
Brogan Solar Farm

on behalf of Fuse Renewables Ltd.

Appendix 2: Breeding Bird Survey Report



Document Control				
Project Name:		Brogan Solar Farm		
Project Number:		Pegas-385-003890		
Report Title:		Appendix 2: Breeding Bird Survey Report		
Issue	Date	Notes	Prepared	Reviewed
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1 INTRODUCTION

1.1 Project background

- 1.1.1 Avian Ecology Limited (AEL) was commissioned by Pegasus Planning Group, on behalf of their client Fuse Renewables Limited to undertake an Ecological Assessment in relation to a proposed solar farm and associated infrastructure (the 'Proposed Development') on land located to the east of the B4393 near Llanfyllin, North Wales, SY22 5LQ; central Ordnance Survey (OS) grid reference: SJ 17662 18915 (hereafter referred to as the 'Site') as illustrated on **Figure 2.1**.
- 1.1.2 This report provides detailed survey methods and results of breeding bird surveys undertaken between April and July 2025.
- 1.1.3 The objectives of this report are to:
- provide baseline information on breeding ornithological features within the Site and relevant survey buffer; and,
 - identify the presence of any notable breeding bird species within the Site and relevant survey buffer and which may require particular consideration in any subsequent assessment.
- 1.1.4 Only common bird species names are referred to within the main text of this report. A summary of all bird species recorded during the surveys or referenced within the text are presented with their scientific names and conservation status in **Annex 2.1**.

1.2 Site overview

- 1.2.1 The Proposed Development is predominantly located within a rural landscape, on agricultural land located to the east of the B493 and located c. 2.5 km east of the town of Llanfyllin in North Wales. The Site is c. 12.1 hectares (ha) in extent.

1.3 Quality assurance and environmental management

- 1.3.1 This report has been subject to AELs internal quality assurance checks in line with ISO9001:2015.
- 1.3.2 All surveys and assessments were undertaken by suitably experienced ecologists as per the Chartered Institute of Ecology and Environmental Management (CIEEM) competency framework (CIEEM, 2024¹) and have been undertaken with reference to the recommendations given in BS 42020:2013 Biodiversity: Code of practice for planning and development (British Standards Institute, 2013²).
- 1.3.3 As per the advice note from CIEEM (2019³) On the Lifespan of Ecological Reports & Surveys; the findings presented in this report are considered valid for up to 18 months from the date of survey, providing there is no significant change to the baseline conditions at the Site.
- 1.3.4 Following this time period, the survey data should be reviewed and, if appropriate, updated to ensure baseline conditions remain valid.

¹ Chartered Institute of Ecology and Environmental Management (2024). *Competency Framework*. [Competency-Framework-2024-V7-Web.pdf](#) (Accessed: 8th January 2026).

² British Standards Institute (2013). *BS 42020:2013 Biodiversity: Code of Practice for Planning and Development*.

³ Chartered Institute of Ecology and Environmental Management (2019). *Advice Note on the Lifespan of Ecological Reports and Surveys* - [Advice-Note.pdf](#) (Accessed: 8th January 2026).

2 METHODOLOGY

2.1 Breeding bird survey

- 2.1.1 Breeding bird surveys were undertaken between April and July 2025, based on guidance from Bird Survey & Assessment Steering Group (2025)⁴. The survey comprised six survey visits undertaken at least ten days apart at the Site, comprising five dawn and one dusk survey.
- 2.1.2 Dawn surveys commenced within 30 minutes before or after sunrise; the dusk visit commenced in the evening (i.e. during the last few hours of the day until at least one hour past sunset) to pick up species not readily recorded by conventional surveys early in the morning (e.g. crepuscular species). All surveys were carried out in optimal conditions for survey (avoiding heavy rain and strong winds). Survey effort is summarised in **Table 2.1**, with full weather conditions presented in **Annex 2.2**.

Table 2.1: Breeding bird survey effort.

