Government takes special conservation measures including the designation of land as SPAs to ensure the survival and reproduction of these species throughout their distributions. These sites are automatically included within the National Site Network; a network of core breeding and resting sites that are protected for rare and threatened species.

Wildlife and Countryside Act

- 2.1.3 The legislative provisions for the protection of wild birds in the UK are contained primarily in Sections 1-7 of the Wildlife and Countryside Act (WCA) 1981 (as amended) (Ref 5-4). Under the WCA, a wild bird is defined as any bird of a species that occurs in a wild state as a resident or a visitor to the European Territory of any member state.
- 2.1.4 Reference is not made in this report to species afforded special protection under Schedule 1 of the Wildlife and Countryside Act (1981) as the protection measures in this Act only apply to bird species within the breeding season.

Priority Species

- 2.1.5 In addition to the above legislation, 49 bird species are listed as being Species of Principal Importance for conservation in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 5-5). These species are of material consideration during the planning process. Section 41 of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species which are of Principal Importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act. The Section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act, to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- 2.1.6 The Joint Nature Conservation Committee (JNCC) UK Biodiversity Action Plan (UKBAP) (Ref 5-6) was launched in 1994 and identified UK BAP priority species of conservation concern that are the most threatened in the UK and requiring action under the UKBAP and for which action plans have been published. However, the work undertaken for the UKBAP is now focussed at a country level, rather than UK level, and the UKBAP has subsequently been succeeded by the UK Post-2010 Biodiversity Framework (July 2012) (Ref 5-7). However, the

UK list of priority species remains an important reference source and has been used to help draw up statutory lists of priority species in England, Scotland, Wales and Northern Ireland. For the purpose of this assessment, the UK BAP is still used as one of the criteria to assist in assigning national value to any given ecological receptor.

2.2 Local Biodiversity Action Plan Species

- 2.2.1 The Site is located within the county of Lincolnshire (see section 1.3 of this report). The Lincolnshire Biodiversity Action Plan (3rd edition) (Ref 5-8) provides the local nature conservation strategy for identifying threats to species within each of the counties and set out the action plans necessary to conserve them. This Local Biodiversity Action Plan (LBAP) provides context to inform the identification of threatened and, or, uncommon species within the relevant districts and, or, county. This LBAP also identifies priorities for conservation and enhancement but confer no particular legislative or policy protection to the species identified, however in some cases this is provided through related legislation and local planning policy.
- 2.2.2 The Lincolnshire BAP lists 16 bird species for which action plans have been prepared. These species are presented in Table 2-1.

Table 2-1: Priority bird species listed in the Lincolnshire LBAP

| Common Name | Scientific name | Lincolnshire LBAP Action Plan |
|----------------|----------------------|-------------------------------|
| Barn Owl | Tyto alba | - |
| Bullfinch | Pyrrhula pyrrhula | ✓ |
| Corn Bunting | Emberiza calandra | ✓ |
| Curlew | Numenius arquata | ✓ |
| Grey Partridge | Perdix perdix | ✓ |
| Lapwing | Vanellus vanellus | ✓ |
| Linnet | Linaria cannabina | ✓ |
| Redshank | Tringa totanus | ✓ |
| Reed Bunting | Emberiza schoeniclus | ✓ |
| Skylark | Alauda arvensis | ✓ |
| Snipe | Gallinago gallinago | ✓ |
| Starling | Sturnus vulgaris | ✓ |
| Tree Sparrow | Passer montanus | ✓ |
| Turtle Dove | Streptopelia turtur | ✓ |
| Yellow Wagtail | Motacilla flava | ✓ |
| Yellowhammer | Emberiza citrinella | ✓ |

- 2.2.3 The Lincolnshire Biodiversity Action Plan (Ref 7-10) identifies the following threats to farmland birds in Lincolnshire:
 - The loss of permanent and relatively species-rich grassland;

- Increased chemical usage including fertilisers, pesticides and use of broad spectrum and persistent animal treatments;
- Uniformity within crops, offering fewer opportunities for birds to feed and nest;
- The decline of mixed farming;
- Loss of hedgerow trees through old age and removal for safety and other reasons;
- Hedgerow removal and poor management of remaining hedges;
- Drainage of arable land decreasing the potential for nesting Lapwing and reducing the ability of chicks to probe for food;
- A reduction in crop mosaic; and
- Nest destruction by agricultural machinery and non-replacement of old nest boxes for Barn Owls, reducing future availability of nesting sites.

2.3 Birds of conservation concern

- 2.3.1 The Birds of Conservation Concern (BoCC) (Ref 5-9) is an assessment of the conservation status of all regularly occurring British birds. The lists (Red, Amber and Green), that indicate the level of conservation importance for each species, are derived from quantitative assessments from standardised criteria. The assessment is based on the most up-to-date evidence available and criteria include conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity, localised distribution and international importance. The lists are drawn together by the UK's leading bird conservation organisations, including the Royal Society for the Protection of Birds (RSPB) and British Trust for Ornithology (BTO).
- 2.3.2 The criteria for birds being included in the BoCC lists are as follows.

Red List:

- are globally threatened (Critically Endangered, Endangered and Vulnerable, but not Near Threatened) under International Union for Conservation of Nature and Natural Resources (IUCN) guidelines;
- have shown a historical population decline between 1800 and 1995 and have not recovered:
- have suffered a severe non-breeding population decline of more than 50%; and
- whose UK range in the non-breeding season has declined by more than 50% between respective breeding and non-breeding atlases.

Amber List:

- those that are threatened in Europe (Critically Endangered, Endangered and Vulnerable, but not Near Threatened as per IUCN Red List Guidelines);
- those that were previously red-listed for historical population decline, followed by an increase of at least 100% over 25 years or the longer-term period;
- those that have suffered a moderate non-breeding population decline of between 25% and 50%;
- whose UK range in the non-breeding season has declined by more than 50% between respective breeding and non-breeding atlases;
- non-breeding rarities (UK population <900 non-breeding individuals);
- non-breeding localisation whereby more than 50% of the UK population was found at ten or fewer sites in the non-breeding season; and

• non-breeding international importance whereby the UK holds at least 20% of the European population in the non-breeding (WI) season of a particular species.

Green List:

- Species that occur regularly in the UK but do not qualify under any of the above criteria.
- 2.3.3 The BoCC lists confer no legal status, however where any BoCC Red or Amber-listed species are present at a site, their conservation status should be taken into account when determining the likely impacts (and significance) of proposed plans and projects and in determining the level of mitigation that may be required when birds are to be affected by plans or projects.

3. Methods

3.1 Field Survey

Survey Area

3.1.1 The survey area included all habitat within the Site and a 50m survey buffer. Standardised survey buffers for assessing the impacts of development on bird populations do not exist, however, the survey area used provides information on the wintering birds within the area immediately surrounding the Scheme and includes areas contiguous with the Site, where birds may potentially be adversely affected. The survey area is sufficient to determine the likely impacts of the Scheme on the wintering bird species occurring or likely to occur in the area

Walkover Survey

- 3.1.2 The walkover surveys were based on a transect methodology such as that detailed in Bibby et al. (2000) (Ref 5-10) and Gilbert et al. (1998) (Ref 5-11).
- 3.1.3 Fixed routes were walked around the Site, surveying the habitat for wintering birds. Regular stopping points were included within the route to allow survey of birds that were audible or visible within any inaccessible areas.
- 3.1.4 Surveys for wintering birds were undertaken between January and March 2022; and October and December 2022, with a total of six survey visits taking place. Owing to the size of the Site, each survey was split over four to five days. The survey dates were:
 - Visit 1 25th to 28th January 2022
 - Visit 2 14th, 15th, 18th, 21st and 25th February 2022
 - Visit 3 22nd to 25th March 2022
 - Visit 4 17th. 19th. 20th and 28th October 2022
 - Visit 5 14th to 18th November 2022
 - Visit 6 5th and 7th to 9th December 2022
- 3.1.5 All surveys were undertaken during appropriate weather conditions for detecting birds. These were dry conditions with winds of 15mph or less.
- 3.1.6 The survey routes were walked by surveyors using suitable optical equipment to observe bird behaviour. Regular stopping points were included along the routes to record any species that may be passing through the survey area. Survey routes were mapped, and the direction walked alternated on each survey visit, to ensure that all areas were covered at various times of day across the duration of the survey. Surveys were undertaken during a range of daylight hours, between sunrise and sunset.
- 3.1.7 On each survey visit, the route was walked at a slow pace with start and finish times noted. All birds seen and heard were recorded directly onto base maps of the survey area, using mobile mappers loaded directly onto an ArcGIS base map using ESRI software on hand-held PDA devices, with a 1:10,000 scale Ordnance Survey base map of the survey area. Registrations of birds were recorded using standard British Trust for Ornithology (BTO) two letter species codes. All bird species were recorded and mapped across the whole survey area.

