

**APPENDIX 9.4
BREEDING BIRD SURVEY REPORT**

APPENDIX 9.4
(BREEDING BIRD SURVEYS)
TO
CHAPTER 9 OF THE ENVIRONMENTAL STATEMENT

ALLESTON SOLAR FARM, PEMBROKESHIRE

carried out by



commissioned by

ALLESTON CLEAN ENERGY LIMITED

SEPTEMBER 2024



BREEDING BIRDS SURVEY REPORT

ALLESTON SOLAR FARM, PEMBROKESHIRE

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The information, data and advice which has been prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions. This report and its contents remain the property of Clarkson and Woods Ltd. until payment has been made in full.



1 INTRODUCTION

- 1.1.1 Clarkson and Woods Ltd. was commissioned by the Applicant to carry out breeding bird surveys of fields at the land at Alleston Farm, Lower Lamphey Road, Lamphey, Pembrokeshire, hereafter referred to as 'the Site'.
- 1.1.2 The Development comprises the installation of an approximately a 30MW ground mounted photovoltaic solar farm together with associated equipment, infrastructure and ancillary works.
- 1.1.3 Four breeding bird surveys were carried out over two seasons, between April 2023 and April 2024. Surveys followed survey methodology aligned with the British Trust for Ornithology (BTO) Common Bird Census, further detailed in Section 2.
- 1.1.4 Unless the client indicates to the contrary, information on the presence of species collected during the surveys will be passed to the county biological records centre to augment their records for the area. This is in line with the CIEEM code of professional conduct¹.

1.2 Survey and Report Objectives

- 1.2.1 Given the proposed changes to land use, breeding bird surveys were recommended to ascertain a baseline of the breeding bird assemblage across a Survey Area chosen to encompass all long-term development zones within the Development. This report details the methods and results of the surveys together with an evaluation of the Site for the various species recorded. It also provides a brief overview of the potential impacts that could result from the proposals, so as to inform the layout of the Development. This information will then be used within the eventual Alleston Solar Farm Project Environmental Statement to identify and characterise the impacts on breeding birds considered likely to result from the Development in the light of avoidance, mitigation and enhancement measures adopted by the proposals.

1.3 Description of the Survey Area

- 1.3.1 The Site is located on land at Alleston Farm, Pembrokeshire and is bound to the north by Lower Lamphey Road and agricultural fields, and to the east by further fields. Watery Lane forms the western and south-western boundaries of the Site (see **Figure 1** overleaf). The southern boundary follows an existing area of woodland in a south-easterly direction. In addition, there are a small number of residential properties located adjacent to the north and west of the Site boundary.
- 1.3.2 The residential dwellings of Pembroke are 190m north-west of the Site whilst the village of Lamphey is located in 370m to the north-eastern corner of the Site.
- 1.3.3 Land use in the surrounding area of the Site is predominantly agricultural, with scattered farmhouses as well as residential developments associated with Pembroke and Lamphey. The West Wales Line railway line, which connects Pembroke and Lamphey, runs approximately 40m north of the Site. Pembroke train station is located 680m north-east of the Site and Lamphey train station is located 415m east of the Site.
- 1.3.4 The Site encompasses approximately 96 hectares (ha) and comprises of several agricultural fields, separated by rows of mature hedgerows. This is with the exception of Alleston Farmhouse, a Grade II Listed building, and the associated buildings which are located within the centre of the Site, accessed from the north along Lower Lamphey Road and West along Watery Lane, both along unnamed tracks. Within the eastern region of the Site a collection of fields is currently used for equestrian activities, which will continue, whilst an area of mature trees and vegetation are located within the south-western region of the Site and run into the central region of the Site, this collection of trees are known as Alleston Wood.

1.4 Quality Assurance

- 1.4.1 All ecologists employed directly by Clarkson and Woods are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow the Institute's Code of Professional Conduct² when undertaking ecological work.

¹ Code of Professional Conduct. CIEEM, January 2019.

² CIEEM (February 2022). *Code of Professional Conduct*. <https://cieem.net/resource/code-of-professional-conduct/>

1.4.2 This report has been prepared in accordance with the relevant British Standard: *BS42020: 2013 – Biodiversity: Code of Practice for Planning and Development*³. It has been prepared by an experienced ecologist who is a member of CIEEM. The report has also been subject to a two-stage quality assurance review by appropriately experienced ecologists who are full members of CIEEM.



Figure 1: Extent of the Survey Area

³ The British Standards Institution (2013). *BS42020: 2013 – Biodiversity: Code of Practice for Planning and Development*. BSI Standards Ltd.



2 METHODOLOGY

2.1 Desk Study

Designated Site

- 2.1.1 Statutory designated sites focused on breeding birds within the proximity of the application Site (10km for International Sites, 5km for National Sites and 2km for Local Sites) were identified using the Defra web-based MAGIC database (<https://magic.defra.gov.uk/>) and National Resources Wales' GIS database.
- 2.1.2 Non-statutory designated sites focussed on wintering birds within 2km of the application Site were identified using from the Aderyn Record Centre data search.

Local Conservation Strategies

- 2.1.3 Relevant Local Authority plans and strategies with a biodiversity focus were consulted for aspects relevant to birds, including priority species listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006).

Landscape-scale Conservation Strategies, Initiatives and Records

- 2.1.4 The Birds of Conservation Concern (BoCC) Red List⁴ was also consulted. This provides a categorisation of bird species according to their conservation status, based on the assessment criteria. It considers both temporal and spatial trends across their distribution ranges and incorporates the use of a simple traffic light system, with red, amber or green categories used to illustrate risk levels. Red-listed species of high conservation concern are most at risk, reducing to amber and then green.
- 2.1.5 The Aderyn Record Centre was consulted for records of bird species within 2km of Alleston Solar Farm.

General

- 2.1.6 Where relevant, Ordnance Survey maps (1:25,000) and online aerial images of the Site were examined online to assess habitat connectivity (e.g. <https://www.google.com/maps>).
- 2.1.7 The data presented within this report constitutes a summary of the data obtained from the local records centre. Should additional detail be required on any of the records described within this report Clarkson and Woods Ltd. should be contacted.

