



Tween Bridge Solar Farm

A Nationally Significant Infrastructure Project in the Energy Sector

Preliminary Environmental Information Report

Technical Appendix 7.2 – Breeding Bird Survey Report

October 2023



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Tween Bridge Solar Farm

on behalf of Pegasus Planning Limited

Technical Appendix 7.2: Breeding Bird Survey Report



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1 INTRODUCTION

1.1 Project Background

- 1.1.1 Avian Ecology Limited (AEL) was commissioned by Pegasus Planning Limited in 2022 and 2023 to undertake a breeding bird survey.
- 1.1.2 The survey was undertaken in relation to The Scheme of a renewable energy generating project; consisting of ground-mounted solar photovoltaic ('PV') arrays, together with on-site energy storage and associated infrastructure. The Scheme is located on land to the east of the town of Thorne and to the west of the town of Crowle (the 'Draft Order Limits') as illustrated on **Figures 1 to 10**.
- 1.1.3 This report subsequently provides detailed survey methodology and results of the breeding bird survey undertaken in two survey periods from April 2022 to July 2022 and April 2023 to June 2023. This report has been prepared in order to provide baseline breeding bird information to inform an assessment of effects from The Scheme upon ornithological features, as presented within the Ecology and Nature Conservation Chapter 7 of the Preliminary Environmental Information Report (PEIR) and the corresponding chapter within the Environmental Statement (ES).
- 1.1.4 The objectives of this report are to:
- provide baseline information on breeding ornithological features within the Draft Order Limits; and,
 - identify the presence of notable breeding bird species within the Draft Order Limits.
- 1.1.5 Only common bird species names are referred to within the main text of this Appendix.
- 1.1.6 **Annex 1** provides a summary of all bird species recorded during survey, including both common and species names together with a summary of their conservation status as relevant.

1.2 Draft Order Limits Overview

- 1.2.1 The Draft Order Limits encompasses a series of connected agricultural land parcels, predominately composed of arable fields. Fields are bound by a series of watercourses as well as hedgerows, fences, and tree lines. A woodland copse is present within the Draft Order Limits as well as a number of ponds.
- 1.2.2 The Tween Bridge Wind Farm is located within the Draft Order Limits, and consists of twenty-two operational wind turbines. The Stainforth and Kneadby Canal also intersects the centre of the Draft Order Limits spanning from west to east.
- 1.2.3 In the wider context, the Draft Order Limits is surrounded by extensive areas of farmland and areas of woodland, with areas of lowland peat bog (Thorne & Hatfield Moors) located to the north and south of the Draft Order Limits.
- 1.2.4 A small 0.53ha of the Draft Order Limits falls within Thorne Moors Special Area of Conservation (SAC) however, this does not list breeding bird species as qualifying features. However, Thorne & Hatfield Moors Special Protection Area (SPA) and Thorne, Crowle & Goole Moors Site of Special Scientific Interest (SSSI) do fall within the Draft Order Limits and are designated for breeding birds including populations of nightjar.
- 1.2.5 **Table 1.1** below provides a summary of designated sites with breeding ornithological interests located within 5km of the Draft Order Limits boundary, and sites of the National Site Network (European sites) located within 10km of the Draft Order Limits boundary.

1.2.6 The Hatfield Moors Important Bird Area (IBA) also corresponds with the boundary of the Thorne and Hatfield Moors SPA, and the wider area also includes Laughton Forest IBA, Humber Estuary IBA and Lower Derwent Valley IBA, which are respectively located 10.43km south-east, 12.91km north-east and 16.31km north of the Draft Order Limits boundary.

Table 1.1: Ornithological designated sites for nature conservation (breeding qualifying interests).

LNR: Local Nature Reserve; NNR: National Nature Reserve; SSSI: Site of Special Scientific Interest; SPA: Special Protection Area.

Designation	Distance	Ornithological Interests
Thorne, Crowle and Goole Moors SSSI	Partially within the northern Draft Order Limits boundary	Breeding species include nightjar, nightingale, woodcock and whinchat. Teal, snipe, reed and grasshopper warblers are also associated with the site's heath and fen habitats. The breeding population of nightjars on the Moors is of national importance as its numbers regularly exceed 1% of the total British breeding population.
Thorne and Hatfield Moors SPA	Partially within the northern Draft Order Limits boundary and 100m south	Breeding qualifying features: European nightjar (breeding)
Humberhead Peatlands NNR	Directly adjacent to the northern Draft Order Limits boundary and 100m south	Breeding bird assemblage includes nightjar.
Hatfield Moors SSSI	100m south	The site supports a diverse breeding community of heathland birds, including nightjar. Nightingales also breed and three species of owl have been known to nest.
Buntings Wood Thorne LNR	1.75km west	A large number of breeding bird species.
Humber Estuary Ramsar	6.14km east	Species breeding at levels of national importance: Great bittern (breeding); Eurasian marsh harrier (breeding); Pied avocet (breeding); and, Little tern (breeding).
Humber Estuary SPA/SPA (Marine Components GB)	7.57km north-east	Breeding qualifying features: Great bittern (breeding); Eurasian marsh harrier (breeding); Pied avocet (breeding); and, Little tern (breeding).

2 METHODOLOGY

2022 Survey

- 2.1.1 A breeding bird survey was undertaken between April 2022 and July 2022, employing an adapted version of the British Trust for Ornithology (BTO) Common Bird Census (CBC) technique (Gilbert *et al.*, 1998¹) and comprising a series of three staggered survey visits undertaken at least seven days apart.
- 2.1.2 All survey visits were carried out from dawn and finished by 11:00hrs in conditions suitable for survey (avoiding heavy rain and strong winds). A summary of survey effort is presented in **Table 2.1** and detailed survey conditions are presented in **Annex 2**.
- 2.1.3 The survey area is illustrated in **Figure 1** and comprised a preliminary Draft Order Limits boundary and also a 100m buffer ('wider survey area') observed from the Draft Order Limits boundary to record the presence of species listed under Schedule 1 of the Wildlife & Countryside Act 1981² (as amended).
- 2.1.4 Due to the extent of the survey area, eight distinct areas (Areas 1 to 8 as shown on **Figure 1**) were surveyed over a number of consecutive days and analysed independently.
- 2.1.5 Results for all eight areas were then combined to provide a final count of species breeding within the Draft Order Limits and wider survey area (**Table 3.1**).
- 2.1.6 All breeding bird survey visits in 2022 were undertaken by a suitably competent and experienced ornithologist.
- 2.1.7 During survey all bird registrations were recorded on suitably scaled field maps using standard BTO species codes and behaviour notations (such as singing, carrying food, active nest). The approximate locations of bird territories within the Draft Order Limits were determined using standard territory mapping techniques to identify and isolate areas within which birds consistently displayed breeding behaviours (following Gilbert *et al.*, 1998).
- 2.1.1 For the purposes of this report, although the estimated number of breeding territories for all species is provided (**Table 3.1**) only the breeding territories of Notable Species are mapped and presented on **Figures 1 to 10**, given these are the most relevant species to the design and assessment of development proposals. Notable Species relevant to the proposed development include of Birds of Conservation Concern (BoCC Amber and Red List Species (Stanbury *et al.*, 2021³), Annex 1⁴ raptors and owls, Schedule 1⁵ species and Lincolnshire/Doncaster Biodiversity Action Plan species^{6,7}.
- 2.1.2 Observations of non-breeding birds just visiting the Draft Order Limits (e.g., gulls feeding in fields) and birds flying over the Draft Order Limits were also recorded.

Table 2.1: Breeding bird survey effort-2022.

¹ Gilbert, G., Gibbons, D.W & Evans, J. (1998) *Bird monitoring methods. A manual of techniques for key UK species*. RSPB, Sandy.

² Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

³ 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**, pp. 723-747. Available online at <https://britishbirds.co.uk/content/status-our-bird-populations>.

⁴ 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

⁵ <https://www.rspb.org.uk/birds-and-wildlife/advice/wildlife-and-the-law/wildlife-and-countryside-act/schedules/>

⁶ <http://www.southkesteven.gov.uk/CHttpHandler.ashx?id=7371&p=0>

⁷ <https://www.doncaster.gov.uk/services/environmental/doncaster-biodiversity-action-plan>

Survey Visit	Date	Start time (24hrs)	End time (24hrs)	Sunrise (24hrs)
1	26/04/2022 to 10/05/2022	06:00 to 08:40	08:30 to 11:00	05:12 to 05:40
2	17/05/2022 to 30/05/2022	05:00 to 05:15	10:00 to 10:30	04:44 to 05:00
3	07/06/2022 to 07/07/2022	05:00	09:00 to 10:30	04:34 to 04:45

2023 Survey

- 2.1.3 Following the completion of the 2022 breeding bird survey, alterations to the preliminary Draft Order Limits boundary were made to accommodate changes in scheme design.
- 2.1.4 Areas of the survey area that were not included in the 2022 survey (Area 1a, 2a, 4a, 6a, 7a and 9), as illustrated in **Figures 1 to 10**, were subsequently surveyed between April 2023 and June 2023.
- 2.1.5 Data from 2023 was collected using the same methods as in 2022. All survey visits were carried out from dawn and finished by 11:00hrs in conditions suitable for survey (avoiding heavy rain and strong winds). A summary of survey effort is presented in **Table 2.2** and detailed survey conditions are presented in **Annex 2**.
- 2.1.6 All breeding bird survey visits in 2023 were undertaken by a suitably competent and experienced ornithologist.
- 2.1.7 Results from 2023 for all additional areas were then combined with the data from 2022 to provide a final count of species breeding within the Draft Order Limits and wider survey area (**Table 3.1**).