3.2 Assessment of Ornithological Importance

3.2.1 An assessment of the ornithological importance of the survey area during the non-breeding (winter) season has not been made, as it is beyond the scope of this commission. However,

this can be achieved through evaluating any species afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest, as detailed in Section 2 of this report. These include:

- Species listed on Annex 1 of the EU Birds Directive (Ref 5-1);
- Priority bird species in the UK (Ref 5-5);
- Species listed as priority species or additional species of interest on the Lincolnshire BAP (Table 2-1); and
- Species included in the Birds of Conservation Concern (BoCC) Red or Amber Lists (Ref 5-9).
- 3.2.2 In addition to evaluating a site based on its populations of wintering birds in relation to legal status, rarity and biodiversity importance, consideration should also be given to the value of the survey area for the population of individual species that it supports (species abundance), alongside the number of species that the Site and representative habitats, supports (species diversity).
- 3.2.3 To support a focussed assessment of the population of wintering birds within the Site, species rarity, abundance and diversity within the survey area can be used to assess the biodiversity importance of the wintering bird populations recorded during the field surveys and the geographical importance of the Site.

3.3 Assumptions and Limitations

3.3.1 There were no limitations with the survey undertaken. Therefore, it is considered that sufficient representatives of all habitat types have been covered within the entirety of the non-breeding survey period, to allow for a comprehensive assessment of bird species and assemblages present.

4. Results

- 4.1.1 A total of 76 species were recorded within the survey area during the wintering bird surveys undertaken between January and March 2022 and October and December 2022. Within the northern site, 71 species were recorded, whilst in the southern site, 63 species were recorded. Of the 76 bird species recorded across the Site, 46 species (see **Table 4-1**) met at least one of a range of criteria relating to conservation importance, as listed in Section 2 of this report.
- 4.1.2 The 76 species, along with their respective peak counts and conservation status are presented in **Table 4-1**. Species lists in **Table 4-1** are listed in taxonomic order, as defined by the British Ornithologists Union (BOU) British List. Count data for each species recorded per survey visit, is included in Annex A.
- 4.1.3 Survey (count) data, per species, for the northern site and southern site is presented in Annex A.

Table 4-1: Peak count data and conservation status of wintering birds recorded within the Site

| Species | Scientific name | cientific name Conservation status | | Peak Count within the Southern Site (see Section 1.2) | Site Peak count |
|----------------------|------------------------|---------------------------------------|---------|---|--------------------|
| Canada Goose | Branta canadensis | - | 2 | 0 | 2 |
| Greylag Goose | Anser anser | BoCC Amber | 4 | 2 | 4 |
| Pink-footed Goose | Anser brachyrhynchus | BoCC Amber | 50 | 9 | 50 |
| Mute Swan | Cygnus olor | - | 6 | 1 | 6 |
| Gadwall | Mareca strepera | BoCC Amber | 2 | 0 | 2 |
| Wigeon | Mareca penelope | BoCC Amber | 11 | 0 | 11 |
| Mallard | Anas platyrhynchos | BoCC Amber | 10 | 0 | 10 |
| Teal | Anas crecca | BoCC Amber | 32 | 6 | 32 |
| Reg-legged Partridge | Alectoris rufa | - | 3 | 18 | 18 |
| Grey Partridge | Perdix perdix | BoCC Red, Priority Species, Lincs BAP | 7 | 12 | 12 |
| Pheasant | Phasianus colchicus | - | Present | Present | Present |
| Little Grebe | Tachybaptus ruficollis | - | 3 | 0 | 3 |
| Grey Heron | Ardea cinerea | - | 3 | 0 | 3 |
| Great White Egret | Ardea alba | Annex 1, BoCC Amber | 1 | 0 | 1 |
| Little Egret | Egretta garzetta | Annex 1 | 4 | 0 | 4 |
| Cormorant | Phalacrocorax carbo | - | 0 | 2 | 2 |
| Sparrowhawk | Accipiter nisus | BoCC Amber | 1 | 3 | 3 |
| Red Kite | Milvus milvus | Annex 1 | 1 | 1 | 1 |
| Buzzard | Buteo buteo | - | 5 | 6 | 6 |
| Moorhen | Gallinula chloropus | BoCC Amber | 8 | 1 | 8 |

| Species | Scientific name | Conservation status | Peak Count within the Northern Site (see Section 1.2) | Peak Count within the Southern Site (see Section 1.2) | Site Peak count |
|--------------------------|----------------------------|---------------------------------------|---|---|--------------------|
| Lapwing | Vanellus vanellus | Priority Species, BoCC Red, Lincs BAP | 452 | 41 | 452 |
| Golden Plover | Pluvialis apricaria | Annex 1 | 25 | 71 | 71 |
| Woodcock | Scolopax rusticola | BoCC Red | 1 | 2 | 2 |
| Snipe | Gallinago gallinago | BoCC Amber | 12 | 15 | 15 |
| Black-headed Gull | Chroicocephalus ridibundus | BoCC Amber | 6 | 167 | 167 |
| Common Gull | Larus canus | BoCC Amber | 2 | 45 | 45 |
| Herring Gull | Larus argentatus | Priority Species, BoCC Red, Lincs BAP | 30 | 1 | 30 |
| Lesser Black-backed Gull | Larus fuscus | BoCC Amber | 1 | 0 | 1 |
| Stock Dove | Columba oenas | BoCC Amber | 3 | 100 | 100 |
| Woodpigeon | Columba palumbus | BoCC Amber | 167 | 854 | 854 |
| Collared Dove | Streptopelia decaocto | - | 0 | 4 | 4 |
| Great Spotted Woodpecker | Dendrocopos major | - | 1 | 2 | 2 |
| Green Woodpecker | Picus viridis | - | 1 | 3 | 3 |
| Kestrel | Falco tinnunculus | BoCC Amber | 2 | 2 | 2 |
| Merlin | Falco columbarius | Annex 1, BoCC Red | 0 | 1 | 1 |
| Peregrine | Falco peregrinus | Annex 1 | 1 | 1 | 1 |
| Jay | Garrulus glandarius | - | 2 | 2 | 2 |
| Magpie | Pica pica | - | 8 | 7 | 8 |
| Jackdaw | Coloeus monedula | - | 20 | 143 | 143 |
| Rook | Corvus frugilegus | BoCC Amber | 140 | 327 | 327 |
| Carrion Crow | Corvus corone | - | 35 | 54 | 54 |
| Raven | Corvus corax | - | 1 | 1 | 1 |