2.2 Field Surveys

- 2.2.1 The Site was surveyed on four separate occasions, with the first two visits between April and May 2023, and the second two visits between March and April 2024, as detailed in Table 1 below. The 2023 surveys were initially carried out as a 'scoping' exercise in order to establish the need or otherwise for further visits. A 'scoping' exercise was chosen since the initial Phase 1 Habitat Survey determined that the fields which make up the Site are generally of low value to nesting birds, with the boundary hedgerow and woodland habitats being of moderate value but are to be retained within proposals. Upon completion of these first two visits and review of observation, it was confirmed that continuing to a full suite of surveys in 2023 would not be necessary for the assessment or proportionate to the scale of likely impacts. Nonetheless, the completed surveys were repeated in 2024 to provide up-to-date baseline data and to corroborate the conclusions drawn from the 2023 data.
- 2.2.2 All surveys were only carried out in favourable weather conditions, avoiding strong winds (excess of Beaufort 4/moderate breeze), rain more than a light drizzle, or where visibility was compromised by low cloud/foggy conditions. Detailed weather conditions of each survey have also been included within Table 1.
- 2.2.3 Surveys typically commenced by approximately 1hr after sunrise and were completed within 4 hours. During each visit, surveys covered the entirety of the red line boundary shown in Figure 1 above. Given the size of the Site, it was subdivided into separate survey sections (north and south parcels) to enable coverage by multiple surveyors in a single visit.

⁴ Birds of Conservation Concern 5 (Stanbury et. Al, 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.



2.2.4 The surveys broadly followed British Trust for Ornithology (BTO) Common Birds Census guidelines and the methodology recommended by the Bird Survey Guidelines committee (<http://birdsurveyguidelines.org>), where experienced bird surveyors systematically walked through the survey area, ensuring that all locations were visited to within 50m. Surveyors would periodically stop to scan habitats of particular interest, such as trees, field margins or ditches, as well as opportunistically throughout each field.

2.2.5 The location and behaviour of all birds and flocks of birds seen or heard was noted on A3 Ordnance Survey maps at 1:10,000 resolution. Standard BTO Common Birds Census symbology and species codes were used to create a survey map for each individual visit. Particular attention was paid to birds exhibiting breeding behaviour, for instance birds in full song, exhibiting antagonistic behaviour/calling, carrying nest material, carrying food, and returning to nesting sites. All surveyors were equipped with binoculars to aid identification.

Personnel

2.2.6 The following surveyors conducted breeding bird surveys across the survey period. All surveyors are highly experienced bird surveyors able to identify all British species by sight and sound and were assessed by Clarkson & Woods as competent to complete the survey.

- Harry Fox BSc MCIEEM
- Mike Hockey MCIEEM
- Adèle Remazeilles ACIEEM
- Chris Sutton
- Chris Orsman

2.2.7 **Table 1** provides detail of the survey dates, weather conditions and surveyor(s) for each survey.

Table 1: Survey Dates, Weather Conditions & Surveyor Details

Survey Visit No.	Date	Weather Conditions (Cloud 0-8, Wind 1-12, Precipitation, Temperature °C)	Surveyors (Initials)
1	06/04/2023	Cloud 7, Wind 3, Dry, 8°C	HF, MH
2	10/05/2023	Cloud 6, Wind 2, Dry, 11-12°C	AR, CS
3	18-19/03/2024	Cloud 2, Wind 3, Dry, 9°C	CO
4	12-13/04/2024	Cloud 8, Wind 3, Dry, 11-12°C	CO

2.3 Data Interpretation

2.3.1 Observations were digitised using QGIS software, to allow interpretation of the distribution of different species and to create distribution maps for species of interest.

2.3.2 Data were collated for interpretation in tables within Microsoft Excel, allowing the number of individuals of each species to be enumerated for each survey visit, and for different habitats within the Site. Species not of conservation concern/ non-notable species were not enumerated as they would not be included as Important Ecological Features in the impact assessment. A list of these species is provided.

2.3.3 To enable the identification of the location and estimation of the number breeding territories, the following steps were taken:

- i. In the field; each surveyor followed a standardised approach, as described above, to ensure consistency across surveys and so that records relating to the same individuals were recorded as such to avoid duplication;
- ii. Mapping; all bird registrations were mapped using QGIS software including their behaviour, abundance and confirmed evidence of nesting with data. Where relevant, this information was collated from each visit and considered together to estimate minimum and maximum number of breeding territories for some species.



- iii. Data interpretation; field results were analysed to determine the breeding status of recorded species which included the following categories: unconfirmed, possible, probable and confirmed in accordance with the following BTO categories⁵. The territory-mapping approach set out within the BTO Common Bird Census instructions⁶ was also consulted and professional expertise by contributing ecologists exercised where needed.
- 2.3.4 For (ii) above, the estimation of territory numbers was carried out for the species considered to be at most risk of impact from development, i.e. their breeding ecology includes open field habitat. For all other species (iii), any wader or waterfowl flushed from suitable breeding habitat was considered to be at least possibly breeding. The survey scope did not set out to identify nests or to confirm nesting for each species (although this was recorded where observed), but to infer their breeding status from collated data and the suitability and context of surrounding habitats.
- 2.3.5 To enable assessment of impacts, each species was categorised based on its primary ecology requirements and habitat use recorded on Site during the wintering season, as follows:
- Open habitats, including use of open, arable, fallow or grassland/pasture fields;
 - Boundary habitats, including hedgerow/scrub, arable margins etc. *This includes species that rely on such boundary habitats in combination with adjacent farmland (e.g. yellowhammers utilising field margins and the open arable fields);*
 - Waterbodies, such as ponds, rivers, and ditches; and
 - Woodlands and mature trees.
- 2.3.6 It is acknowledged that many species are associated with more than one category of habitat. Such species were allocated to the habitat considered to have the greatest risk of being adversely impacted, to ensure appropriate ecological assessment.