Survey Visit	Date	Start Time (24hr)	End Time (24hrs)	Survey Type
1	13/04/2025	06:30	08:30	Dawn
2	25/04/2025	06:00	08:00	Dawn
3	15/05/2025	05:06	07:31	Dawn
4	03/06/2025	05:06	08:38	Dawn
5	23/06/2025	19:25	22:35	Dusk
6	15/07/2025	05:02	07:49	Dawn

- 2.1.3 The breeding bird survey area (henceforth 'BBS Area') is illustrated in **Figure 2.1: Breeding Bird Survey Plan** and comprised the Site, as well as a surrounding 100 m Site buffer. Coverage of the 100 m buffer was observed from within the Site boundary.
- 2.1.4 During the surveys, all 'Priority Species' (see 2.1.7 below) were recorded on suitably scaled field maps using standard British Trust for Ornithology (BTO) species codes⁵ and behaviour notations (such as singing, carrying food, active nest). In line with the survey objectives and the scale of the assessment, a broad territory mapping approach was adopted. This approach treats each observation of a species exhibiting breeding or territorial behaviour such as singing, display, or evidence of breeding activity, as a single territory or breeding pair within the mapped area. Where multiple observations or registrations of the same species occurred in close proximity and likely referred to the same pair, these were classed as a single territory to avoid overestimating breeding pairs.
- 2.1.5 The likelihood of breeding territories was determined using standard criteria used to classify observations as indicative of possible, probable, or confirmed breeding (see **Table 2.2**). However, territory totals represent broad estimates rather than intensive territory mapping, in line with good practice for site-wide breeding bird surveys (following breeding bird survey methods described in Gilbert *et al.*, 1998⁶).

⁴ Bird Survey & Assessment Steering Group. (2025). Bird Survey Guidelines for assessing ecological impacts <https://birdsurveyguidelines.org> (Accessed: 8th January 2026).

⁵ https://www.bto.org/sites/default/files/u10/downloads/taking-part/species_codes.pdf (Accessed: 8th January 2026).

⁶ Gilbert, G., Gibbons, D.W., & Evans, J. (1998) *Bird Monitoring Methods: A Manual of Techniques for UK Key Species*. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.

Table 2.2: Criteria for Breeding Evidence (adapted from Sharrock, 1974⁷; Gillings et al., 2013⁸)

Possible	Probable	Confirmed
- Observed in suitable nesting habitat. - Singing male in suitable breeding habitat.	- Pair observed in suitable nesting habitat. - Permanent territory presumed through registration of territorial behaviour (song etc.) from many individuals on one day. - Courtship and display. - Visiting probable nest site. - Agitated behaviour or calls suggesting probable presence of nest or young nearby. - Nest building or excavation.	- Distraction display or injury feigning. - Used nest or eggshells. - Recently fledged young. - Adults entering or leaving nest site or adults seen incubating. - Adult carrying faecal sac or food for young. - Nest containing eggs. - Nest with young.

2.1.6 ‘Priority Species’ relevant to the Proposed Development that were recorded and mapped during the breeding bird surveys, comprised Birds of Conservation Concern Wales (BoCCW) Amber and Red List Species (Johnstone *et al.*, 2021⁹), birds listed under Section 7 of the Environment (Wales) Act 2016¹⁰, and Annex 1¹¹/Schedule 1¹² species.

2.1.7 Presence of common and widespread species that are not classified as Priority Species (i.e. BoCCW Green List Species and non-native species), hereafter referred to as “Secondary Species” were also recorded for each survey visit; however, locations and activities were not mapped with precedence being given to identify Priority Species.

2.1.8 Observations included species potentially breeding in the wider area, even where habitats on the Site were not suitable for those particular species but may be beneficial to their overall breeding success. Additionally, non-breeding birds visiting the Site (e.g., gulls foraging in juvenile plumage) and birds flying over the Site were also recorded.

2.1.9 Field surveys were undertaken by G. Hogan and M. Payne, both suitably experienced ornithologists.

2.2 Limitations

2.2.1 There are no identified significant limitations in the survey dataset or methods that would affect the robustness of the assessment of potential impacts on breeding bird species.

⁷ Sharrock, J.T.R. (1974) ‘Minutes of the second meeting of the European Ornithological Atlas Committee’, in: Pinowski, J. and Williamson, K. (eds). Proceedings of the Fourth Meeting of the International Bird Census Committee and the Second Meeting of the European Ornithological Atlas Committee, Acta Ornithologica, 14(6), pp. 261–268.