| Species | Scientific name Conservation status | | Peak Count within the Northern Site (see Section 1.2) | Peak Count within the Southern Site (see Section 1.2) | Site Peak count |
|-----------------|-------------------------------------|--|---|---|--------------------|
| Marsh Tit | Poecile palustris | Priority Species, BoCC Red, Lincs BAP | 1 | 0 | 1 |
| Blue Tit | Cyanistes caeruleus | - | 23 | 33 | 33 |
| Great Tit | Parus major | - | 16 | 23 | 23 |
| Skylark | Alauda arvensis | Priority Species, BoCC Red, Lincs BAP | 91 | 202 | 202 |
| Long-tailed Tit | Aegithalos caudatus | - | 39 | 40 | 40 |
| Chiffchaff | Phylloscopus collybita | - | 3 | 4 | 4 |
| Goldcrest | Regulus regulus | - | 1 | 6 | 6 |
| Wren | Troglodytes troglodytes | BoCC Amber | 19 | 26 | 26 |
| Nuthatch | Sitta europaea | - | 0 | 2 | 2 |
| Treecreeper | Certhia familiaris | - | 2 | 0 | 2 |
| Starling | Sturnus vulgaris | Priority Species, BoCC Red, Lincs BAP | 746 | 450 | 746 |
| Blackbird | Turdus merula | - | 31 | 86 | 86 |
| Fieldfare | Turdus pilaris | BoCC Red | 1,013 | 873 | 1,013 |
| Redwing | Turdus iliacus | BoCC Amber | 59 | 114 | 114 |
| Song Thrush | Turdus philomelos | Priority Species, BoCC Amber, Lincs BAP | 13 | 30 | 30 |
| Mistle Thrush | Turdus viscivorus | BoCC Red | 1 | 3 | 3 |
| Robin | Erithacus rubecula | - | 14 | 41 | 41 |
| Stonechat | Saxicola rubicola | - | 1 | 0 | 1 |
| House Sparrow | Passer domesticus | Priority Species, BoCC Red, Lincs BAP | 21 | 6 | 21 |
| Tree Sparrow | Passer montanus | Priority Species, BoCC Red, Lincs BAP | 2 | 20 | 20 |

| Species | Scientific name | Conservation status | Peak Count within the Northern Site (see Section 1.2) | Peak Count within the Southern Site (see Section 1.2) | Site Peak count |
|-----------------------------|----------------------|---|---|---|--------------------|
| Dunnock | Prunella modularis | Priority Species, BoCC Amber, Lincs BAP | 17 | 30 | 30 |
| Grey Wagtail | Motacilla cinerea | BoCC Amber | 0 | 1 | 1 |
| Pied Wagtail | Motacilla alba | - | 3 | 7 | 7 |
| Meadow Pipit | Anthus pratensis | BoCC Amber | 22 | 19 | 22 |
| Chaffinch | Fringilla coelebs | - | 96 | 103 | 103 |
| Bullfinch | Pyrrhula pyrrhula | Priority Species, BoCC Amber, Lincs BAP | 1 | 2 | 2 |
| Greenfinch | Chloris chloris | BoCC Red | 5 | 63 | 63 |
| Linnet | Linaria cannabina | Priority Species, BoCC Red, Lincs BAP | 189 | 189 | 189 |
| Lesser Redpoll | Acanthis cabaret | Priority Species, BoCC Red | 1 | 2 | 2 |
| Goldfinch | Carduelis carduelis | - | 37 | 74 | 74 |
| Siskin | Spinus spinus | - | 2 | 2 | 2 |
| Corn Bunting | Emberiza calandra | Priority Species, BoCC Red, Lincs BAP | 6 | 0 | 6 |
| Yellowhammer | Emberiza citrinella | Priority Species, BoCC Red, Lincs BAP | 40 | 71 | 71 |
| Reed Bunting | Emberiza schoeniclus | Priority Species, BoCC Amber, Lincs BAP | 36 | 34 | 36 |
| Total Number of Species: 76 | | | 71 | 63 | n/a |

- Six species (Great White Egret, Little Egret, Red Kite, Golden Plover, Merlin and Peregrine) 4.1.4 listed on Annex I of the EU Birds Directive (2009) were recorded within the survey area. A single Great White Egret frequented Carr Dyke, to the east of the northern Site, in February 2022. Up to four Little Egrets were also recorded in this area / flying over the northern Site in February 2022. Single Red Kites were, typically, recorded flying over both the northern and southern sites in March 2022. Single Merlin and Peregrine were recorded within the southern site only, with records in December 2022 (having recently killed a Meadow Pipit); and January and November 2022 (fly-overs), respectively. Records of Golden Plover were made in both the northern and southern sites with records in the northern site in February, October, November and December (peak counts of 5, 1, 3 and 25 respectively); and in the southern site in January and December (peak count of 71 and 19 respectively). The majority of these records concerned birds flying over the Site, although small numbers (<10 birds) were observed settled on the ground, including the count of 25 birds which were made in December 2022, just outside the northern site survey area (see Figure 1.1) Furthermore, 100 Golden Plover were seen circling the southern site on 3rd April 2022, during the first survey for breeding birds, although these birds did not land within the Site.
- 4.1.5 A total of 16 priority species were recorded within the survey area. These were: Grey Partridge, Lapwing, Herring Gull, Marsh Tit, Skylark, Starling, Song Thrush, House Sparrow, Tree Sparrow, Dunnock, Bullfinch, Linnet, Lesser Redpoll, Corn Bunting, Yellowhammer and Reed Bunting.
- 4.1.6 Seventeen species, included on the BoCC Red List and 25 species, included on the BoCC Amber list, were recorded within the survey area. The remaining species are all included on the Green list and are of least conservation concern.
- 4.1.7 Fourteen species, listed as Lincolnshire Biodiversity Action Plan species, were recorded within the survey area.

4.2 Species Distribution

4.2.1 The location of Annex 1 species, Priority species and/ or BoCC Red and Amber-listed bird species, (see **Table 4-1**) are presented in **Figures 1.1** to **3.4**. In general, concentrations of species were found within the most suitable habitats to support each individual species' needs (*i.e.* species that require woodland habitat, were found within woodland habitat on the Site etc.).

4.3 Evaluation of key habitat types for wintering birds

4.3.1 A summary of the broad habitat types present in the survey area and their key ornithological features, are presented in **Table 5-1**.

Table 4-2: Key Ornithological Features of habitat within the Survey Area

| Broad Habitat Type | Key Ornithological Features |
|--|---|
| Small waterbodies / ponds / watercourses | Supports species associated with wetland features, such as Mallard, Teal and Moorhen – particularly Hodge Dike (see Figure 3.1). |
| Arable farmland | The predominant habitat type occurring within the Scheme boundary and wider landscape beyond the survey area. Supports seed-eating passerines, including Skylark, Yellowhammer and Linnet, found throughout. |
| Scrub / hedgerows | Frequently occurring habitat within the Site of varying quality. Supports species such as Yellowhammer, Dunnock, Song Thrush and Bullfinch. |
| Mature trees / woodland | Parcels of woodland and individual trees scattered within the Site. Supports species such as Green Woodpecker, as well as species often found in scrub / hedgerows. Individual species of conservation interest, but limited species abundance and diversity. |

Broad Habitat Type Key Ornithological Features

Game cover crops

Occasional habitat feature occurring within the Site Supports flocks of farmland seed-eating passerines, such as Linnet, Yellowhammer, Reed Bunting and Dunnock.