2.4 Ecological Assessment

- 2.4.1 To enable assessment of the Development within the associated Environmental Statement on any given breeding bird species, and to measure scale of impacts resulting from loss or change to their habitats, the ecological importance of each species was defined. This was achieved through consideration of the species' national and local conservation status; conservation value in a geographical context; results of the completed surveys (local scale context); and application of professional judgment (which may increase or decrease the ecological importance, based on local knowledge).
- 2.4.2 The national conservation status of any given species was established by their categorisation on the Birds of Conservation Concern (BoCC) Red List and whether they are a Species of Principal Importance under the Environment (Wales) Act. Their local conservation status was determined through their listing on the Local BAP, local bird group data, and consideration of local records.
- 2.4.3 The ecological importance of each species was determined by applying the criteria provided within the CIEEM guidelines for Ecological Impact Assessment (2018)⁷. This enabled the ecological importance of each species to be established and considered within a geographical context. This ensures the appropriate assessment of potential cumulative impacts of the proposals at a landscape scale.
- 2.4.4 The results of the breeding bird surveys provided local contextual information which, combined with professional judgement and local knowledge, enabled reassessment of each species' importance where appropriate.

⁵ BTO (2022) *Breeding Evidence* [Online] Available at: [/https://www.bto.org/sites/default/files/u36/downloads/breedingcodes.pdf](https://www.bto.org/sites/default/files/u36/downloads/breedingcodes.pdf) [Accessed: 20/07/2022]

⁶ Marchant (1983) *Common Bird Census Instructions*. [online] Available at: [CBC-instructions-g100.pdf \(bto.org\)](https://www.bto.org/sites/default/files/u36/downloads/cbc-instructions-g100.pdf) [Accessed 05/09/2022]

⁷ CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Sept 2018*. Chartered Institute of Ecology and Environmental Management. www.cieem.net



2.5 Limitations

Field Surveys

- 2.5.1 It is possible that the presence of certain species has been missed due to their being present in low numbers, or due their cryptic nature. However, the survey methodology ensures that all land is visited to within 50m and so the likelihood of under-recording species is reduced.
- 2.5.2 The surveys offer only 'snapshots' of birds' usage of the Site, and it is possible that over the course of the winter period the abundance and species of birds using the Site varies slightly from that recorded by the surveys. However, four separate visits have been conducted, spread across two seasons, which allows for a representative baseline to be established.



3 RESULTS

3.1 Desk Study Information

Designated Sites

Castlemartin Coast Special Protection Area (SPA)

- 3.1.1 Located approximately 4.5km south-west of the Site at its closest point, this site is designated as a linear strip of outstanding maritime habitats with a significant breeding population of chough *Pyrrhocorax pyrrhocorax*.
- 3.1.2 The following sites designed for their nature conservation importance were revealed by the desk study. However, since none of the sites are designed for their bird interest, they will not be considered further within this report.

Pembrokeshire Marine Special Area of Conservation (SAC)

- 3.1.3 This site is situated approximately 1.7km south-east of the Site. It is designated for its coastal and marine habitats and non-avian species associated with marine environments.

Bristol Channel Approaches SAC

- 3.1.4 This site is situated approximately 1.9km south-east of the Site. It is designated for population of harbour porpoise *Phocoena phocoena*.

Pembrokeshire Bat Sites and Bosherton Lake SAC

- 3.1.5 This site is situated approximately 3.9km southwest of the Site and is designated for its freshwater habitats and the presence of otters and important bat roosts. Furthermore, the site covers multiple associated Sites of Special Scientific Interest (SSSIs) that fall within 5km of Alleston Farm, including:
- Stackpole SSSI; 3.9km southwest
 - Stackpole Courtyard Flats and Walled Garden SSSI; 3.9km southwest
 - Carew Castle SSSI; 4.8km northeast
 - Orielton Stable Block and Cellars SSSI; 4.3km west
 - Park House Outbuildings SSSI; 3.9km southwest

Pembroke Mill Ponds LNR and Wildlife Trust Reserve (WTR)

- 3.1.6 This site is situated approximately 1.0km north-west of the Site. It is designated as priority ponds with developing reed bed and carr, and adjoining woodland, formerly part of a tidal creek.

Freshwater East Local Nature Reserve (LNR)

- 3.1.7 This site is situated approximately 1.2km south of the Site. It is designated for habitats including dune grassland, woodland and reed marsh, which support a good diversity of botanical species.

Freshwater East Cliffs to Shrinkle Haven SSSI

- 3.1.8 This site is situated approximately 1.7km south-east of the Site. It is designated for geological features and coastal cliff habitats and species that it supports.

Stackpole Quay to Trewent Point SSSI

- 3.1.9 This site is situated approximately 1.9km south-east of the Site. It is designated for geological features and coastal cliff habitats and species that it supports.

Local Policy

- 3.1.10 Farmland birds are listed on the Pembrokeshire Local Biodiversity Action Plan (LBAP). This covers the following species which overwinter in the UK and are potentially relevant to the Site: barn owl *Tyto alba*, kingfisher



Alcedo atthis, short-eared owl *Asio flammeus*, peregrine falcon *Falco peregrinus*, green woodpecker *Picus viridis*, *Larus fuscus* lesser black-backed gull, Cetti's warbler *Cettia cetti*, and water rail *Rallus aquaticus*.

Local Records

- 3.1.11 Various species were recorded by the data search within 2km of the Development, including passerines, raptors, waders and wildfowl. All records pertained to locations >500m outside the red line boundary (or undetermined). **Table 2** below includes bird species of conservation importance which overwinter in the UK and were recorded by the data search.
- 3.1.12 Those species listed under Section 7 of the Environment (Wales) Act 2016 are highlighted in **bold**, those protected from disturbance when nesting under Schedule 1 of the Wildlife & Countryside Act (WCA) are underlined, and those recognised as Red or Amber listed species of conservation concern by the British Trust for Ornithology are also highlighted by colour.