⁸ Gillings, S., Balmer, D. E., Caffrey, B. J. and Swann, B. (2013) ‘Survey methods and data sources’, in: Balmer, D. E., Gillings, S., Caffrey, B. J., Swann, R. L., Downie, I. S. & Fuller, R. J. (eds), Bird Atlas 2007–11: The Breeding and Wintering Birds of Britain and Ireland. Thetford, UK: BTO Books. pp. 34–45

⁹ Johnstone, I.G., Hughes, J., Balmer, D.E., Brenchley, A., Facey, R.J., Lindley, P.J., Noble, D.G. & Taylor, R.C. (2022). Birds of Conservation Concern Wales 4: the population status of birds in Wales. *Milvus* 2:1. Available online at https://birds.wales/wp-content/uploads/2023/12/Birds_of_Consevation_Concern_Wales_4_corrected_version_December_2023.pdf

¹⁰ <https://www.gov.wales/sites/default/files/publications/2023-01/list-living-organisms-principal-importance-purpose-maintaining-enhancing-biodiversity-wales.pdf> (Accessed: 8th December 2025)

¹¹ Annex 1 – species listed on Annex 1 of the EC Directive 2009/147/EC of the European Parliament on the conservation of wild birds. https://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm (Accessed: 8th December 2025)

¹² Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). <https://www.legislation.gov.uk/ukpga/1981/69/schedule/1> (Accessed: 8th December 2025)

- 2.2.2 The results in this report represent a snapshot of the 2025 breeding bird assemblage. As birds are highly mobile, the absence of a species during the survey does not confirm it will be absent in the future.
- 2.2.3 Breeding bird populations and territory distribution may also be influenced by wider ecological and land management factors beyond the scope of this survey, including predation pressure, variation in crop rotation and agricultural practices, localised habitat quality, annual changes to landscape structure, and broader bird movement patterns (not limited to). These factors can lead to natural fluctuations in breeding bird presence and abundance between years.

3 RESULTS

3.1 Breeding bird survey

3.1.1 The breeding bird assemblage recorded within the BBS Area was considered representative of the locale and the agricultural and field boundary habitats present.

3.1.2 A total of 42 bird species were recorded within the BBS Area, of which 28 are considered to be breeding within the BBS Area. Of these, ten of the breeding species are classed as Priority Species. Priority Species breeding within the Site itself included eight species as summarised in **Table 3.1** and illustrated on **Figure 2.2**. No breeding Priority Species recorded on-Site were ground-nesting species.

Priority Species

3.1.3 Priority Species recorded as breeding within the Site included one Red List species (goldcrest) and four Amber List species (magpie, mistle thrush, dunnock and chaffinch).

3.1.4 Two Priority Species recorded as breeding within the Site are listed as species of principal importance under Section 7 of the Environment (Wales) Act 2016 (song thrush and dunnock).

3.1.5 No species recorded breeding in the BBS Area were listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) or Annex 1 of the Directive 2009/147/EC (Birds Directive).

3.1.6 Three additional Priority Species that were identified in the wider survey 100 m buffer included green woodpecker, house sparrow and willow warbler.

3.1.7 Breeding territories of the six on-Site Priority Species were typically associated with vegetation along field boundaries, which principally comprised of field-margins, hedgerows and woodland within or directly adjacent to the Site. The estimated territories and reasoning for each species is summarised in **Table 3.1** below, with the estimated locations of these territories illustrated on **Figure 2.2: Breeding Bird Results**.

Table 3.1: Breeding bird territories for Priority Species recorded within the BBS Area.

Species	Total Estimated Territories within the Site	Total Estimated Territories within the 100 m Site buffer	Comments
Green woodpecker	0	1	Possible: individual heard singing during third survey visit from woodland to the west of the Site.
Magpie	1	1	Probable: calling birds and pairs observed in suitable habitat over several survey visits.
Willow warbler	0	2	Possible: two males observed singing from suitable habitat during first survey visit.
Goldcrest	1	0	Probable: male observed calling during third survey visit and a pair observed including a singing male in suitable habitat during sixth survey visit.
Song thrush	1	3	Probable/confirmed: males observed singing from suitable habitat across all survey visits and a family with juveniles observed during fifth survey visit.
Mistle thrush	1	0	Possible: adult bird observed in suitable habitat during fifth survey visit.
House sparrow	0	1	Possible: several adults observed calling from suitable habitat across multiple survey visits.
Dunnock	4	1	Probable: males observed singing and calling from the same locations in suitable habitat over multiple survey visits.