5. References

| Ref 5-1 | EC (2009) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version). EC, Brussels. |
|----------|---|
| Ref 5-2 | HMSO (2018). Conservation of Habitats and Species Regulations 2017 (as amended). HMSO, London. |
| Ref 5-3 | HMSO (2019) The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. HMSO, London |
| Ref 5-4 | Anon. (1981). The Wildlife & Countryside Act. HMSO, London. |
| Ref 5-5 | Anon. (2006). The Natural Environment and Rural Communities Act. HMSO, London. |
| Ref 5-6 | Anon. (2008). UK Biodiversity Action Plan. |
| Ref 5-7 | JNCC, UK Post-2010 Biodiversity Framework, 2012, available at http://jncc.defra.gov.uk/page-6189 (Accessed July 2020) |
| Ref 5-8 | Lincolnshire Biodiversity Action Plan. (2012-2020) 3 rd edition. http://www.southkesteven.gov.uk/CHttpHandler.ashx?id=7371&p=0 |
| Ref 5-9 | Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747 |
| Ref 5-10 | Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000). Bird Census Techniques: 2nd edition. Academic Press, London. |
| Ref 5-11 | Gilbert G., Gibbons D.W., and Evans J. (1998) Bird Monitoring Methods: A manual of techniques for key UK species. RSPB, Bedfordshire |

Annex A: Survey Data

Northern Site

| Common Name | Scientific Name | Count Per Survey | | | | | |
|-------------------------|----------------------------|------------------|---------|---------|---------|---------|---------|
| | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 |
| Canada Goose | Branta canadensis | 0 | 2 | 0 | 0 | 0 | 0 |
| Greylag Goose | Anser anser | 0 | 0 | 0 | 0 | 0 | 4 |
| Pink-footed Goose | Anser brachyrhynchus | 0 | 0 | 0 | 50 | 0 | 0 |
| Mute Swan | Cygnus olor | 3 | 4 | 0 | 2 | 6 | 6 |
| Gadwall | Mareca strepera | 0 | 0 | 0 | 0 | 2 | 2 |
| Wigeon | Mareca penelope | 11 | 0 | 0 | 0 | 2 | 2 |
| Mallard | Anas platyrhynchos | 5 | 8 | 8 | 3 | 10 | 0 |
| Teal | Anas crecca | 32 | 30 | 16 | 0 | 0 | 0 |
| Red-legged Partridge | Alectoris rufa | 3 | 2 | 0 | 0 | 0 | 0 |
| Grey Partridge | Perdix perdix | 0 | 4 | 1 | 6 | 7 | 0 |
| Pheasant | Phasianus colchicus | 0 | 6 | 0 | 0 | 0 | 0 |
| Little Grebe | Tachybaptus ruficollis | 0 | 3 | 1 | 0 | 2 | 0 |
| Grey Heron | Ardea cinerea | 1 | 0 | 3 | 0 | 0 | 0 |
| Great White Egret | Ardea alba | 0 | 1 | 0 | 0 | 0 | 0 |
| Little Egret | Egretta garzetta | 0 | 4 | 0 | 0 | 0 | 0 |
| Sparrowhawk | Accipiter nisus | 1 | 0 | 0 | 1 | 0 | 1 |
| Red Kite | Milvus milvus | 0 | 0 | 1 | 0 | 0 | 0 |
| Buzzard | Buteo buteo | 5 | 1 | 2 | 2 | 0 | 1 |
| Moorhen | Gallinula chloropus | 1 | 4 | 1 | 3 | 5 | 8 |
| Lapwing | Vanellus vanellus | 0 | 450 | 3 | 46 | 4 | 452 |
| Golden Plover | Pluvialis apricaria | 0 | 5 | 0 | 1 | 3 | 25 |
| Woodcock | Scolopax rusticola | 0 | 1 | 0 | 0 | 0 | 0 |
| Snipe | Gallinago gallinago | 2 | 0 | 8 | 0 | 12 | 0 |
| Black-headed Gull | Chroicocephalus ridibundus | 6 | 0 | 0 | 0 | 0 | 0 |
| Common Gull | Larus canus | 0 | 0 | 0 | 0 | 2 | 2 |
| Herring Gull | Larus argentatus | 30 | 3 | 0 | 0 | 0 | 0 |

| Common Name | Scientific Name | Count Per Survey | | | | | |
|-----------------------------|-------------------------|------------------|---------|---------|---------|---------|---------|
| | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 |
| Lesser Black-backed Gull | Larus fuscus | 0 | 0 | 0 | 1 | 1 | 0 |
| Stock Dove | Columba oenas | 3 | 2 | 2 | 2 | 3 | 0 |
| Woodpigeon | Columba palumbus | 89 | 53 | 167 | 7 | 122 | 98 |
| Great Spotted Woodpecker | Dendrocopos major | 0 | 1 | 1 | 1 | 1 | 0 |
| Green Woodpecker | Picus viridis | 0 | 0 | 1 | 0 | 1 | 1 |
| Kestrel | Falco tinnunculus | 1 | 2 | 0 | 1 | 1 | 2 |
| Peregrine | Falco peregrinus | 0 | 1 | 0 | 0 | 0 | 0 |
| Jay | Garrulus glandarius | 1 | 1 | 2 | 0 | 0 | 0 |
| Magpie | Pica pica | 4 | 3 | 3 | 2 | 2 | 8 |
| Jackdaw | Coloeus monedula | 20 | 5 | 10 | 3 | 2 | 2 |
| Rook | Corvus frugilegus | 140 | 32 | 0 | 0 | 0 | 0 |
| Carrion Crow | Corvus corone | 33 | 2 | 35 | 16 | 17 | 1 |
| Raven | Corvus corax | 0 | 0 | 1 | 0 | 0 | 0 |
| Marsh Tit | Poecile palustris | 0 | 0 | 0 | 1 | 0 | 1 |
| Blue Tit | Cyanistes caeruleus | 13 | 21 | 15 | 4 | 23 | 22 |
| Great Tit | Parus major | 12 | 5 | 9 | 3 | 9 | 16 |
| Skylark | Alauda arvensis | 77 | 58 | 91 | 73 | 85 | 82 |
| Long-tailed Tit | Aegithalos caudatus | 8 | 6 | 3 | 24 | 39 | 0 |
| Chiffchaff | Phylloscopus collybita | 0 | 0 | 3 | 0 | 0 | 0 |
| Goldcrest | Regulus regulus | 1 | 0 | 0 | 0 | 1 | 1 |
| Wren | Troglodytes troglodytes | 7 | 15 | 19 | 6 | 13 | 6 |
| Treecreeper | Certhia familiaris | 0 | 1 | 0 | 0 | 2 | 1 |
| Starling | Sturnus vulgaris | 135 | 21 | 157 | 746 | 30 | 153 |
| Blackbird | Turdus merula | 30 | 31 | 24 | 7 | 20 | 19 |
| Fieldfare | Turdus pilaris | 54 | 170 | 72 | 166 | 209 | 1013 |
| Redwing | Turdus iliacus | 3 | 59 | 48 | 8 | 2 | 17 |
| Song Thrush | Turdus philomelos | 7 | 13 | 6 | 6 | 12 | 7 |
| Mistle Thrush | Turdus viscivorus | 1 | 0 | 0 | 0 | 0 | 0 |
| Robin | Erithacus rubecula | 10 | 7 | 14 | 14 | 12 | 11 |
| Stonechat | Saxicola rubicola | 0 | 0 | 0 | 1 | 0 | 0 |

| Common Name | Scientific Name | Count Per Survey | | | | | | |
|----------------|----------------------|------------------|---------|---------|---------|---------|---------|--|
| | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | |
| House Sparrow | Passer domesticus | 4 | 6 | 8 | 0 | 15 | 21 | |
| Tree Sparrow | Passer montanus | 0 | 0 | 2 | 0 | 0 | 0 | |
| Dunnock | Prunella modularis | 4 | 6 | 17 | 4 | 7 | 8 | |
| Pied Wagtail | Motacilla alba | 0 | 0 | 3 | 0 | 1 | 0 | |
| Meadow Pipit | Anthus pratensis | 6 | 9 | 15 | 22 | 18 | 6 | |
| Chaffinch | Fringilla coelebs | 74 | 96 | 77 | 13 | 62 | 26 | |
| Bullfinch | Pyrrhula pyrrhula | 0 | 1 | 0 | 0 | 0 | 0 | |
| Greenfinch | Chloris chloris | 2 | 5 | 2 | 4 | 0 | 0 | |
| Linnet | Linaria cannabina | 105 | 189 | 64 | 6 | 30 | 9 | |
| Lesser Redpoll | Acanthis cabaret | 0 | 0 | 0 | 1 | 0 | 0 | |
| Goldfinch | Carduelis carduelis | 0 | 37 | 27 | 20 | 24 | 8 | |
| Siskin | Spinus spinus | 0 | 1 | 0 | 2 | 0 | 0 | |
| Corn Bunting | Emberiza calandra | 0 | 1 | 1 | 0 | 6 | 0 | |
| Yellowhammer | Emberiza citrinella | 37 | 27 | 40 | 16 | 18 | 22 | |
| Reed Bunting | Emberiza schoeniclus | 8 | 14 | 25 | 36 | 12 | 15 | |