Table 2: Bird Species Records Returned within 2km of the Site

Species	No. of Records	Distance of Nearest Record	Year of Most Recent Record
Barn owl <i>Tyto alba</i>	<u>5</u>	<u>0.4km</u>	<u>2009</u>
Black-headed gull <i>Chroicocephalus ridibundus</i>	8	0.5km	2021
<u>Black Redstart <i>Phoenicurus ochruros</i></u>	<u>1</u>	<u>1.5km</u>	<u>2019</u>
Bullfinch <i>Pyrrhula pyrrhula</i>	10+	0.1km	2018
<u>Cetti's warbler <i>Cettia cetti</i></u>	<u>10+</u>	<u>0.8km</u>	<u>2021</u>
Common Gull <i>Larus canus</i>	10+	0.8km	2021
Curlew <i>Numenius arquata</i>	5	0.8km	2020
Dunnock <i>Prunella modularis</i>	10+	0.4km	2021
<u>Fieldfare <i>Turdus pilaris</i></u>	<u>10+</u>	<u>0.5km</u>	<u>2021</u>
<u>Firecrest <i>Regulus ignicapilla</i></u>	<u>8</u>	<u>0.5km</u>	<u>2018</u>
Great Black-backed Gull <i>Larus marinus</i>	5	0.8km	2021
Goldcrest <i>Regulus regulus</i>	10+	0.4km	2020
Herring Gull <i>Larus argentatus</i>	10+	0.4km	2021
House Sparrow <i>Passer domesticus</i>	10+	0.4km	2021
Kestrel <i>Falco tinnunculus</i>	5	2.0km	2020
<u>Kingfisher <i>Alcedo atthis</i></u>	<u>10+</u>	<u>0.8km</u>	<u>2021</u>
Lapwing <i>Vanellus vanellus</i>	6	0.8km	2020
Lesser Black-backed Gull <i>Larus fuscus</i>	10+	0.4km	2021
Lesser Spotted Woodpecker <i>Dryobates minor</i>	1	0.5km	2007
Linnet <i>Linaria cannabina</i>	10+	0.4km	2019
Long-tailed Tit <i>Aegithalos caudatus</i>	10+	0.4km	2021
Mallard <i>Anas platyrhynchos</i>	10+	0.4km	2021
Marsh Tit <i>Poecile palustris</i>	7	0.8km	2018
Meadow Pipit <i>Anthus pratensis</i>	10+	0.4km	2019
Mistle Thrush <i>Turdus viscivorus</i>	10+	0.4km	2021



Species	No. of Records	Distance of Nearest Record	Year of Most Recent Record
Oystercatcher <i>Haematopus ostralegus</i>	2	0.8km	2018
Peregrine <i>Falco peregrinus</i>	<u>5</u>	<u>1.4km</u>	<u>2018</u>
Red Kite <i>Milvus milvus</i>	4	<u>0.5km</u>	<u>2021</u>
Redshank <i>Tringa totanus</i>	10+	0.8km	2021
Redwing <i>Turdus iliacus</i>	<u>10+</u>	<u>0.4km</u>	<u>2021</u>
Reed Bunting <i>Emberiza schoeniclus</i>	10+	0.8km	2017
Skylark <i>Alauda arvensis</i>	10+	0.4km	2018
Snipe <i>Gallinago gallinago</i>	3	0.8km	2021
Song Thrush <i>Turdus philomelos</i>	10+	0.5km	2021
Starling <i>Sturnus vulgaris</i>	10+	0.4km	2021
Whimbrel <i>Numenius phaeopus</i>	<u>5</u>	<u>1.1km</u>	<u>2018</u>
Woodcock <i>Scolopax rusticola</i>	10	0.4km	2021
Yellowhammer <i>Emberiza citrinella</i>	10+	0.4km	2021

3.2 Field Survey Results

- 3.2.1 The results of the field surveys are discussed in the paragraphs below for each species in turn, with species organised by sub-heading according to their habitat associations, further subdivided by their conservation status. A summary of the notable species recorded during the surveys is shown in **Table 4** overleaf, which gives the number individuals of each species recorded at the Site per visit, as well as the likely breeding status of this species within the Site.
- 3.2.2 **Table 5** shows a list of the additional non-notable species recorded by the surveys.
- 3.2.3 The conservation status of each species given in these tables is denoted according to the abbreviations given in **Table 3** below.

Table 3: Key to Conservation Status Abbreviations

Abbreviation	Meaning
S.7	Section 7 species under the Environment (Wales) Act 2016
Sch.1	Schedule 1 species under the Wildlife & Countryside Act 1981 (as amended)
	'Red listed' species according to BTO/RSPB Birds of Conservation Concern 5 (2021)
	'Amber listed' species according to BTO/RSPB Birds of Conservation Concern 5 (2021)
	'Green listed' species according to BTO/RSPB Birds of Conservation Concern 5 (2021)
LBAP	Listed under the Pembrokeshire Local Biodiversity Action Plan

Results Summary

- 3.2.4 Across the Site, a total of 59 species were recorded. Of these, 32 were species of conservation concern/notable species, comprising 11 red-listed and 21 amber-listed species (national status).
- 3.2.5 Of the red and amber-listed species, ten were also 'Species of Principal Importance' (SPIs). These species are listed under Section 7 of the Environment (Wales) Act 2016, and so are capable of being material considerations within the planning process.



- 3.2.6 Two species were listed under the Pembrokeshire LBAP: lesser black backed gull and green woodpecker.
- 3.2.7 In addition, two species were also listed under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended). This confers special protection when breeding. This designation is given to species which, in the main, are nationally scarce and therefore notable. However, both species in question (merlin and redwing) are thought to be late winter migrants and highly unlikely to be using the site for breeding purposes.
- 3.2.8 No chough (bird species for which Castlemartin Coast SPA is designated) were recorded during the surveys and the habitat suitability of the Site for this species is poor.

Table 4: Peak Count Per Survey Visit and Breeding Status of each Species (Peak Counts in Bold)

The following abbreviations refer to the breeding status of each species, in accordance with BTO good practice guidance⁸. Any variations from this approach are described separately within the relevant species section.

Co. – confirmed breeding (e.g. nest located, fledglings or adults seen with food for young); **Pr.** – probable breeding (e.g. pair observed in breeding season, repeated territorial behaviour, nest building etc.); **Po.** – possible breeding (e.g. evidence indicates bird species could be but less conclusive than that obtained for probable breeders); **Un.** (or non-breeding) – not considered likely to breed on Site (e.g. flying over, summer non-breeder).