Table 2.2: Breeding bird survey effort-2023.

Survey Visit	Date	Start time (24hrs)	End time (24hrs)	Sunrise (24hrs)
1	22/04/2023 to 05/05/2023	06:00 to 06:30	11:00	04:33 to 05:21
2	19/05/2023 to 23/05/2023	06:00 to 06:30	11:00	04:51 to 04:57
3	14/06/2023 to 17/06/2023	06:00 to 06:30	10:45 to 11:00	04:33

Limitations

- 2.1.8 A small area of the wider survey area (Area 8a), as illustrated in **Figure 9** was not directly accessed during survey visits. This area comprised a very small, section of agricultural field, and the survey area adopted provides extensive coverage of adjacent and comparable habitats within the remainder of the Draft Order Limits and within which infrastructure associated with the Proposed Development will be sited.
- 2.1.9 The breeding bird assemblage within non-surveyed parts of the Draft Order Limits would reasonably be expected to be very similar to that within the survey area, supporting a small number of additional pairs of species recorded.
- 2.1.10 No limitations to the survey dataset in informing a robust assessment of potential impacts upon breeding bird species are considered.

3 RESULTS

- 3.1.1 The breeding bird assemblage recorded within the survey area is considered representative of the locale and the agricultural and field boundary habitats present. A total of fifty-one species were recorded breeding within the survey area, which included twenty-nine Notable Species as summarised in **Table 3.1**.
- 3.1.2 Breeding evidence for twenty-seven Notable Species was recorded within the Draft Order Limits, which included:
- Eleven Red List species (grey partridge, cuckoo, lapwing, skylark, mistle thrush, tree sparrow, house sparrow, yellow wagtail, greenfinch, linnet and yellowhammer);
 - Fifteen Amber List species (greylag goose, mallard, stock dove, woodpigeon, moorhen, kestrel, rook, willow warbler, sedge warbler, whitethroat, wren, song thrush, dunnock, meadow pipit and reed bunting);
 - Twelve are listed as rare and most threatened species under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) (grey partridge, cuckoo, lapwing, skylark, song thrush, tree sparrow, house sparrow, dunnock, yellow wagtail, linnet, yellowhammer and reed bunting).
 - Thirteen species recorded listed under the Lincolnshire LBAP (grey partridge, cuckoo, lapwing, skylark, willow warbler, song thrush, tree sparrow, house sparrow, dunnock, yellow wagtail, linnet, yellowhammer and reed bunting); and,
 - Eight species listed under the Doncaster LBAP (grey partridge, lapwing skylark, song thrush, tree sparrow, yellow wagtail, linnet and reed bunting).
- 3.1.3 Two species recorded are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). This comprised hobby (one territory within the Draft Order Limits) and Cetti's warbler (one territory within the wider survey area and one territory outside the survey area that may utilise the wider survey area as part of a broader territory). The location of breeding Schedule 1 species territories are considered sensitive and have been excluded from **Figures 1 to 10**. Confidential breeding locations of Schedule 1 species are presented separately on **Figure 11**; the *Confidential Schedule 1 Species Survey Results* plan.
- 3.1.4 Two barn owl nest boxes were recorded within the wider survey area of Area 6, with individual barn owls recorded foraging within the Draft Order Limits in Area 8 over the course of surveys. Use (or signs of use) of the nest boxes was however, not observed during surveys, but it is possible birds may use the boxes for roosting or breeding in other years. Barn owl is listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and further listed as a local priority species under the Lincolnshire and Doncaster LBAPs.
- 3.1.5 No species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive) were recorded breeding within the study area.
- 3.1.6 No species comprising qualifying breeding species of above listed (see **Table 1.1**) Nature Network Sites (European sites) or national designated sites were recorded breeding within the study area.
- 3.1.7 Observations of marsh harrier, were made over the course of survey visits, including a pair flying together in April 2023. No further breeding evidence was however recorded, and the species did not breed within the Draft Order Limits in either survey year. Breeding pairs may however have been present within suitable habitats within the surrounding wider area, and sporadically using the Draft Order Limits as part of their wider territory e.g., for foraging.

- 3.1.8 Within the Draft Order Limits, the number of Notable Species breeding territories was typically below twenty territories, with higher numbers of territories recorded for skylark (250 territories), sedge warbler (23 territories), whitethroat (78 territories), wren (110 territories), dunnock (24 territories), yellow wagtail (91 territories), linnet (48 territories), yellowhammer (32 territories) and reed bunting (53 territories).
- 3.1.9 The number of skylark territories was calculated on the basis of singing males recorded during survey. Here a territory was confirmed if a singing male was recorded at least twice in the same approximate location over the three visits following BTO CBC techniques, in accordance with Gilbert *et al.* (1998). The size of the Draft Order Limits is 1567 ha, which with 250 estimated skylark territories, results on average to be 0.16 skylark territories per ha.
- 3.1.10 With the respective nine Areas combined from the 2022 and 2023 data, skylark densities within the Draft Order Limits were found to range between 0.06 territories per ha (Area 9) and 0.23 territories per ha (Area 7 and 7a). Area 7 and 7a was the only Area to have densities higher than the overall Draft Order Limits average of 0.16 territories per ha. Areas 1 to 8 were dominated by cereal crop fields, with Area 9 largely incorporating both cereal crop and non-cereal crop fields.
- 3.1.11 Skylark territories within the Draft Order Limits were predominately recorded in cereal crop habitat (c1c). Cereal crop fields were recorded to include 89.2% of skylark territories (223) within the Draft Order Limits, at average density of 0.19 territories per ha. With 6.8% of territories (17) recorded in areas not included in previous extended habitat surveys at the time of analysis (see Baseline Habitats and Desk Study Report), the only additional habitat recorded with skylark territories was non-cereal crop arable fields (c1d).
- 3.1.12 Non-cereal crop arable fields supported 4% of skylark territories (10) at an average density of 0.11 in the Draft Order Limits.
- 3.1.13 The cropping regime within the Draft Order Limits comprises winter wheat, maize, spring barley, oilseed rape, potatoes, beans, oats, linseed and sugar beet. Modified grassland pastures are either used for livestock grazing (horse or cattle), or for silage production. With the exception of skylark, breeding territories of Notable Species were typically associated with vegetation along field boundaries, which principally comprises of field-margins, ditches, hedgerows, scrub, tree-lines and woodland habitats within or adjacent to the Draft Order Limits.
- 3.1.14 Ground-nesting Notable Species breeding in open habitats within the Draft Order Limits comprised of greylag goose (1 territory), grey partridge (7 territories), lapwing (19 territories), skylark (250 territories), yellow wagtail (91 territories) and meadow pipit (14 territories). Greylag goose was identified in arable fields containing cereal crops in Area 6. Grey partridge was recorded in grassland field margins and tall ruderal field corners of cereal crop arable fields located in Areas 1, 1a, 3, 4 and 9. Lapwing was identified in Area 1 which primarily comprises cereal crop arable fields, with a single modified grassland pasture also present. Lapwing were also identified in Areas 7a and 9, which comprised of cereal crop and regions not included in habitat surveys. Skylark and yellow wagtail were recorded in all nine combined Areas within the Draft Order Limits and comprised of territories primarily within open arable fields that are also likely to utilise any neighbouring associated grassland field margins in their broader home range. Meadow pipit was identified in Areas 4, 6, 6a, 7, 7a and 9 largely in cereal crop fields and the associated grassland field margins.
- 3.1.15 All breeding species (or potential breeding species) recorded along with an estimated number of the breeding territories within the Draft Order Limits and wider survey area are detailed within **Table 3.1**. Those species in **bold** are considered Notable Species. With the exclusion of Schedule 1 species, the indicative locations of the territories of Notable Species are provided in **Figures 1 to 10**.

Table 3.1: Breeding bird territories recorded within the Draft Order Limits and wider survey area.