Southern Site

| Common Name | Scientific Name | Count Per Survey | | | | | | |
|-------------------------|----------------------|------------------|---------|---------|---------|---------|---------|--|
| | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | |
| Greylag Goose | Anser anser | 2 | 0 | 2 | 0 | 0 | 0 | |
| Pink-footed Goose | Anser brachyrhynchus | 0 | 0 | 0 | 0 | 9 | 0 | |
| Mute Swan | Cygnus olor | 0 | 0 | 0 | 0 | 0 | 1 | |
| Mallard | Anas platyrhynchos | 0 | 7 | 6 | 35 | 21 | 2 | |
| Teal | Anas crecca | 6 | 0 | 0 | 0 | 0 | 0 | |
| Red-legged Partridge | Alectoris rufa | 2 | 4 | 2 | 0 | 18 | 1 | |
| Grey Partridge | Perdix perdix | 7 | 2 | 3 | 4 | 8 | 12 | |
| Pheasant | Phasianus colchicus | 1 | 0 | 2 | 0 | 0 | 0 | |
| Cormorant | Phalacrocorax carbo | 1 | 0 | 2 | 0 | 0 | 0 | |
| Sparrowhawk | Accipiter nisus | 3 | 0 | 2 | 1 | 0 | 0 | |
| Red Kite | Milvus milvus | 0 | 0 | 1 | 0 | 1 | 0 | |

| Common Name | Scientific Name | Count Per Survey | | | | | | |
|-----------------------------|-------------------------------|------------------|---------|---------|---------|---------|---------|--|
| | | Visit 1 | Visit 2 | Visit 3 | Visit 4 | Visit 5 | Visit 6 | |
| Buzzard | Buteo buteo | 3 | 4 | 6 | 6 | 6 | 3 | |
| Moorhen | Gallinula chloropus | 1 | 0 | 0 | 0 | 0 | 0 | |
| Lapwing | Vanellus vanellus | 41 | 0 | 1 | 0 | 0 | 0 | |
| Golden Plover | Pluvialis apricaria | 71 | 0 | 0 | 0 | 0 | 19 | |
| Woodcock | Scolopax rusticola | 1 | 2 | 0 | 0 | 1 | 0 | |
| Snipe | Gallinago gallinago | 3 | 0 | 0 | 0 | 0 | 15 | |
| Black-headed Gull | Chroicocephalus ridibundus | 1 | 21 | 0 | 167 | 0 | 0 | |
| Common Gull | Larus canus | 0 | 0 | 0 | 45 | 0 | 0 | |
| Herring Gull | Larus argentatus | 0 | 0 | 0 | 0 | 1 | 0 | |
| Stock Dove | Columba oenas | 3 | 100 | 2 | 0 | 0 | 15 | |
| Woodpigeon | Columba palumbus | 854 | 450 | 157 | 224 | 441 | 782 | |
| Collared Dove | Streptopelia decaocto | 4 | 0 | 4 | 1 | 2 | | |
| Great Spotted Woodpecker | Dendrocopos major | 1 | 0 | 0 | 0 | 1 | 2 | |
| Green Woodpecker | Picus viridis | 0 | 0 | 3 | 0 | 1 | 1 | |
| Kestrel | Falco tinnunculus | 2 | 0 | 2 | 0 | 2 | 1 | |
| Merlin | Falco columbarius | 0 | 0 | 0 | 0 | 0 | 1 | |
| Peregrine | Falco peregrinus | 1 | 0 | 0 | 0 | 1 | 0 | |
| Jay | Garrulus glandarius | 1 | 1 | 0 | 2 | 1 | 1 | |
| Magpie | Pica pica | 2 | 3 | 7 | 1 | 1 | 5 | |
| Jackdaw | Coloeus monedula | 50 | 86 | 8 | 92 | 9 | 143 | |
| Rook | Corvus frugilegus | 327 | 182 | 112 | 91 | 40 | 188 | |
| Carrion Crow | Corvus corone | 6 | 3 | 20 | 44 | 5 | 54 | |
| Raven | Corvus corax | 0 | 0 | 0 | 1 | 0 | 1 | |
| Blue Tit | Cyanistes caeruleus | 33 | 23 | 19 | 18 | 15 | 24 | |
| Great Tit | Parus major | 19 | 8 | 24 | 16 | 24 | 17 | |
| Skylark | Alauda arvensis | 48 | 59 | 56 | 58 | 119 | 202 | |
| Long-tailed Tit | Aegithalos caudatus | 40 | 3 | 0 | 31 | 25 | 23 | |
| Chiffchaff | Phylloscopus collybita | 0 | 0 | 4 | 1 | 0 | 0 | |
| Goldcrest | Regulus regulus | 1 | 0 | 0 | 4 | 6 | 1 | |

Common Name Scientific Name Count Per Survey Visit 1 Visit 2 Visit 3 Visit 4 Visit 5 Visit 6 Wren Troglodytes troglodytes Nuthatch Sitta europaea Starling Sturnus vulgaris Blackbird Turdus merula Fieldfare Turdus pilaris Turdus iliacus Redwing Song Thrush Turdus philomelos Turdus viscivorus Mistle Thrush Robin Erithacus rubecula House Sparrow Passer domesticus Tree Sparrow Passer montanus Prunella modularis Dunnock Grey Wagtail Motacilla cinerea Pied Wagtail Motacilla alba Meadow Pipit Anthus pratensis Chaffinch Fringilla coelebs Bullfinch Pyrrhula pyrrhula Greenfinch Chloris chloris Linnet Linaria cannabina Lesser Redpoll Acanthis cabaret Goldfinch Carduelis carduelis Siskin Spinus spinus