Species	Conservation Status	Visit No.				Likely Breeding Status
		1	2	3	4	
Birds predominantly associated with open arable/grassland fields						
Meadow pipit	Amber	3	0	3	6	Pr.
Snipe	Amber	3	0	0	0	Un.
Skylark	S.41, Red	6	7	10	12	Pr.
Wheatear	Amber	0	1	0	0	Un.
Woodpigeon	Amber	4	8	15	9	Po.
Stock dove	Amber	1	1	0	0	Po.
House martin	Red	0	3	0	0	Un.
Herring gull	S.41, Red	1	1	3	11	Un.
Merlin	Sch.1, Red	0	0	1	0	Un.
Lapwing	S.41, Red	0	0	0	10	Un.
Lesser black-backed gull	Amber	0	0	0	1	Un.
Great black-backed gull	Amber	0	0	3	0	Un.
Birds predominantly associated with arable field margins and hedgerows/scrub boundaries						
Duncock	S.41, Amber	26	23	66	46	Pr.
Wren	Amber	22	24	57	72	Pr.
Bullfinch	S.41, Amber	4	4	5	2	Po.
Linnet	S.41, Red	8	26	33	47	Po.
House sparrow	S.41, Red	12	11	9	11	Po.
Sedge Warbler	Amber	3	0	0	0	Un.
Whitethroat	Amber	2	0	0	0	Po.
Yellowhammer	S.41, Red	0	0	1	1	Po.
Birds predominantly associated with ditches, waterbodies and associated habitats						
Mallard	Amber	1	2	1	2	Po.
Teal	Amber	0	0	3	0	Un.
Greylag goose	Amber	2	0	0	5	Un.
Grey wagtail	Amber	0	0	0	1	Un.

⁸ BTO (2022) *Breeding Evidence (Breeding Evidence Codes)* [online]. Available at: <https://www.bto.org/our-science/projects/birdatlas/methods/breeding-evidence>. [Accessed 16/09/2022]



Species	Conservation Status	Visit No.				Likely Breeding Status
		1	2	3	4	
Birds predominantly associated with mature trees/woodland						
Song thrush	S.41, Amber	4	4	13	16	Pr.
Mistle thrush	Red	1	0	0	1	Un.
Starling	S.41, Red	2	0	0	1	Un.
Greenfinch	Red	0	2	0	1	Un.
Willow warbler	Amber	1	0	0	8	Po.
Sparrowhawk	Amber	2	0	0	1	Un.
Redwing	Sch.1, Amber	0	0	1	0	Un.
Rook	Amber	45	0	8	65	Po.

Table 5: List of Additional Species (not of Conservation Concern) Recorded by All Surveys

Species		
Pied wagtail	Swallow	Collared dove
Robin	Goldfinch	Chaffinch
Blue tit	Great tit	Blackbird
Jackdaw	Chiffchaff	Carrion crow
Raven	Magpie	Blackcap
Grey heron	Buzzard	Jay
Long-tailed tit	Great spotted woodpecker	Feral pigeon
Garden warbler	Pheasant	Little grebe
Goldcrest	Green woodpecker	Canada goose

Distribution & Abundance by Habitat Type

3.2.9 The main habitats utilised by breeding birds across the Site were:

- Open, arable or grassland/pasture fields
- Arable field margins/ hedgerows and scrub
- Ditches, waterbodies and associated wetland habitats
- Mature trees and woodland

3.2.10 Species associated with each of these broad habitat types are discussed in turn in the text below. Field numbers are taken from the ES Chapter 3, Figure 3.1. Species recorded in low numbers on a limited number of survey visits and/or are considered unlikely to use the site significantly either for nesting or foraging are generally not discussed, as it is unlikely that the Site is of particular importance to these species.

3.2.11 Where data shows a species to have been consistently recorded rarely or in low numbers, this could imply that the Site is not important in terms of supporting a breeding population of this species. However, the detectability of such species should be considered, as some are elusive / cryptic and may have been missed by the survey. The rarity of certain species may also mean that recording a smaller number of individuals is significant.



Open, arable or grassland/pasture fields

Meadow pipit

- 3.2.12 Meadow pipit were recorded on three of the four visits and all within the southern half of the site (F9-F11) towards the centres of the arable/grassland fields. This species nests on the ground and requires long, unbroken sightlines for predator avoidance within low or medium-height vegetation. The numbers and persistence of meadow pipit suggest that a low number of territories (potentially between 1 and 3 – see **Figure 2** overleaf) may be held within the southernmost three fields each year.

Skylark

- 3.2.13 Another ground-nesting bird of open landscapes, skylark were recorded in low-to-moderate numbers on each survey visit, varying between counts of six and 12 individuals. The vast majority of skylark were observed within the southernmost field of the Site (F11), with observations of small numbers (fewer than four) from only three other fields (F4, F6 and F9) being made. From the pattern of observations made, it is considered that up to four skylark territories may be held within the southernmost field on Site each year (see **Figure 3**, below).

Woodpigeon

- 3.2.14 Woodpigeon were regularly recorded during the surveys, with observations being limited to causal foraging within the fields or fly-overs. Woodpigeon are likely to nest within trees at the edges of the site, particularly those within the central north-south woodland belt which separates the northern and southern parcels and within woodland adjacent to the north of the northern parcel and the south of the southern parcel.

Snipe, wheatear, stock dove, house martin, herring gull, merlin, lapwing, lesser black-backed gull and great black-backed gull

- 3.2.15 These species were all recorded in very low numbers and were not indicative of any significant usage or association with the Site.
- 3.2.16 Snipe were only recorded in low numbers on the first survey which indicated that they had still yet to move from wintering grounds to upland breeding sites.
- 3.2.17 Only one wheatear and merlin were recorded, presumably moving through the area on migration. House martin may occasionally forage over the fields but were not persistently recorded.
- 3.2.18 The lapwing and various gull observations were all of birds flying over the site and not interacting with it in any way.