Species	Total Site Estimated Territories	Total Wider Survey Area Estimated Territories	Comments
Greylag Goose	1	0	Located in open field habitat within Area 6.
Mute Swan	1	0	Nest with eggs recorded in a ditch within the Draft Order Limits.
Mallard	11	2	Recorded in various pond and wet ditches throughout the study area.
Grey Partridge	7	1	Recorded in open field habitats throughout the study area.
Pheasant	6	0	Recorded throughout the Draft Order Limits.
Red-legged Partridge	2	0	Recorded in Draft Order Limits field margin habitat.
Cuckoo	5	3	Observed in field boundary tree and woodland habitats in Areas 1, 2, 5, 6, 7, 7a, 8 and 9.
Stock Dove	15	0	Recorded in field boundary habitats throughout the Draft Order Limits.
Woodpigeon	7	10	identified in field boundary habitats throughout the study area.
Collared Dove	7	0	Recorded in field boundary habitats throughout the Draft Order Limits.
Moorhen	1	0	Identified breeding behaviour in ditches within the Draft Order Limits
Coot	2	0	Surveyed in freshwater habitats in the Draft Order Limits.
Lapwing	19	0	Recorded pairs in open arable fields within Area 1, 7a and 9.
Lesser Black-backed Gull	0	1	Breeding on buildings located within the wider area of Area 7a.
Buzzard	3	2	Recorded in field boundary habitats throughout the study area.
Kestrel	1	0	Identified in field boundary trees in Area 3.
Hobby	1	0	Nest observed in an oak tree in Area 4 of the Draft Order Limits.
Magpie	12	0	Recorded in field boundary habitats throughout the Draft Order Limits.
Rook	20	0	Observed nesting in trees in Area 1.
Carrion Crow	38	0	Recorded in field boundary habitats throughout the Draft Order Limits.
Blue Tit	25	1	Observed singing throughout the Draft Order Limits in field boundary habitats.
Great Tit	4	1	Observed singing in field boundary habitats.
Skylark	250	24	Recorded singing throughout open habitat within the study area.
Swallow	10	1	Observed nesting in survey area buildings within Areas 1, 3 and 7a.
House Martin	0	2	Observed nesting in buildings in the wider survey area of Areas 1 and 3.
Cetti's Warbler	0	2	Recorded in the wider survey area of Area 1 and directly adjacent and/or potentially within the wider survey area of Area 8.
Long-tailed Tit	9	0	Recorded in field boundary habitats within the Draft Order Limits.

Species	Total Site Estimated Territories	Total Wider Survey Area Estimated Territories	Comments
Willow Warbler	6	11	Mostly identified in Area 6a, 7a and 8 with vocal recordings along field boundary habitats.
Chiffchaff	22	5	Identified singing throughout field boundary habitats.
Sedge Warbler	23	6	Identified singing throughout field boundary habitats, particularly near ponds and ditches.
Reed Warbler	2	0	Recorded singing in Area 9 and near a pond in Area 3.
Blackcap	24	4	Recorded in field boundary habitats throughout the Draft Order Limits.
Garden Warbler	1	2	Identified vocally in Area 7a and 8.
Whitethroat	78	9	Recorded singing and calling throughout field boundary habitats throughout the study area.
Wren	110	36	Recorded singing and calling throughout field boundary habitats throughout the study area.
Song Thrush	7	6	Observed singing in wooded habitats throughout the study area.
Mistle Thrush	1	0	Identified in on-Site tree line habitat in Area 1.
Blackbird	27	3	Recorded in field boundary habitats throughout the Draft Order Limits.
Robin	21	4	Recorded in field boundary habitats throughout the Draft Order Limits.
Tree Sparrow	9	0	Surveyed in Areas 1 and 4 in field boundary habitats.
House Sparrow	10	27	Recorded in field boundary vegetation in Areas 2a, 3, 4, 6, 7a and 8.
Dunnock	24	5	Identified singing along field boundary habitats.
Yellow Wagtail	91	6	Ground nesting species recorded singing and calling in open field habitat.
Pied Wagtail	8	0	Vocally and visually identified throughout field boundary habitat.
Meadow Pipit	14	0	Ground nesting species recorded signing in open field habitat. Identified in Areas 4, 6, 6a, 7, 7a, 8 and 9.
Chaffinch	28	8	Recorded throughout field boundary habitats.
Greenfinch	48	3	Identified vocally in field boundary habitats within Areas 3, 5 and 6.
Linnet	25	1	Recorded in field boundary habitats throughout the study area.
Goldfinch	32	4	Surveyed in field boundary habitats throughout the Draft Order Limits.
Yellowhammer	53	9	Recorded in field boundary habitats throughout the Draft Order Limits.
Reed Bunting			Identified in field boundary habitats throughout the study area.

3.1.16 During survey visits, observations of thirty other species were also made, but for which established breeding evidence was not recorded within the survey area. This included:

- Canada Goose
- Pink-footed Goose
- Whooper Swan
- Shelduck
- Gadwall
- Teal
- Tufted Duck
- Swift
- Turtle Dove
- Crane
- Little Grebe
- Great Crested Grebe
- Oystercatcher
- Curlew
- Green Sandpiper
- Black-headed Gull
- Common Tern
- Arctic Skua
- Cormorant
- Grey Heron
- Sparrowhawk
- Marsh Harrier
- Red Kite
- Barn Owl
- Great Spotted Woodpecker
- Green Woodpecker
- Peregrine
- Jay
- Jackdaw
- Sand Martin
- Lesser Whitethroat
- Goldcrest
- Starling
- Fieldfare
- Ring Ouzel
- Stonechat
- Wheatear
- Tree Pipit
- Bullfinch
- Lesser Redpoll
- Corn Bunting

3.1.17 Of these, marsh harrier is listed as a breeding species for the Humber Estuary SPA/SPA (Marine Components GB) and comprises is the only species listed as a qualifying species for a European designated site (as listed in **Table 1.1**). Seven of these non-breeding species are also listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). These six species include whooper swan, green sandpiper, marsh harrier, red kite, peregrine, barn owl and fieldfare. A further six species are listed on Annex 1 of the Directive 2009/147/EC (Birds Directive), including crane, whooper swan, common tern, marsh harrier, red kite and peregrine.

FIGURE 1. BREEDING BIRD SURVEY PLAN (OVERVIEW)