Prepared for: Low Carbon AECOM

Emberiza citrinella

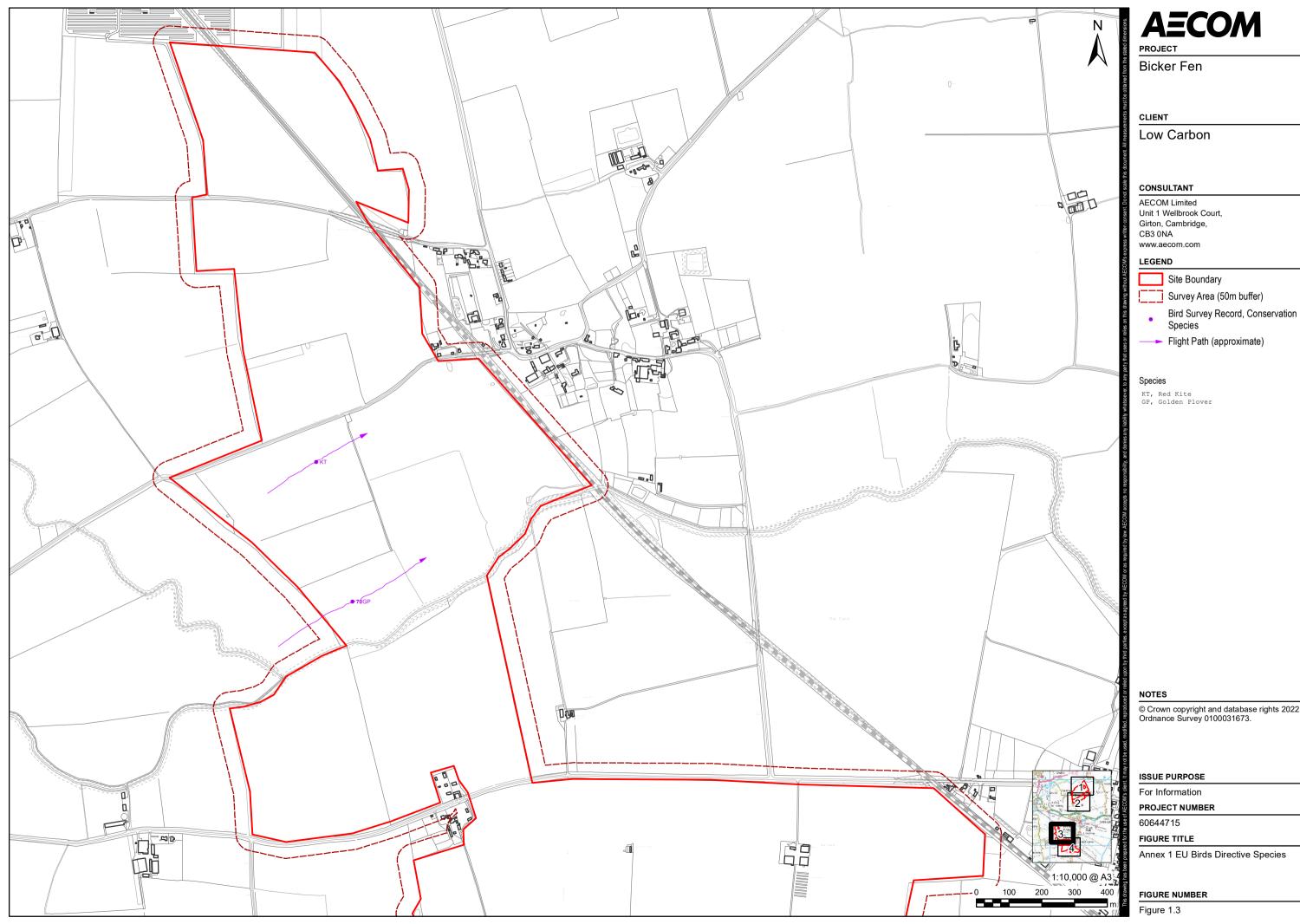
Emberiza schoeniclus

Yellowhammer

Reed Bunting

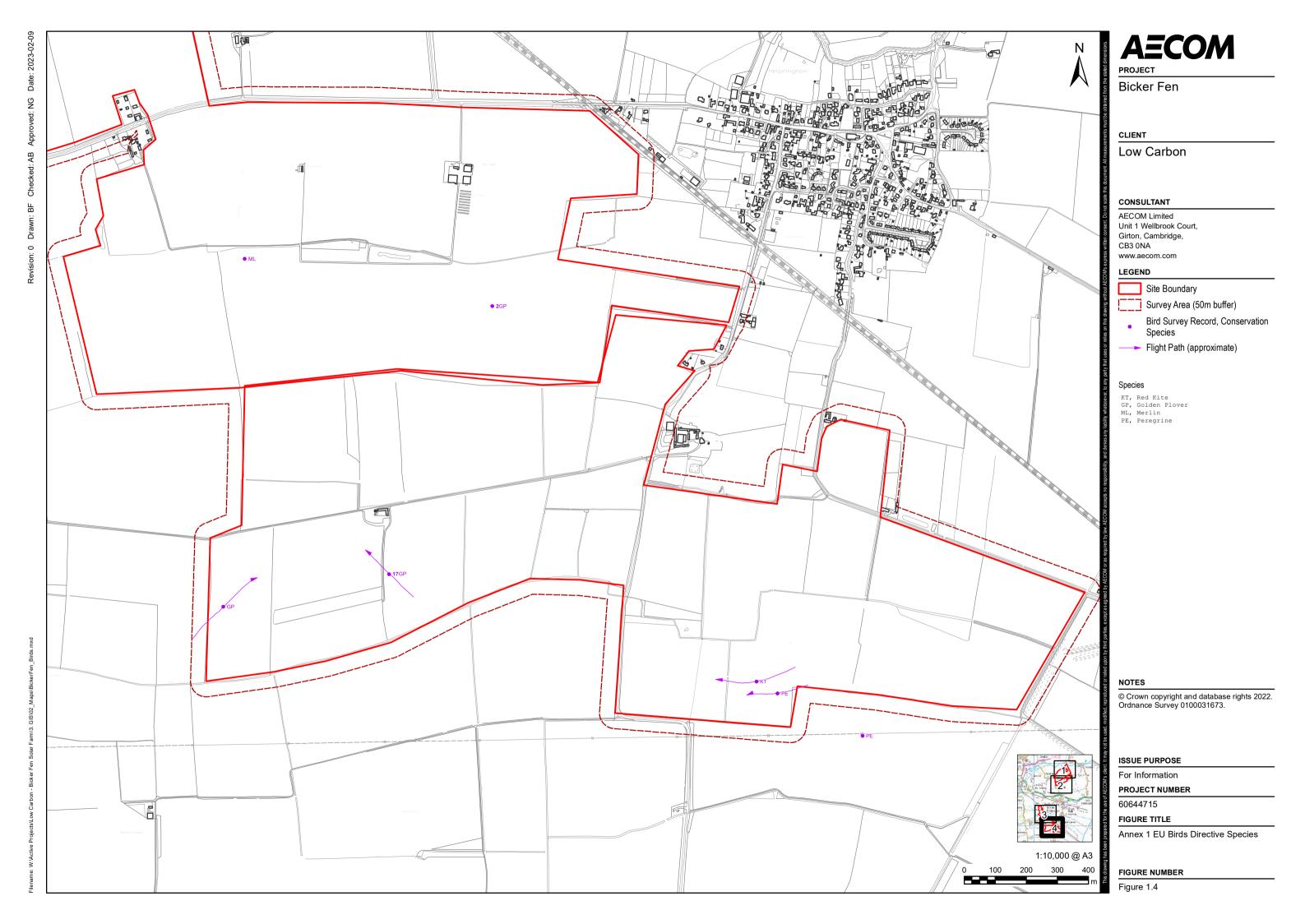
Annex B: Figures

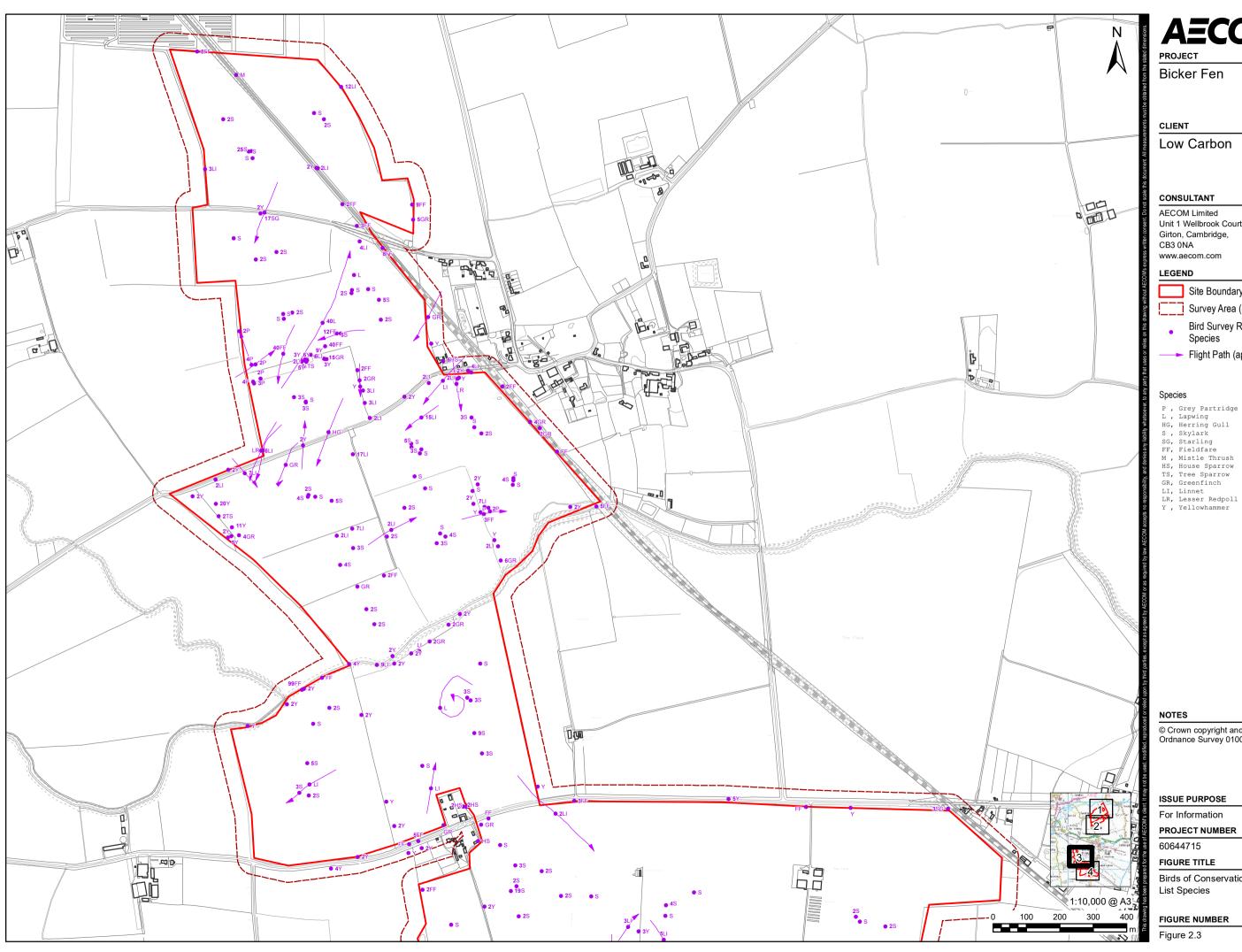
Figure 1.1 to 3.4 Distribution of Species of Conservation Concern



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Annex 1 EU Birds Directive Species





AECOM

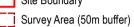
Bicker Fen

Low Carbon

CONSULTANT

AECOM Limited Unit 1 Wellbrook Court, Girton, Cambridge, CB3 0NA www.aecom.com

Site Boundary



Bird Survey Record, Conservation

Flight Path (approximate)