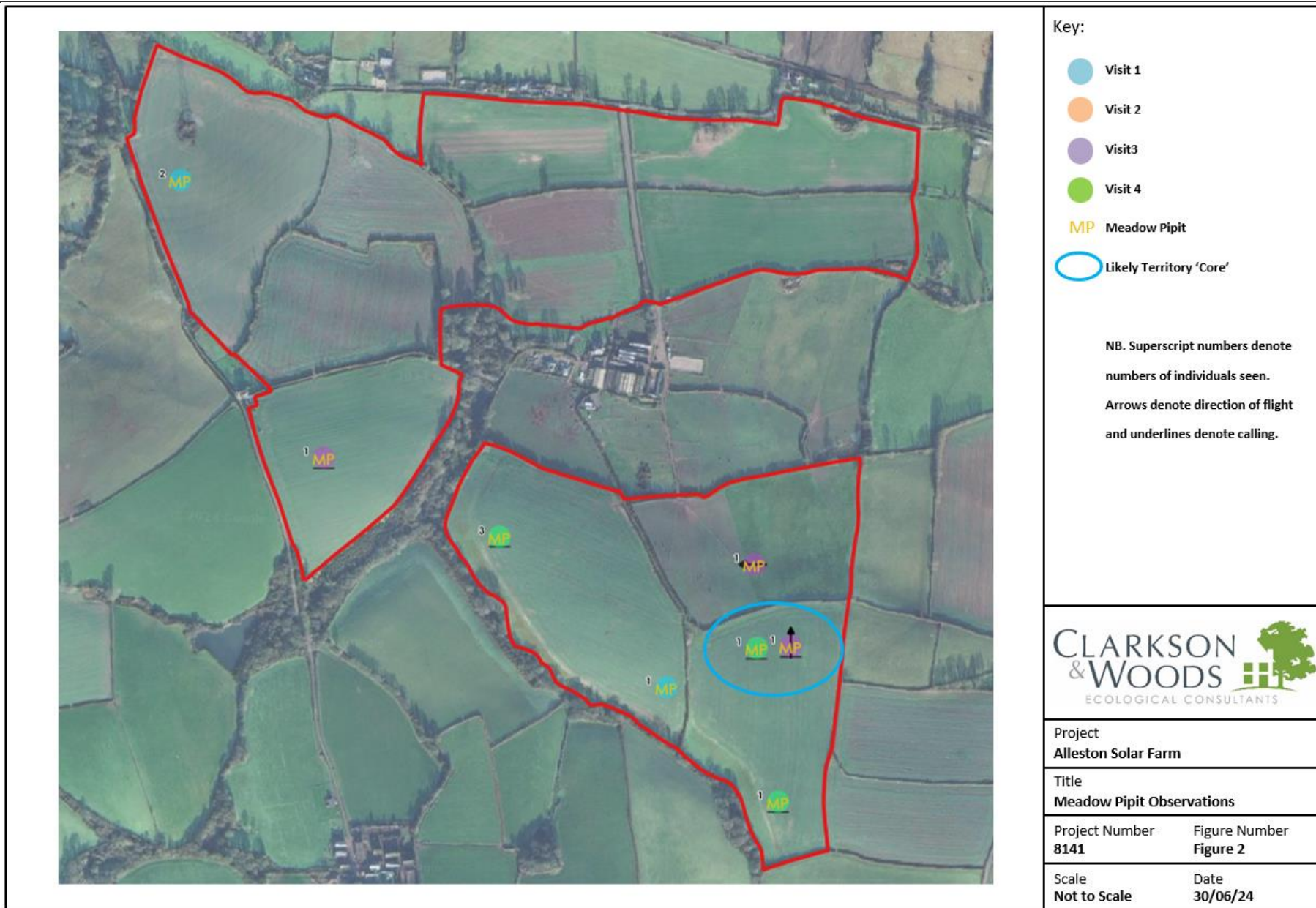


Figure 2: Meadow Pipit Observations

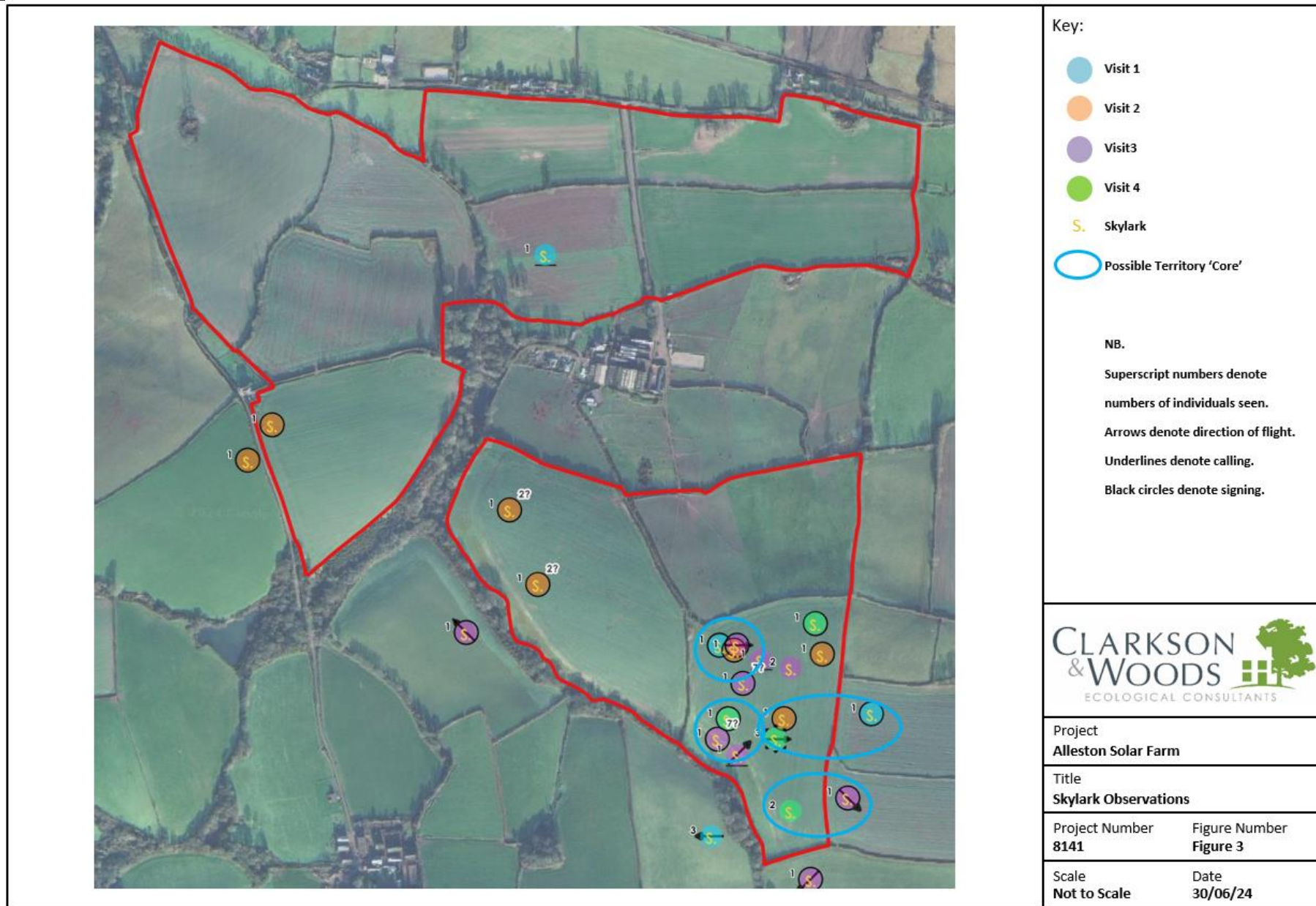


Figure 3: Skylark Observations



Arable field margins/ hedgerow and scrub boundaries

Dunnock

- 3.2.19 Dunnocks were recorded consistently over the visits and evenly across the Site's hedgerow and woodland edge network in strong numbers, where it is presumed that correspondingly numerous nests will be present. Dunnocks are unlikely to venture far into the arable and pasture fields for foraging, being more likely to confine themselves to the field margins and woodland stands.