Chaffinch	1	3	Probable: males observed singing from suitable habitat over multiple survey visits.
Greenfinch	0	1	Possible: male observed singing over two survey visits.

Secondary Species

3.1.8 Common and widespread species (i.e. Secondary Species) that were recorded breeding within the BBS Area comprise the following species:

- Pheasant (2 possible territories);
- Stock dove (1 confirmed, 3 possible territories);
- Woodpigeon (4 probable, 2 possible territories);
- Great spotted woodpecker (1 possible territory);
- Jay (1 possible territory);
- Carrion crow (1 probable territory);
- Blue tit (3 confirmed, 3 probable territories);
- Great tit (3 confirmed territories);
- Long-tailed tit (1 confirmed territory);
- Chiffchaff (2 confirmed, 4 possible territories);
- Blackcap (3 probable territories);
- Lesser whitethroat (1 possible territory);
- Wren (7 probable territories);
- Nuthatch (1 possible territory);
- Blackbird (7 probable territories);
- Robin (1 confirmed, 5 probable territories);
- Redstart (1 possible territory); and,
- Goldfinch (3 probable, 1 possible territory).

Non-breeding species

3.1.9 During survey visits, observations of 14 other species were also made, however no breeding evidence was recorded within the Site¹³, species recorded comprise:

- Canada goose;
- Mute swan;
- Mallard;
- Goosander;
- Swift;
- Lesser black-backed gull;
- Grey heron;
- Red kite;
- Buzzard;
- Jackdaw;
- Raven;
- Swallow;

¹³ This was based on a number of factors including the number and gender of birds recorded (e.g., only one record of one female during the survey period), unsuitability of habitats on-Site for breeding of some species, and movement of birds from Site to a suspected nest site off-Site.

- Pied wagtail; and,

- Crossbill.

3.1.10 Of these, red kite and crossbill are both listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), with red kite also listed under Annex 1 of the Directive 2009/147/EC (Birds Directive).

4 SUMMARY

- 4.1.1 Six breeding bird surveys were conducted between April and July 2025.
- 4.1.2 A total of 42 bird species were recorded within the BBS Area, of which 28 were considered to be breeding. Of these, six breeding species are classed as Priority Species with territories within the Site. Three additional Priority Species were recorded within the 100 m Site buffer.
- 4.1.3 No ground-nesting Priority Species were identified breeding within the Site.
- 4.1.4 No species recorded as breeding were listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) or Annex 1 of the Directive 2009/147/EC (Birds Directive).
- 4.1.5 Territories of the six breeding non-ground nesting Priority Species were typically associated with vegetation along field boundaries, which principally comprised of hedgerows, treelines and woodland habitats within or directly adjacent to the Site.
- 4.1.6 The breeding bird assemblage recorded within the BBS Area was considered representative of the local area and of the habitats present, including arable land, field boundary hedgerows, and areas of grassland.