P , Grey Partridge

M , Mistle Thrush

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ISSUE PURPOSE

For Information

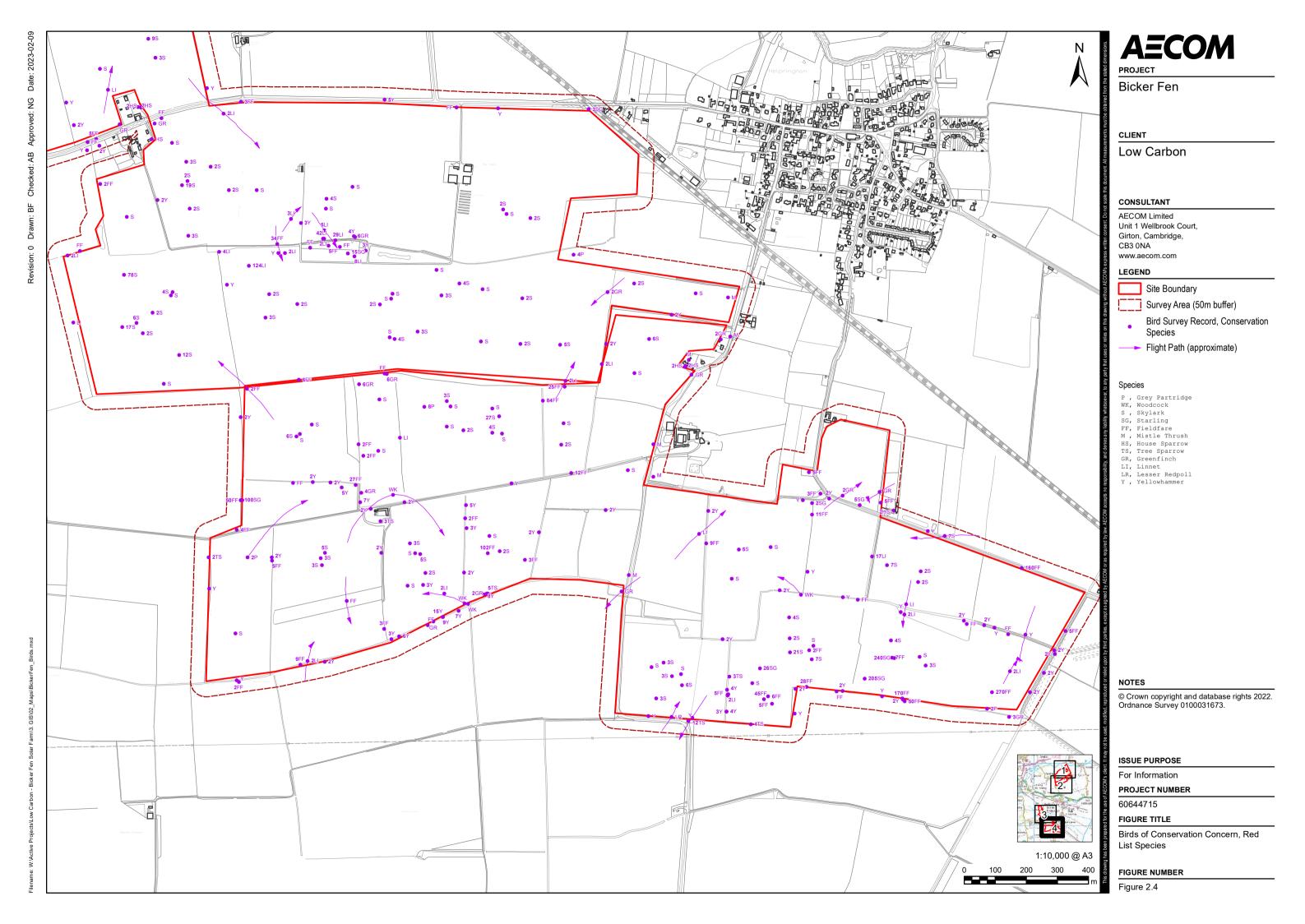
PROJECT NUMBER

60644715

FIGURE TITLE

Birds of Conservation Concern, Red List Species

FIGURE NUMBER



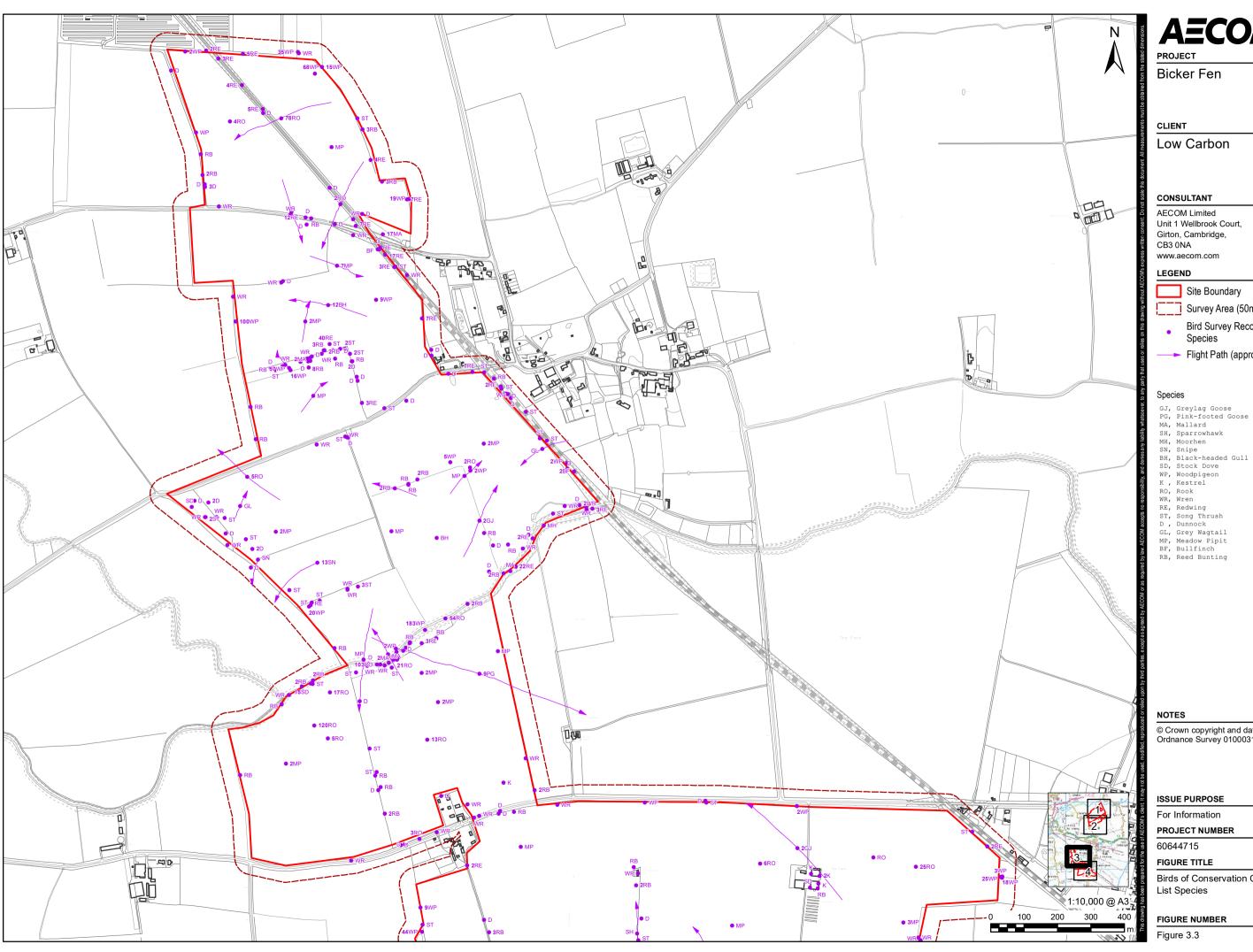
Bird Survey Record, Conservation

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Bird Survey Record, Conservation

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Birds of Conservation Concern, Amber