Wren

- 3.2.20 Wrens were also recorded consistently and evenly within the hedgerow and woodland edge network and were not recorded venturing into the arable and pasture fields to any significant degree. A large number of wren nests and territories can be presumed within the hedgerow and woodland edge network.

Bullfinch

- 3.2.21 Low, but persistent numbers of bullfinch were recorded within the hedgerows, woodland edges and mature trees around the field perimeters, and it is likely up to three nesting pairs are present. As they are mostly reliant on tree buds and seeds, it is unlikely that this species would be found with the arable or pasture fields to any significant extent.

Linnet

- 3.2.22 Several small and medium sized flocks of linnet were recorded moving widely around the Site throughout the survey visits. It is likely that these represent family groups which may be nesting within the banks of scrub just out of the survey boundary, and within the hedgerow and woodland edge habitats lining the arable fields. Linnets will forage on spilt seeds and arable weed seed heads, therefore uncultivated field margins are almost as valuable as hedgerows. As these birds are highly mobile in habit, the numbers recorded may be slightly over-represented, but nevertheless it is likely that several nesting pairs are resident on Site each year (see **Figure 4**, overleaf).

House sparrow

- 3.2.23 Low numbers of house sparrow were consistently recorded and these were associated with the group of buildings just off-site to the north of the Site, as well as the farm buildings located in the centre of the Site. Presumably these buildings each host a colony of these species. House sparrows will forage widely among garden and hedgerow habitats, as well as arable field margins.

Sedge warbler, whitethroat and yellowhammer

- 3.2.24 These species were very infrequently recorded and, despite being associated with scrub and arable wayside habitats which are present on and adjacent to the Site, it is considered unlikely that the Site is of particular value to them.



Figure 4: Linnet Observations



Ditches, waterbodies and associated wetland habitats

Mallard, teal, greylag goose and grey wagtail

- 3.2.25 The waterbodies and watercourses which lie within the woodland belt separating the northern and southern survey areas are suitable for mallard, teal and grey wagtail. However, these lie outside of the development footprint and will be retained and protected throughout the Development. The habitats within the development boundary are not considered to be of particular value to these species. The observations of greylag goose were of individuals flying over the Site and therefore not interacting with it in any significant way.

Mature trees and woodland

Song thrush

- 3.2.26 Low to moderate numbers of song thrush were recorded during the surveys, almost entirely within the woodland belts around the Site. A small number of individuals were recorded within the more mature and taller hedgerows elsewhere within the Site. While some foraging for soil invertebrates within the grassland fields may take place (especially during winter), it is not considered that the Site is of particular importance to song thrush beyond the presence of the hedgerow and woodland edge network.

Rook

- 3.2.27 Medium-sized flocks of rook were sporadically recorded within the fields of southern parcel (mostly within F10) as well as within the trees and woodland at field edges. This species is particularly mobile and while the fields may represent a foraging resource, it is evident that the population moves around the local area and the Site can be expected to form only a small part of the overall local resource. Rooks are also likely to nest within the woodland and mature tree belts found at the periphery of the Site.

Mistle thrush, starling, redwing, greenfinch, willow warbler and sparrowhawk

- 3.2.28 These species were recorded both sporadically and in low numbers during the surveys, therefore the Site is considered to be of no significant importance to them.

Summary of Distribution of Key Species

- 3.2.29 Considering all species of conservation concern together, the key areas of the Site are discussed below.
- 3.2.30 The Site supported a moderately rich farmland and woodland species assemblage, most of which were more strongly associated with the hedgerow and woodland edge network. Generally, species were evenly distributed across the Site, although skylark, rook and meadow pipit in particular were more likely to be observed within the Site's southern land parcel. It is considered that the species assemblage, and the usage of the Site by it, is typical for a mixed farmland arrangement in the local area.
- 3.2.31 Species of conservation concern that were found interacting with the fields themselves were generally limited to skylark, meadow pipit and linnet, with linnet being recorded in substantial numbers.
- 3.2.32 The central pond within Alleston Woodland also supported mallard and teal.

Non-notable Species/ Species not of Conservation Concern

- 3.2.33 A moderately rich assemblage of non-notable farmland species was recorded during the surveys, as is considered typical for the setting. Again, species were most strongly associated with the boundary habitats rather than the open fields themselves, although a smaller number of species such as carrion crow, jackdaw and goldfinch were regularly observed within them.
- 3.2.34 Species such as green woodpecker, great spotted woodpecker, jay, blackcap, chiffchaff, willow warbler and goldcrest all indicate a healthy bird assemblage associated with the woodland habitats.
- 3.2.35 The presence of grey heron and little grebe also indicate that the on- and off-Site wetland habitats are of value to several species.



Overview of Potential Impacts from Development

- 3.2.36 The species considered to be the at most risk of impacts are those associated with open habitats and which typically require long, unbroken sightlines for predator avoidance while breeding. In the case of the Site, skylark and meadow pipit, of which a small number of territories are present, are considered the most at risk of impacts. Similarly, those species which rely on arable and pasture habitats for foraging stand to be affected to a reduced degree, including linnets and various corvid and thrush species. Construction of the solar arrays will result in the loss of open sightlines and the cessation of arable cultivation and pasture management, which may result in the exclusion of species with such dependencies.
- 3.2.37 The installation of arrays is expected to have limited impact on boundary habitats, waterbodies and woodland, which are expected to be retained almost in their entirety. As such, species associated with these habitats are at low risk of impacts, but it is understood that a small number of new gaps in existing hedgerows will be required to facilitate construction access and operational management. While the quantity of habitat loss is very small, direct impacts (killing and injury) during construction activities will need to be appropriately avoided and mitigated for.