Figure 2.1: Breeding Bird Survey Plan

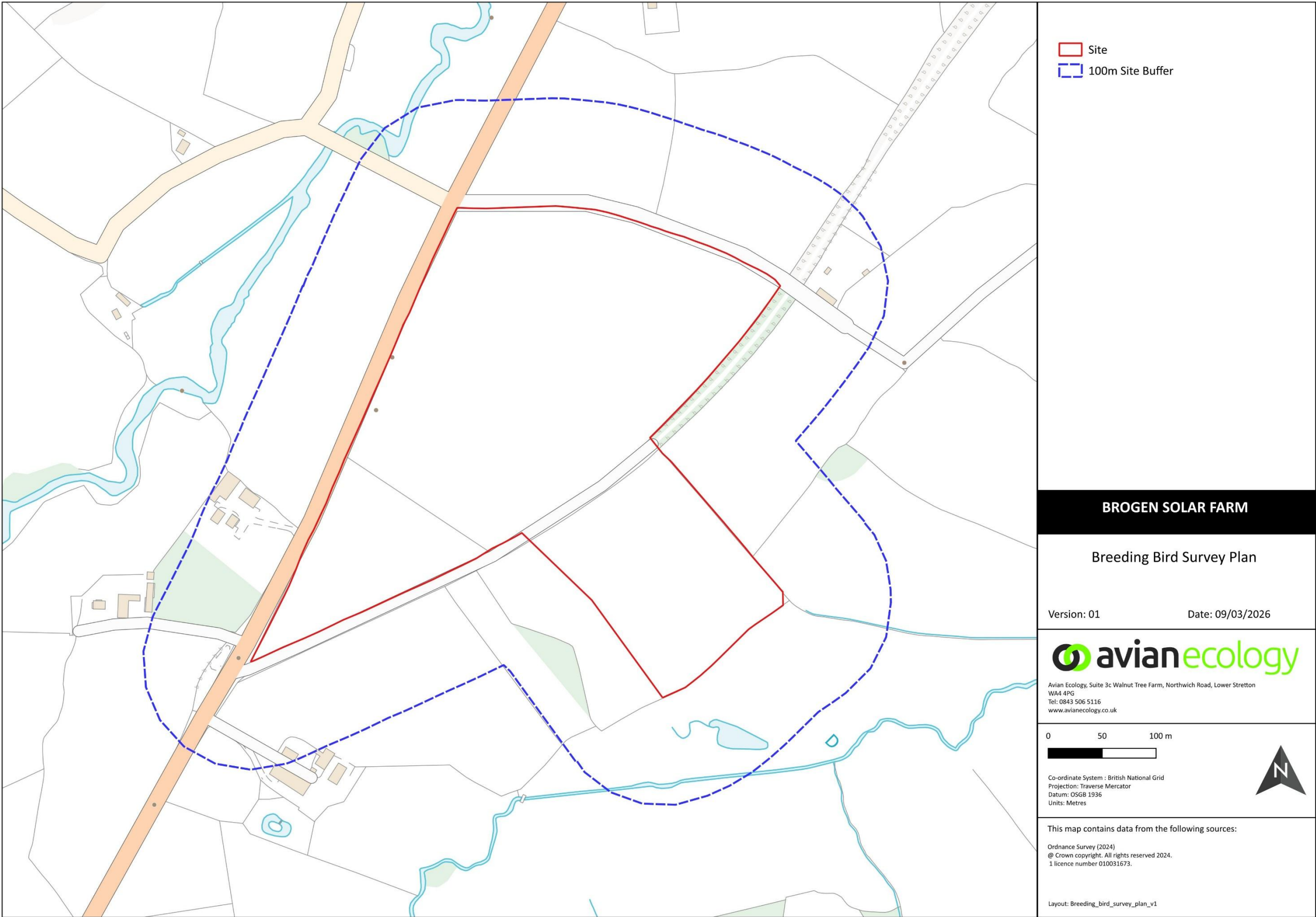