AECOM

Bicker Fen

Low Carbon

AECOM Limited Unit 1 Wellbrook Court, Girton, Cambridge,

Site Boundary

Survey Area (50m buffer)

Bird Survey Record, Conservation

Flight Path (approximate)

GJ, Greylag Goose PG, Pink-footed Goose

RB, Reed Bunting

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ISSUE PURPOSE

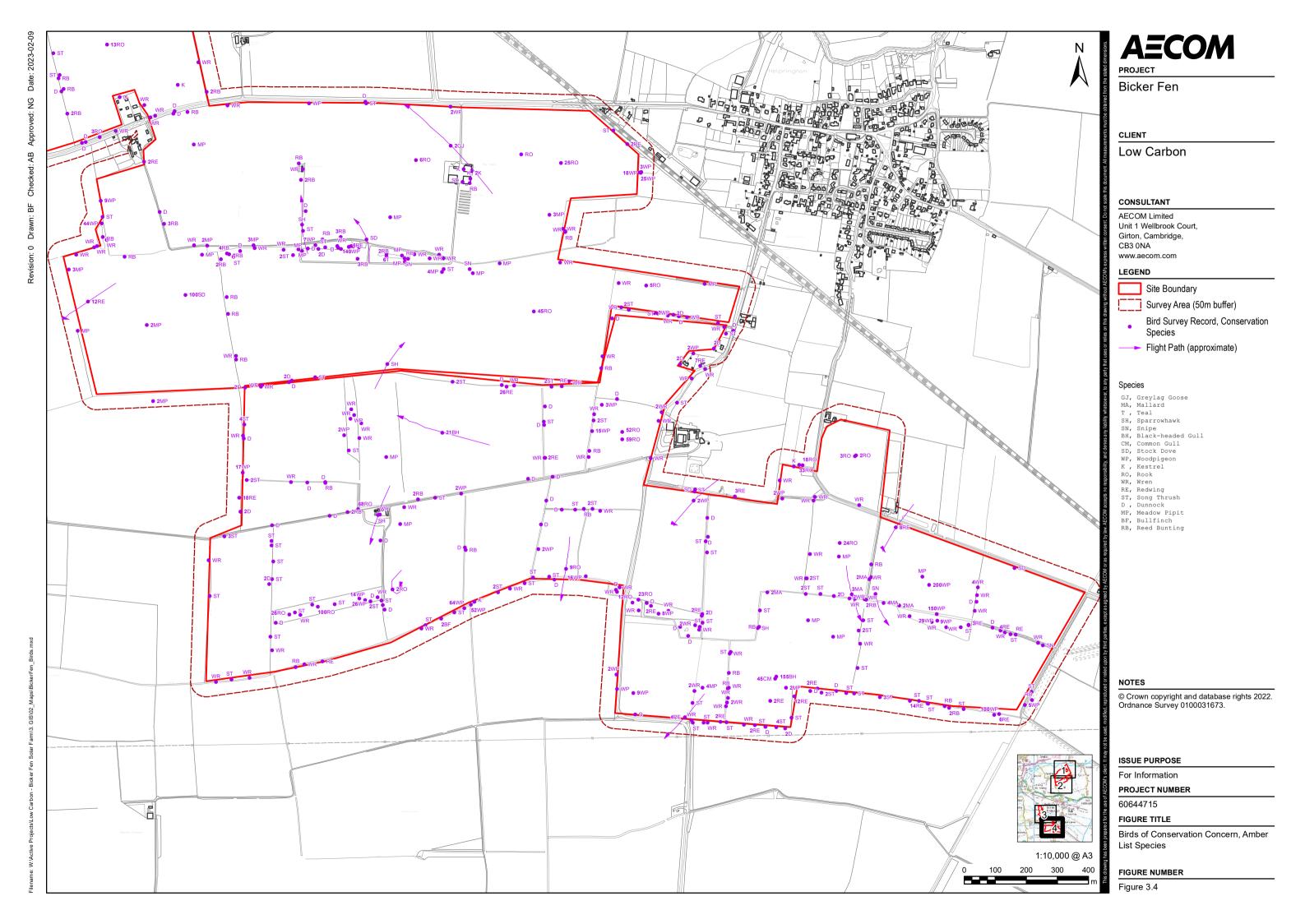
For Information

PROJECT NUMBER

FIGURE TITLE

Birds of Conservation Concern, Amber List Species

FIGURE NUMBER



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