4 ECOLOGICAL EVALUATION

- 4.1.1 This section provides an analysis of the value of ecological features (in this case breeding birds) identified as occurring within or in proximity of the Site. The valuation of the feature reflects the rarity and conservation status of each species as well as its relative abundance and activity levels on Site.
- 4.1.2 **Table 6** below provides the status of each notable bird species recorded and also the importance of the Site to each species based on the combined survey results.
- 4.1.3 The County status is based on information provided by the 2023 Pembrokeshire Bird List (Pembrokeshire Bird Group).

Table 6: Ecological Evaluation

Species	Conservation Status	County status	Abundance and Distribution within the Site	Ecological Importance
Birds predominantly associated with open arable/grassland fields				
Meadow pipit	Amber	Common resident, passage migrant & winter visitor	Regularly recorded in low numbers in south of the site. 1 to 3 territories present, potentially.	Local
Snipe	Amber	Common passage migrant & winter visitor	Recorded only once in low numbers. Presumed winter migrant.	Site
Skylark	S.41, Red	Scarce breeder, common winter visitor & passage migrant	Low-to-moderate numbers recorded, mainly in the south of the Site. Up to four territories potentially present.	Local
Wheatear	Amber	Passage migrant	Recorded once moving through site.	Site
Woodpigeon	Amber	Common resident, passage migrant & winter visitor	Consistently recorded in low numbers.	Site
Stock dove	Amber	Common resident	Two individuals recorded once each.	Site
House martin	Red	Breeding summer visitor and passage migrant	Three individuals recorded once	Site
Herring gull	S.41, Red	Common passage migrant & winter visitor	Regularly recorded in low numbers.	Site
Merlin	Sch.1, Red	Winter visitor	One individual recorded once, presumably moving through.	Site
Lapwing	S.41, Red	Breeding resident and winter visitor	Ten individuals observed flying over once.	Site
Lesser black-backed gull	Amber	Breeding summer visitor and passage migrant	One individual seen once.	Site
Great black-backed gull	Amber	Common passage migrant & winter visitor	Three individuals seen once.	Site



Birds predominantly associated with arable field margins and hedgerows/scrub boundaries				
Dunnock	S.7, Amber	Common resident	Present in strong numbers within hedgerow network.	Local
Wren	Amber	Common resident	Present in strong numbers within hedgerow network.	Local
Bullfinch	S.7, Amber	Common resident	Low numbers within hedgerows and trees.	Site
Linnet	S.7, Red	Common resident & passage migrant	Regular, mobile flocks. Several pairs likely breeding within hedgerows and scrub nearby. Forages on Site.	Local
House Sparrow	S.7, Red	Common resident	Low numbers breeding off Site / outside of development footprint	Site
Sedge Warbler	Amber	Breeding summer visitor and passage migrant	Three individuals seen once.	Site
Whitethroat	Amber	Breeding summer visitor and passage migrant	Two individuals seen once.	Site
Yellowhammer	S.7, Red	Uncommon & declining resident	Two individuals seen once each.	Site
Birds predominantly associated with ditches, waterbodies and associated wetland habitats				
Mallard	Amber	Common resident	Regularly recorded low numbers in ponds and ditches.	Site
Teal	Amber	Common winter visitor – occasional breeder	Recorded on one occasion and in low numbers, but outside development footprint.	Site
Greylag goose	Amber	Feral	Small numbers flying over	Site
Grey wagtail	Amber	Common breeding resident	One individual seen once.	Site
Birds predominantly associated with mature trees/woodland				
Song thrush	S.41, Amber	Common resident, passage migrant & winter visitor	Consistently recorded in low to moderate numbers in boundary habitats. Some foraging in pasture grassland.	Local
Mistle thrush	Red	Common resident & passage migrant	Two individuals seen once each.	Site
Starling	S.41, Red	Common winter visitor & migrant. Scarce breeding resident	Two individuals seen once.	Site
Greenfinch	Red	Uncommon resident & passage migrant	Low numbers recorded twice only.	Site
Willow warbler	Amber	Common breeding summer visitor and passage migrant	Low numbers recorded twice only.	Site
Sparrowhawk	Amber	Common breeding resident	Up to two recorded twice.	Site



Redwing	Sch.1, Amber	Common passage migrant & winter visitor	One individual seen once.	Site
Rook	Amber	Scarce resident	Moderate flocks observed sporadically, mainly in the south of the Site.	Local



5 SUMMARY

- 5.1.1 In total, 59 bird species were recorded across the Site by the surveys. Of these, 32 were species of conservation concern / notable species, comprising 11 red-listed and 21 amber-listed species; with ten also being Species of Principal Importance. In addition, two species were listed under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), and two species were listed under the Pembrokeshire LBAP. This was considered to be a moderately rich species assemblage, but is likely to be representative of the local area which is characterised by mixed farming and an abundance of hedgerows, woodland and scrub within the landscape.
- 5.1.2 The species considered to be at most risk of impacts are those associated with open habitats and which require open sightlines, or which have a strong dependency on the provision and management of arable crops (including arable field margins). Construction of the solar arrays will result in the loss of open sightlines and the cessation of arable management, which may result in the exclusion of species with such dependencies. This includes meadow pipit and skylark, predominantly. The installation of arrays should have limited impacts on boundary habitats, waterbodies and woodland, which will be retained, save for a small number of newly proposed access gaps to be created in hedgerows to facilitate construction and operational maintenance. The risk of killing and injury remains during these activities and avoidance and mitigation procedures should be followed.
- 5.1.3 Other species like linnets, rooks and yellowhammers may also have marginally reduced foraging opportunities, at least temporarily, although are expected to utilise the newly created grassland habitats amongst and surrounding the arrays successfully.
- 5.1.4 Taking into consideration the relative abundance of the recorded species as well as their conservation status, the Site was considered to be of **Local importance** to skylark, meadow pipit, dunnock, wren, linnets, song thrush and rook. The habitats on Site are considered to be of **Site importance** to all other bird species.
- 5.1.5 This information is intended to inform the Environmental Statement to be prepared in support of the development. The Environmental Statement will contain a full discussion of avoidance, mitigation and compensation measures, together with a complete ecological impact assessment.