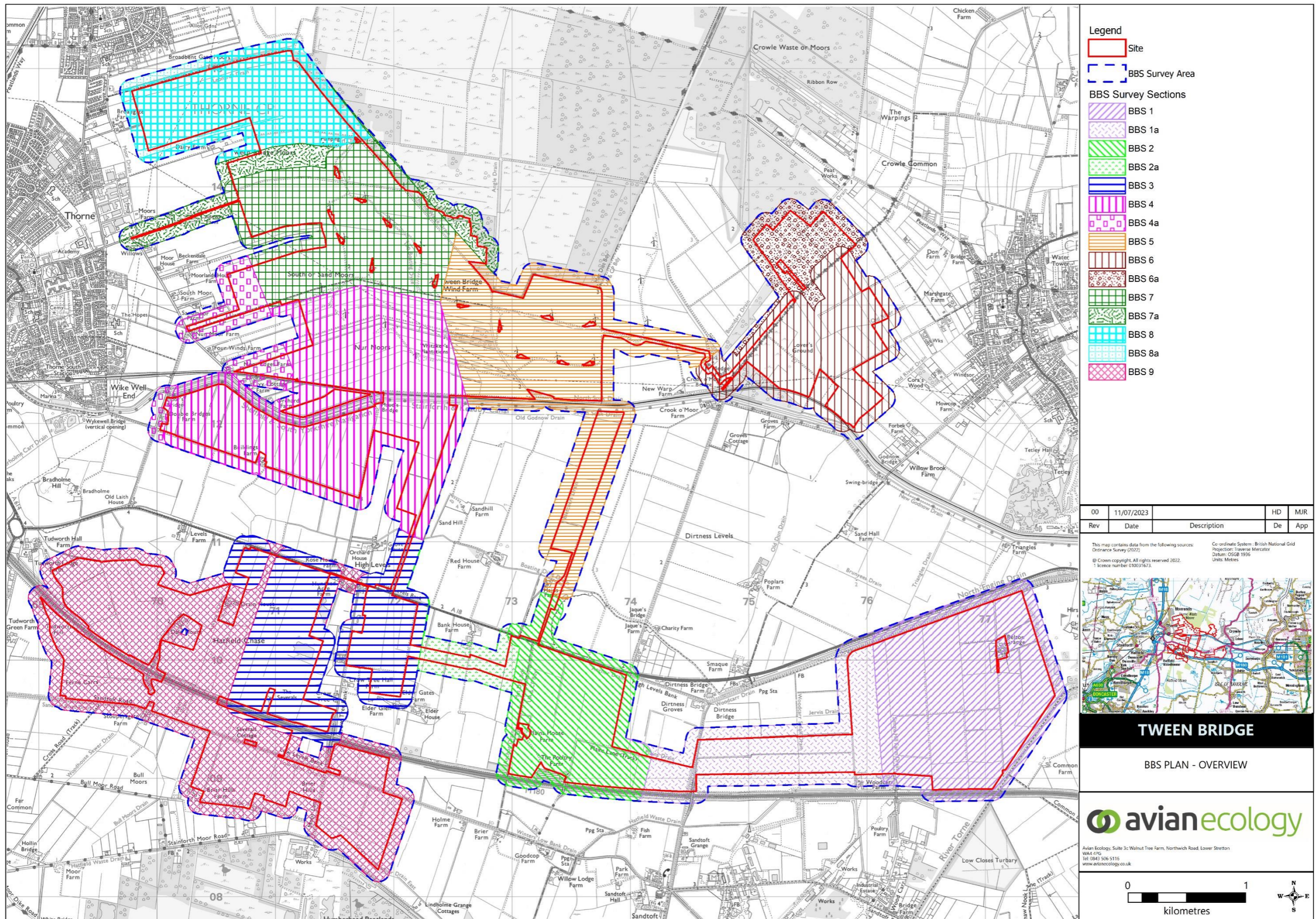


FIGURE 2. BREEDING BIRD SURVEY RESULTS – AREA 1 & 1A

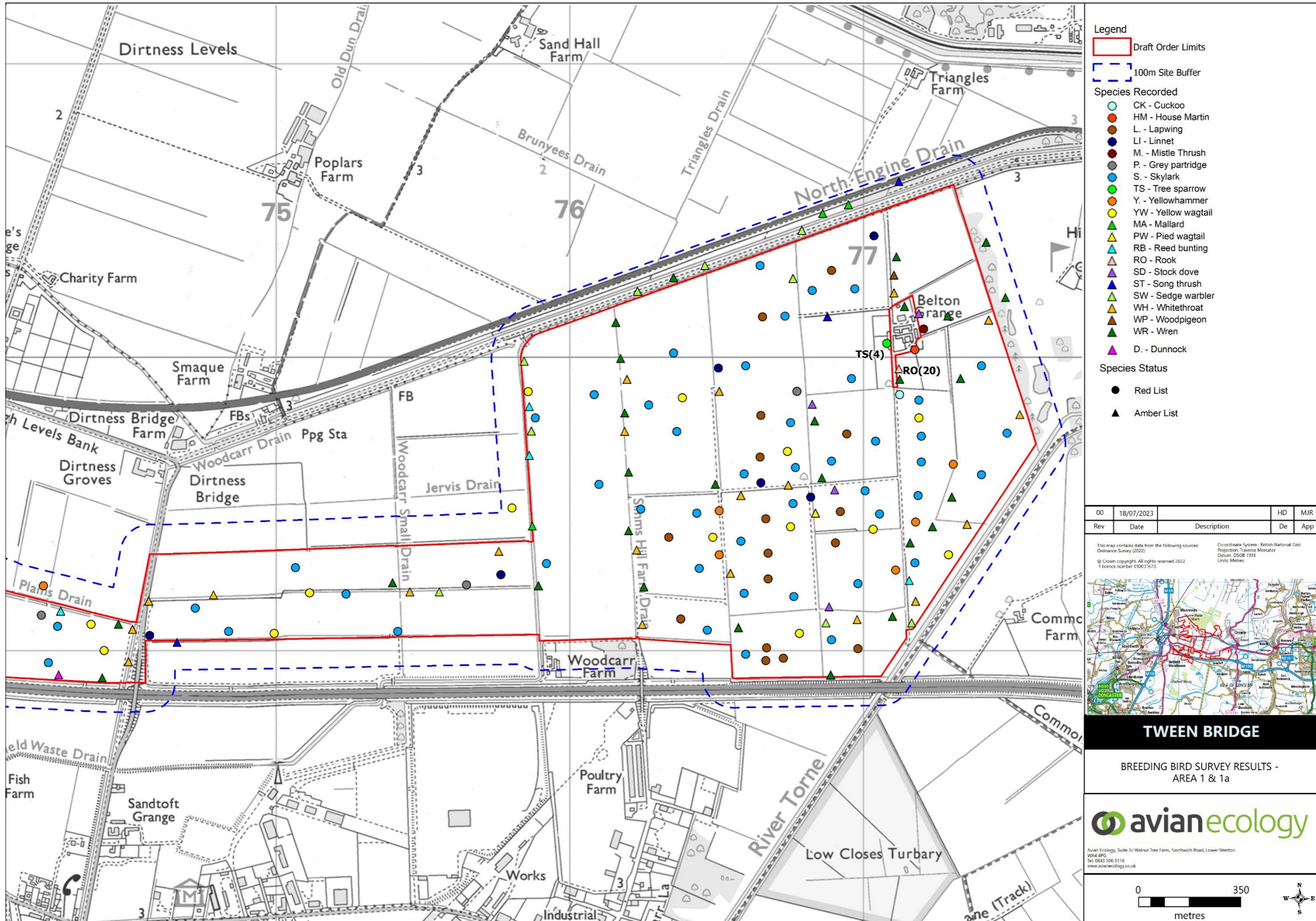


FIGURE 3. BREEDING BIRD SURVEY RESULTS – AREA 2 & 2A