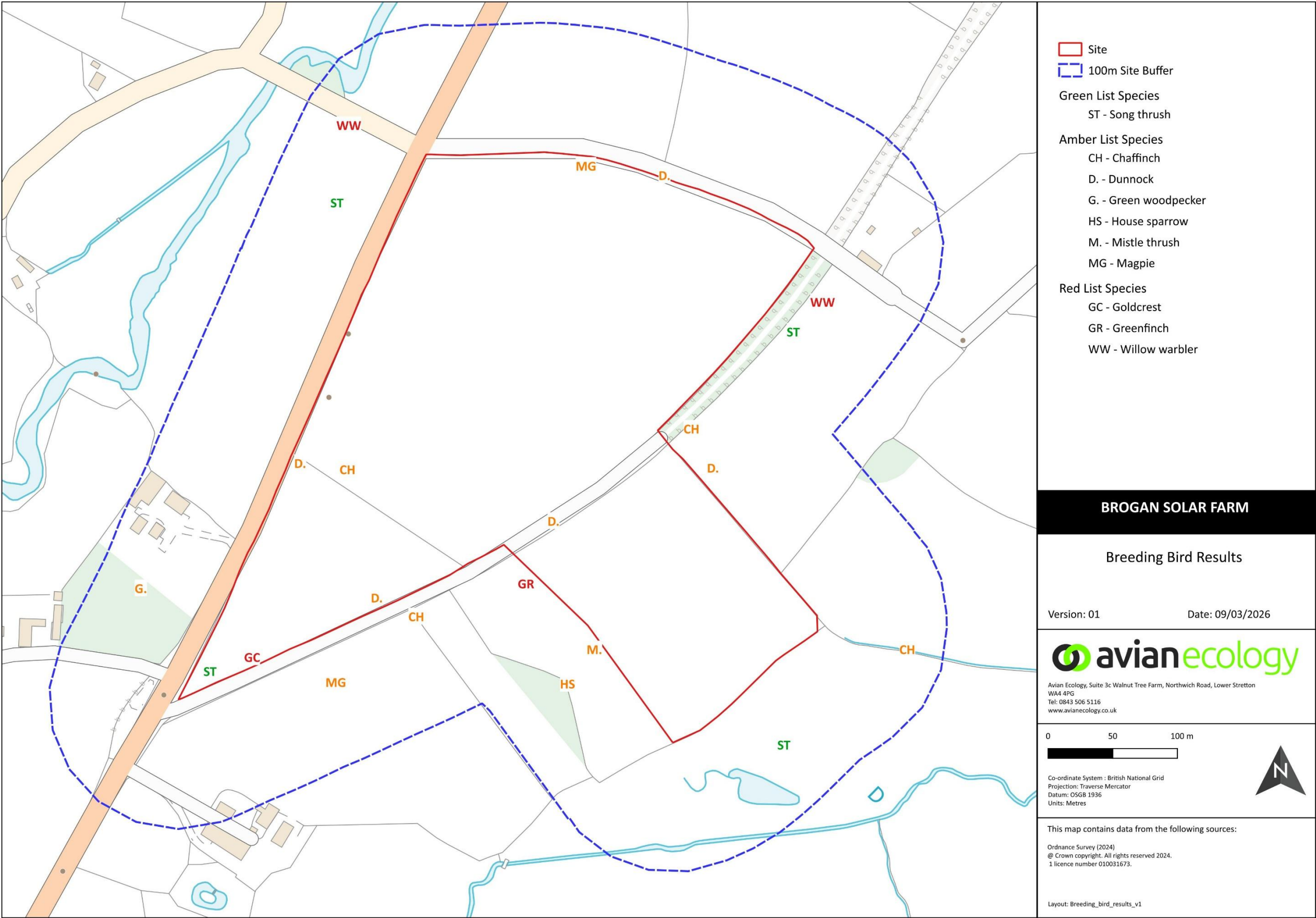