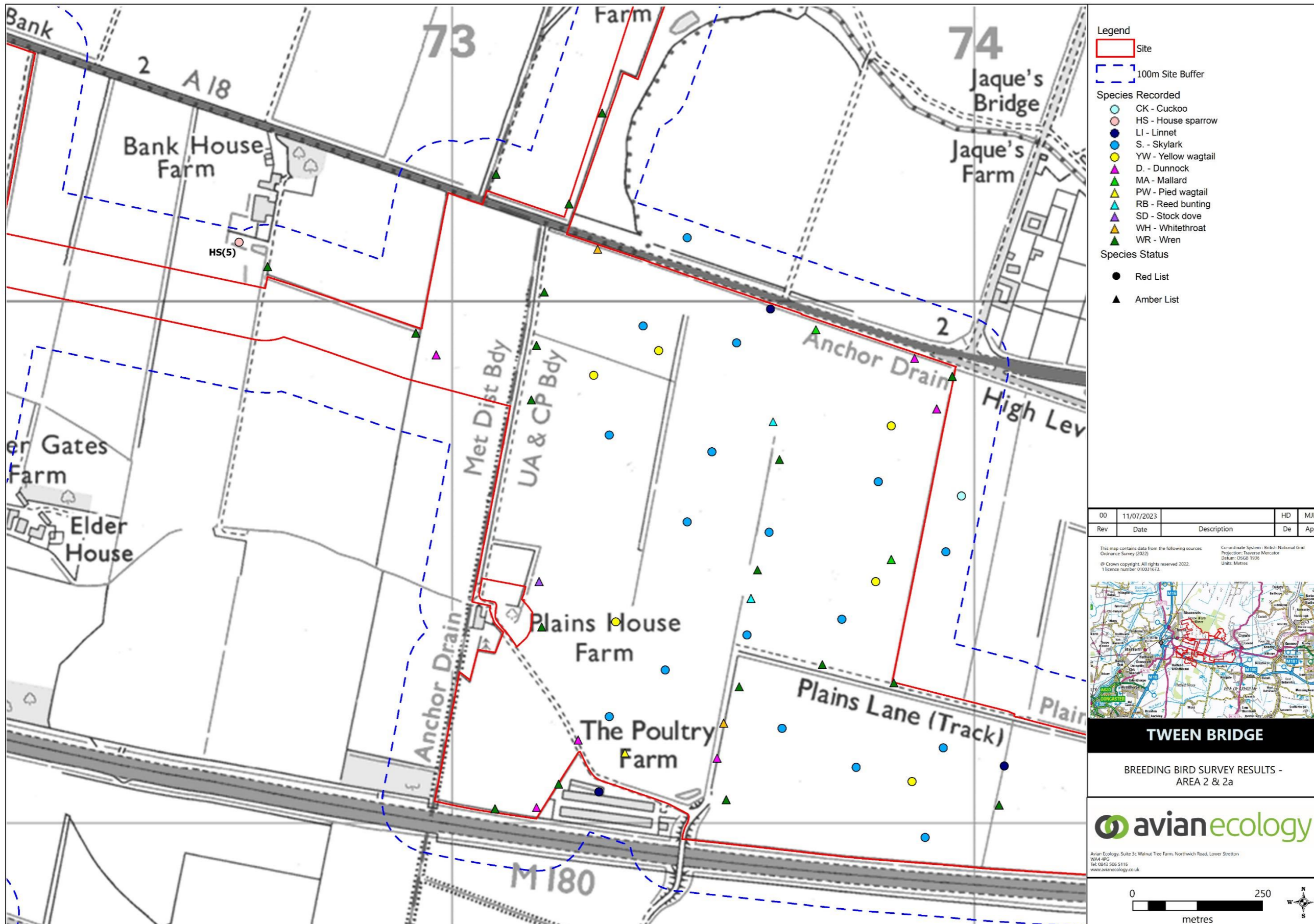


FIGURE 4. BREEDING BIRD SURVEY RESULTS - AREA 3

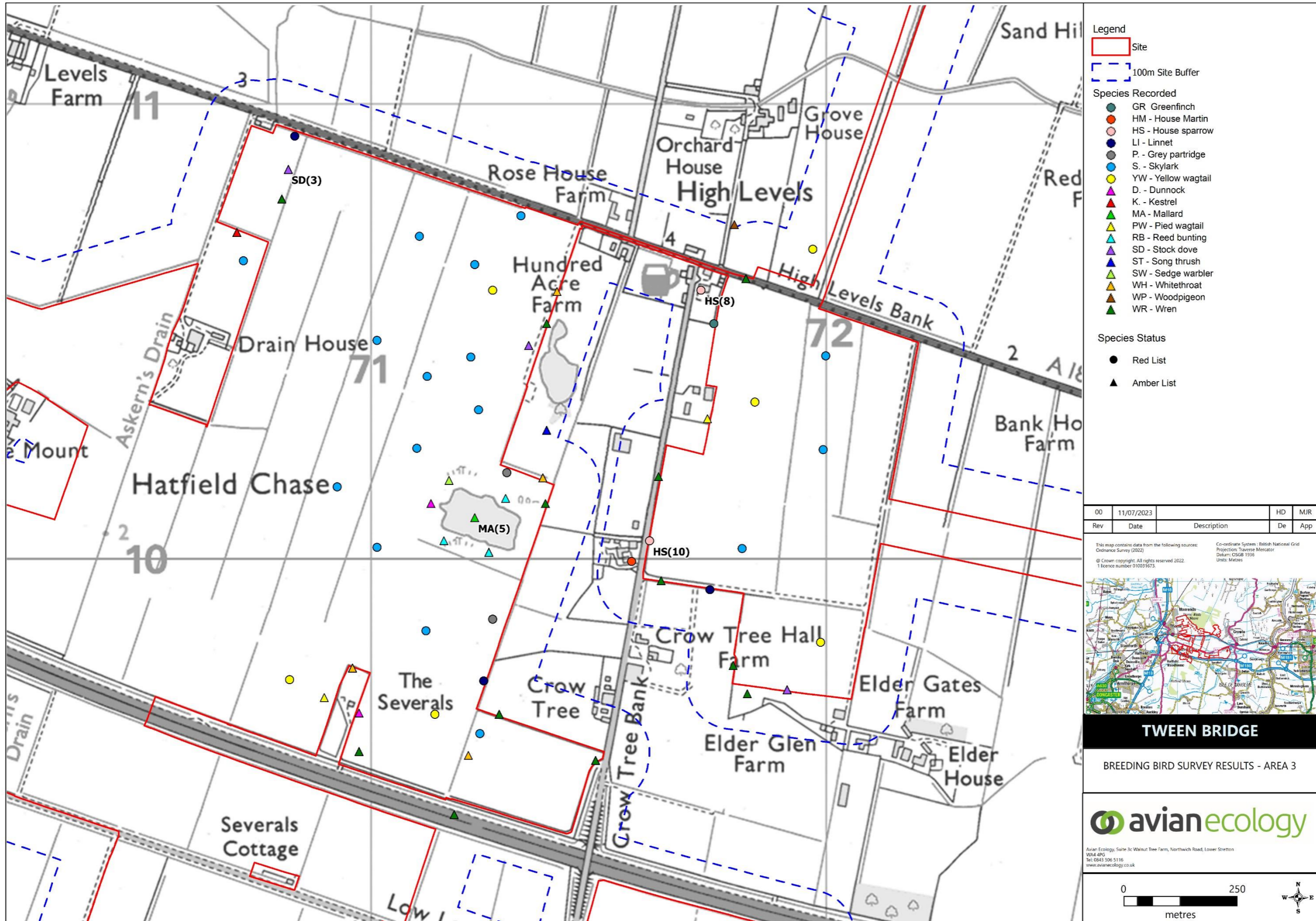


FIGURE 5. BREEDING BIRD SURVEY RESULTS – AREA 4 & 4A

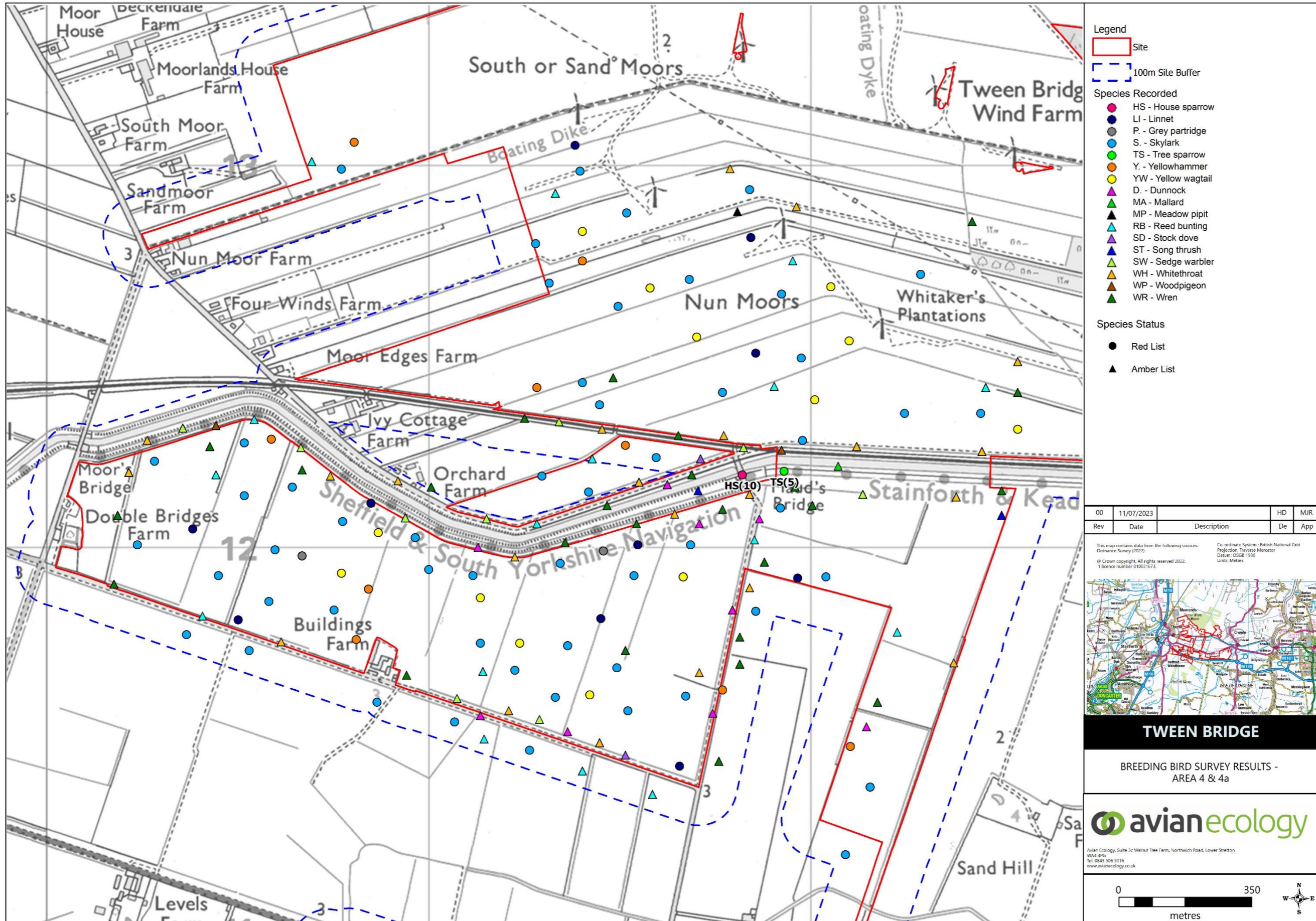