Figure 2.2: Breeding Bird Results



Annex 2.1: Bird Species Summary

Table A2.1 provides a list of bird species included in the breeding bird survey report. Both common and species names are presented along with a summary of each species conservation status using the following abbreviations:

- Ann1 – European Birds Directive Annex I species;
- Sch1.1/1.1A/A1/1.2 – Schedule 1 part 1, 1 part 1A, A1 or 1 part 2 of the Wildlife and Countryside Act 1981 (as amended);
- Green/Amber/Red – Birds of Conservation Concern Wales as listed by leading bird conservation organisations in Wales, including the RSPB and BTO. Red and Amber categories are given (Johnstone *et al.*, 2022); and,
- Sec7 – species listed on Section 7 of the Environment (Wales) Act 2016 (Species of principle importance for the purpose of maintaining and enhancing biodiversity in relation to Wales).

Table A2.1: Summary of bird species.

Common name	Species name	Conservation status
Canada goose	<i>Branta canadensis</i>	-
Mute swan	<i>Cygnus olor</i>	Green
Mallard	<i>Anas platyrhynchos</i>	Green
Goosander	<i>Mergus merganser</i>	Green
Pheasant	<i>Phasianus colchicus</i>	-
Swift	<i>Apus apus</i>	Red
Stock dove	<i>Columba oenas</i>	Green
Woodpigeon	<i>Columba palumbus</i>	Green
Lesser black-backed gull	<i>Larus fuscus</i>	Red
Grey heron	<i>Ardea cinerea</i>	Amber
Red kite	<i>Milvus milvus</i>	Green; Sch1.1 & 1A; Ann1
Buzzard	<i>Buteo buteo</i>	Green
Great spotted woodpecker	<i>Dendrocopos major</i>	Green
Green woodpecker	<i>Picus viridis</i>	Amber
Jay	<i>Garrulus glandarius</i>	Green
Magpie	<i>Pica pica</i>	Amber
Jackdaw	<i>Coloeus monedula</i>	Green
Carriion crow	<i>Corvus corone</i>	Green
Raven	<i>Corvus corax</i>	Green
Blue tit	<i>Cyanistes caeruleus</i>	Green
Great tit	<i>Parus major</i>	Green
Swallow	<i>Hirundo rustica</i>	Green
Long-tailed tit	<i>Aegithalos caudatus</i>	Green
Willow warbler	<i>Phylloscopus trochilus</i>	Red
Chiffchaff	<i>Phylloscopus collybita</i>	Green
Blackcap	<i>Sylvia atricapilla</i>	Green
Lesser whitethroat	<i>Curruca curruca</i>	Green
Goldcrest	<i>Regulus regulus</i>	Red
Wren	<i>Troglodytes troglodytes</i>	Green
Nuthatch	<i>Sitta europaea</i>	Green
Song thrush	<i>Turdus philomelos</i>	Green; Sec7

Common name	Species name	Conservation status
Mistle thrush	<i>Turdus viscivorus</i>	Amber
Blackbird	<i>Turdus merula</i>	Green
Robin	<i>Erithacus rubecula</i>	Green
Redstart	<i>Phoenicurus phoenicurus</i>	Green
House sparrow	<i>Passer domesticus</i>	Amber; Sec7
Dunnock	<i>Prunella modularis</i>	Amber; Sec7
Pied/white wagtail	<i>Motacilla alba</i>	Green
Chaffinch	<i>Fringilla coelebs</i>	Amber
Greenfinch	<i>Chloris chloris</i>	Red
Crossbill	<i>Loxia curvirostra</i>	Green; Sch1.1
Goldfinch	<i>Carduelis carduelis</i>	Green

Annex 2.2: Breeding Bird Survey Effort

Table A2.2 provides a summary of the survey effort carried out within the BBS Area during the 2025 breeding season, including survey timing, weather conditions and surveyor details. Weather conditions were recorded in line with the weather descriptions provided in **Table A2.3**.

Table A1.2: Breeding bird survey effort.

Visit	Date	Start Time (24 hrs)	End time (24 hrs)	Sunrise / Sunset (24 hrs)	Wind Speed	Wind Direction	Rain	Cloud Cover	Temperature (°C)	Surveyor
1	13/04/2025	06:30	08:30	06:17/20:08	4	W	0	6	8	M. Payne
2	25/04/2025	06:00	08:00	05:51/20:29	2	NE	0	5	3	M. Payne
3	15/05/2025	05:06	07:31	05:14/21:03	1	N	0	0	5	G. Hogan
4	03/06/2025	05:06	08:38	04:52/21:29	4	SW	3	8	12	G. Hogan
5	23/06/2025	19:25	22:35	04:48/21:41	4	SW	0	5	16	G. Hogan
6	15/07/2025	05:02	07:49	05:07/21:30	3	SSW	6	7	14	G. Hogan

Table A2.3: Weather Conditions Reference Table

Wind Speed		W-Direction	Rain		Cloud Cover		Cloud Height	
Calm	0	Use 16-point Compass	None	0	In eighths e.g.	3/8	<150m	0
Light air	1		Light Showers	1			150-500m	1
Light breeze	2	N	Heavy Showers	2			>500m	2
Gentle breeze	3	NE	Light rain	3				
Mod. breeze	4	ENE	Heavy rain	4				
Fresh breeze	5	E						
Strong breeze	6	Etc						
Near gale	7							
Gale	8							
Strong gale	9							
Storm	10							
Violent storm	11							