FIGURE 6. BREEDING BIRD SURVEY RESULTS – AREA 5

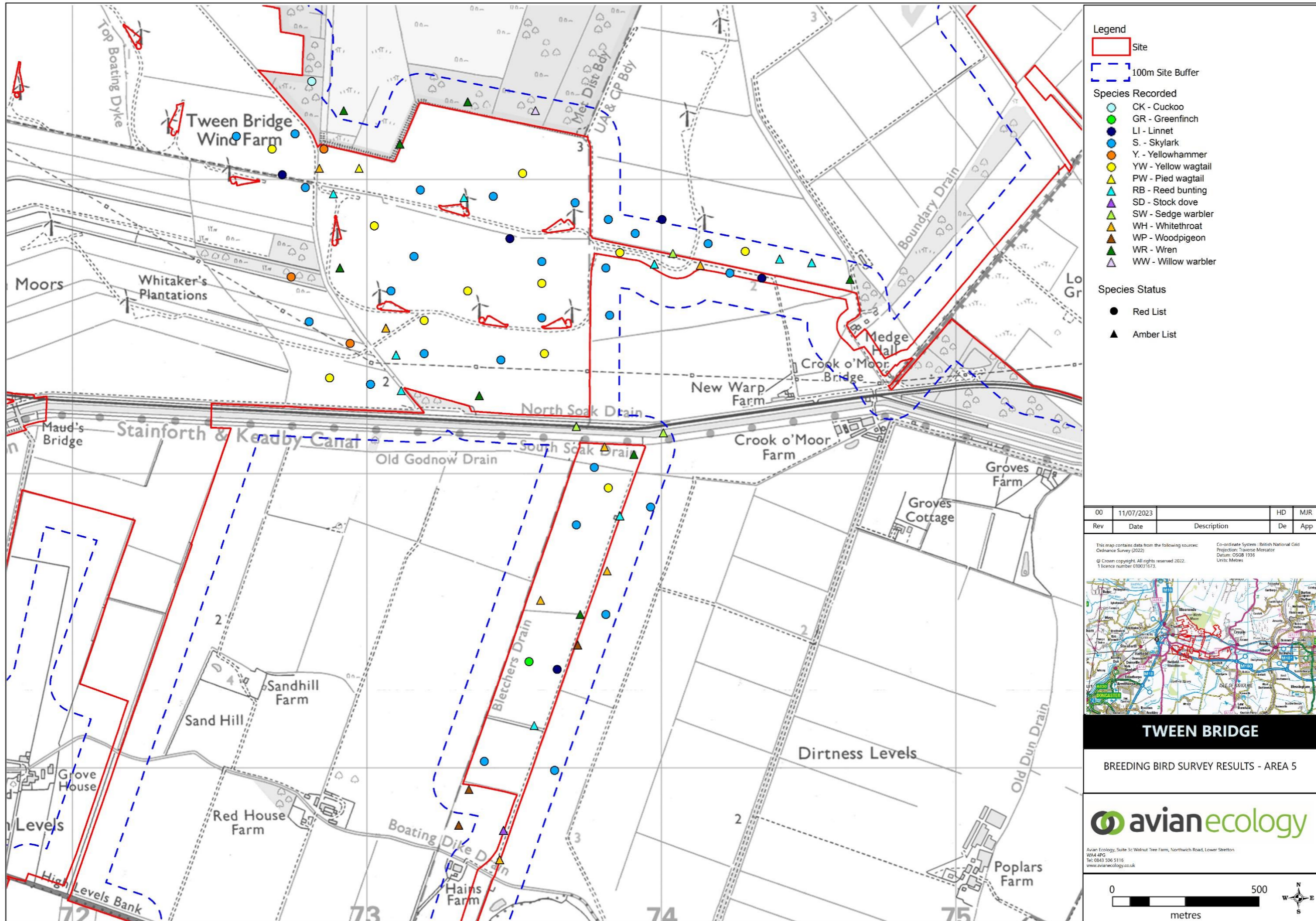


FIGURE 7. BREEDING BIRD SURVEY RESULTS – AREA 6 & 6A

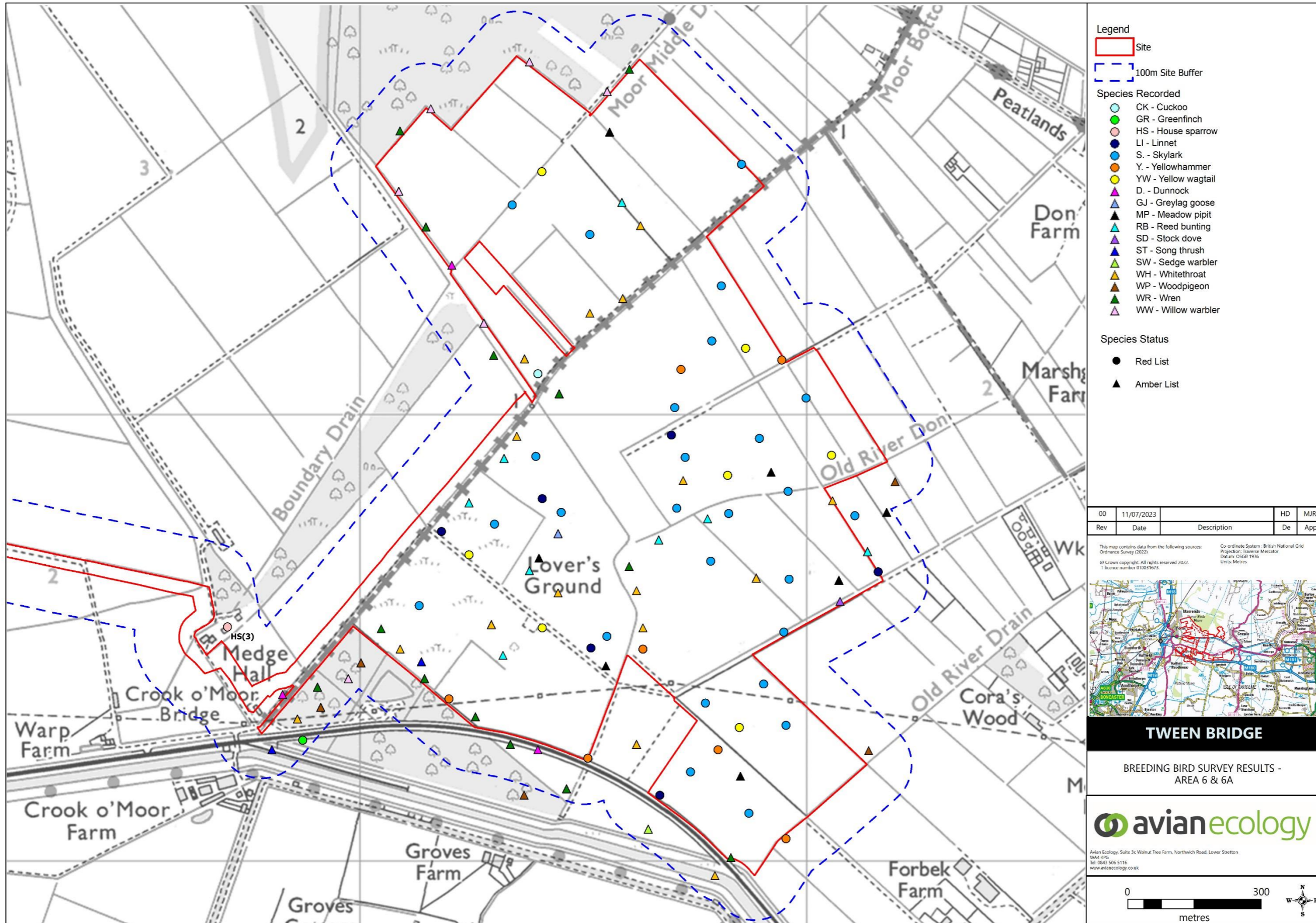


FIGURE 8. BREEDING BIRD SURVEY RESULTS – AREA 7 & 7A

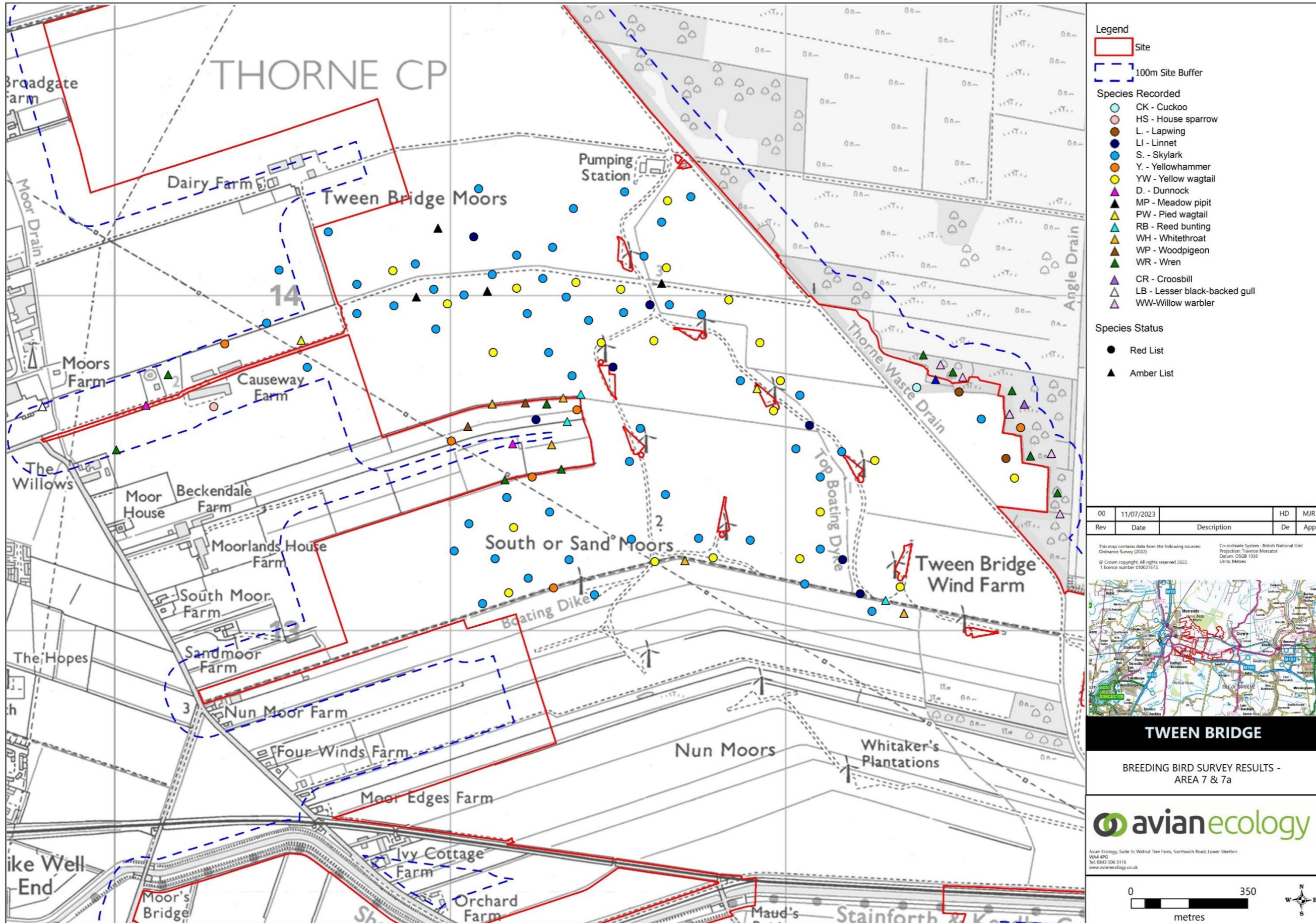


FIGURE 9. BREEDING BIRD SURVEY RESULTS – 8 & 8A

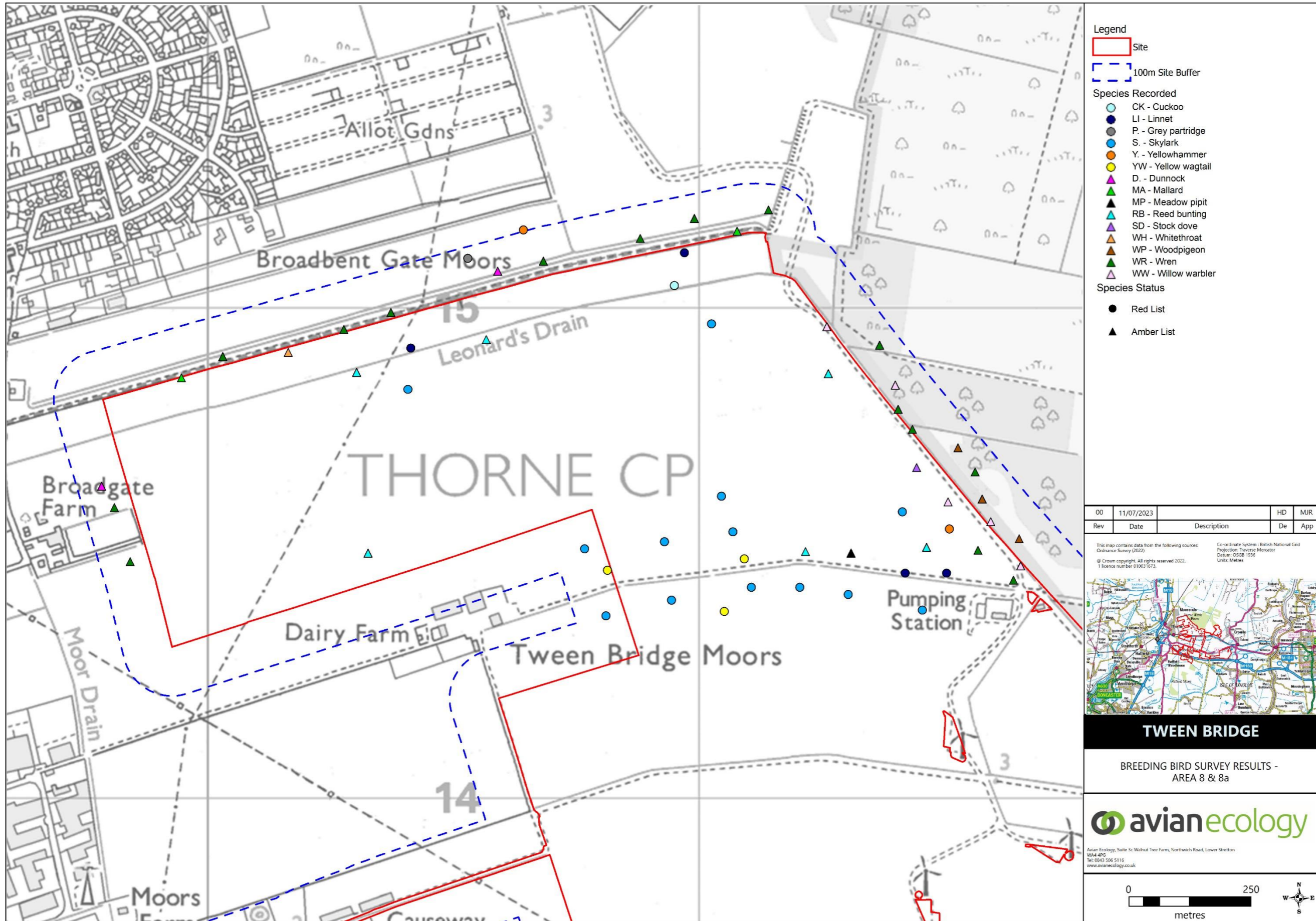
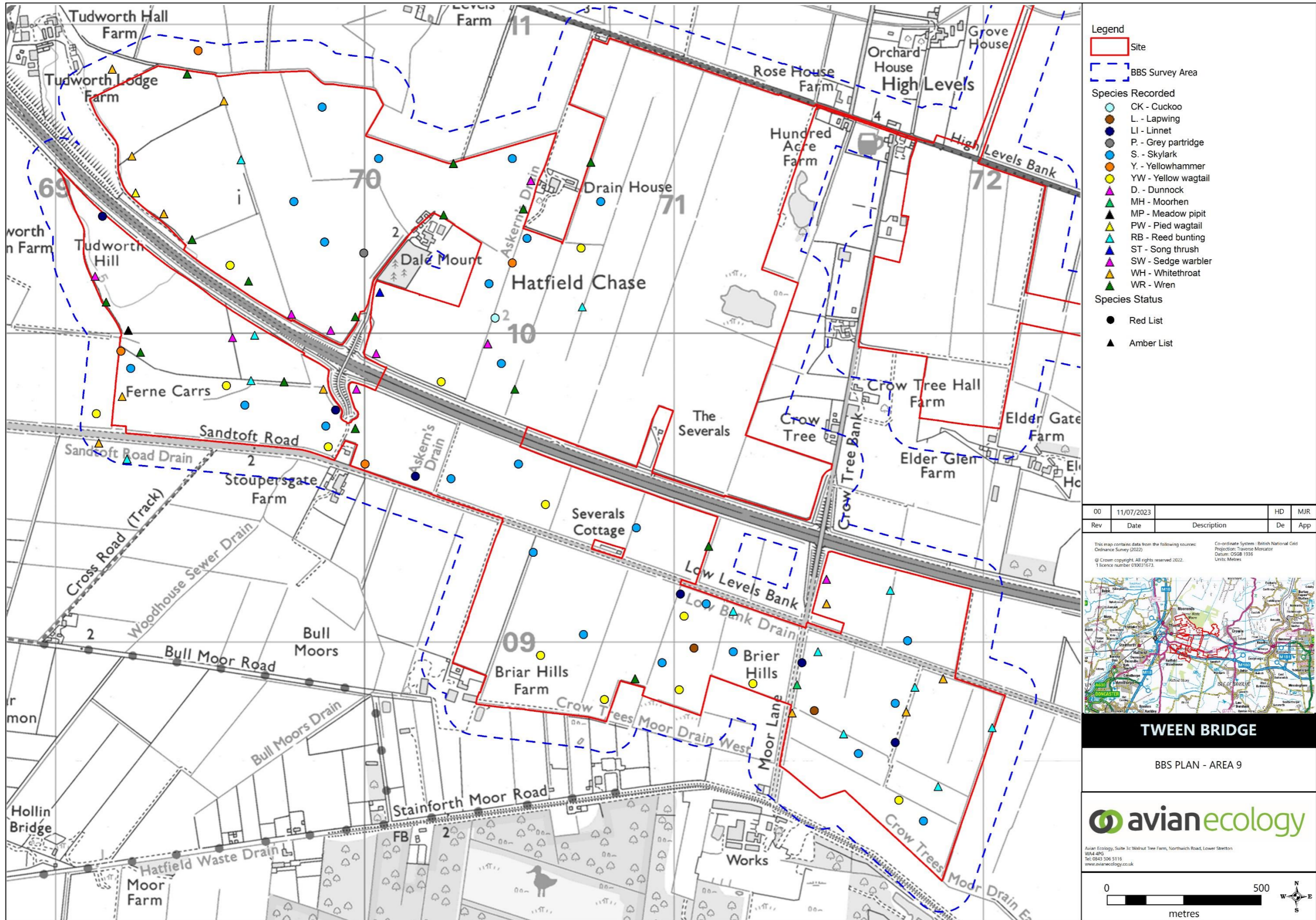


FIGURE 10. BREEDING BIRD SURVEY RESULTS – AREA 9



ANNEX 1 BIRD SPECIES SUMMARY

Table A1 provides a list of bird species recorded during the breeding bird surveys. Both common and species names are presented along with a summary of each species conservation status using the following abbreviations:

- Annex 1 – European Birds Directive Annex I species;
- S1 – Schedule 1 of the Wildlife & Countryside Act 1981 (as amended);
- BoCC – Birds of Conservation Concern as listed by leading bird conservation organisations in the UK, including the RSPB and BTO. Red and Amber categories are given (Stanbury *et al.*, 2021);
- NERC S41 – species listed as rare and most threatened on the NERC Act (2006); and,
- LBAP – species listed under the Lincolnshire or Doncaster Local Biodiversity Action.

Table A1: Summary of bird species.

Common name	Species name	Conservation status
Greylag Goose	<i>Anser anser</i>	Amber
Pink-footed Goose	<i>Anser brachyrhynchus</i>	Amber
Mute Swan	<i>Cygnus olor</i>	Green
Whooper Swan	<i>Cygnus cygnus</i>	Amber; S1; Annex 1
Shelduck	<i>Tadorna tadorna</i>	Amber
Mallard	<i>Anas platyrhynchos</i>	Amber
Teal	<i>Anas crecca</i>	Amber
Tufted Duck	<i>Aythya fuligula</i>	Green
Grey Partridge	<i>Perdix perdix</i>	Red; NERC S41; LBAP
Pheasant	<i>Phasianus colchicus</i>	-
Red-legged Partridge	<i>Alectoris rufa</i>	-
Nightjar	<i>Caprimulgus europaeus</i>	Amber; NERC S41; Annex 1
Swift	<i>Apus apus</i>	Red
Cuckoo	<i>Cuculus canorus</i>	Red; NERC S41; LBAP
Stock Dove	<i>Columba oenas</i>	Amber
Woodpigeon	<i>Columba palumbus</i>	Amber
Turtle Dove	<i>Streptopelia turtur</i>	Red; NERC S41; LBAP
Collared Dove	<i>Streptopelia decaocto</i>	Green
Moorhen	<i>Gallinula chloropus</i>	Amber
Coot	<i>Fulica atra</i>	Green
Crane	<i>Grus grus</i>	Amber; Annex 1
Little Grebe	<i>Tachybaptus ruficollis</i>	Green
Great Crested Grebe	<i>Podiceps cristatus</i>	Green
Oystercatcher	<i>Haematopus ostralegus</i>	Amber
Avocet	<i>Recurvirostra avosetta</i>	Amber; S1; Annex 1
Lapwing	<i>Vanellus vanellus</i>	Red; NERC S41; LBAP
Curlew	<i>Numenius arquata</i>	Red; Sec41; LBAP
Woodcock	<i>Scolopax rusticola</i>	Red
Green Sandpiper	<i>Tringa ochropus</i>	Amber; S1
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber
Little Tern	<i>Sternula albifrons</i>	Amber; S1; Annex 1

Common name	Species name	Conservation status
Common Tern	<i>Sterna hirundo</i>	Amber; Annex 1
Arctic Skua	<i>Stercorarius parasiticus</i>	Red; LBAP
Cormorant	<i>Phalacrocorax carbo</i>	Green
Bittern	<i>Botaurus stellaris</i>	Amber; S1; NERC S41; Annex 1; LBAP
Grey Heron	<i>Ardea cinerea</i>	Green
Sparrowhawk	<i>Accipiter nisus</i>	Amber
Marsh Harrier	<i>Circus aeruginosus</i>	Amber; S1; Annex 1
Red Kite	<i>Milvus milvus</i>	Green; S1; Annex 1
Buzzard	<i>Buteo buteo</i>	Green
Barn Owl	<i>Tyto alba</i>	Green; S1; LBAP
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Green
Green Woodpecker	<i>Picus viridis</i>	Green; LBAP
Kestrel	<i>Falco tinnunculus</i>	Amber
Hobby	<i>Falco subbuteo</i>	Green; S1
Peregrine	<i>Falco peregrinus</i>	Green; S1; Annex 1
Jay	<i>Garrulus glandarius</i>	Green
Magpie	<i>Pica pica</i>	Green
Jackdaw	<i>Coloeus monedula</i>	Green
Rook	<i>Corvus frugilegus</i>	Amber
Carrion Crow	<i>Corvus corone</i>	Green
Blue Tit	<i>Cyanistes caeruleus</i>	Green
Great Tit	<i>Parus major</i>	Green
Skylark	<i>Alauda arvensis</i>	Red; NERC S41; LBAP
Sand Martin	<i>Riparia riparia</i>	Green
Swallow	<i>Hirundo rustica</i>	Green
House Martin	<i>Delichon urbicum</i>	Red
Cetti's Warbler	<i>Cettia cetti</i>	Green; S1
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber
Chiffchaff	<i>Phylloscopus collybita</i>	Green
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Amber
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Green
Blackcap	<i>Sylvia atricapilla</i>	Green
Garden Warbler	<i>Sylvia borin</i>	Green
Lesser Whitethroat	<i>Curruca curruca</i>	Green
Whitethroat	<i>Curruca communis</i>	Amber
Goldcrest	<i>Regulus regulus</i>	Green
Wren	<i>Troglodytes troglodytes</i>	Amber
Starling	<i>Sturnus vulgaris</i>	Red; NERC S41; LBAP
Song Thrush	<i>Turdus philomelos</i>	Amber; NERC S41; LBAP
Mistle Thrush	<i>Turdus viscivorus</i>	Red
Blackbird	<i>Turdus merula</i>	Green
Fieldfare	<i>Turdus pilaris</i>	Red; S1

Common name	Species name	Conservation status
Ring Ouzel	<i>Turdus torquatus</i>	Red; NERC S41
Robin	<i>Erithacus rubecula</i>	Green
Nightingale	<i>Luscinia megarhynchos</i>	Red; LBAP
Whinchat	<i>Saxicola rubetra</i>	Red
Stonechat	<i>Saxicola rubicola</i>	Green
Wheatear	<i>Oenanthe oenanthe</i>	Amber
Tree Sparrow	<i>Passer montanus</i>	Red; NERC S41; LBAP
House Sparrow	<i>Passer domesticus</i>	Red; NERC S41; LBAP
Dunnock	<i>Prunella modularis</i>	Amber; NERC S41; LBAP
Yellow Wagtail	<i>Motacilla flava</i>	Red; NERC S41; LBAP
Pied Wagtail	<i>Motacilla alba yarellii</i>	Amber
Meadow Pipit	<i>Anthus pratensis</i>	Amber
Tree Pipit	<i>Anthus trivialis</i>	Red; NERC S41
Chaffinch	<i>Fringilla coelebs</i>	Green
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber; NERC S41; LBAP
Greenfinch	<i>Chloris chloris</i>	Red
Linnet	<i>Linaria cannabina</i>	Red; NERC S41; LBAP
Lesser Redpoll	<i>Acanthis cabaret</i>	Red; NERC S41
Goldfinch	<i>Carduelis carduelis</i>	Green
Corn Bunting	<i>Emberiza calandra</i>	Red; NERC S41; LBAP
Yellowhammer	<i>Emberiza citrinella</i>	Red; NERC S41; LBAP
Reed Bunting	<i>Emberiza schoeniclus</i>	Amber; NERC S41; LBAP

ANNEX 2: BREEDING BIRD SURVEY EFFORT-2022 AND 2023

Visit	Area	Date	Start Time (24 hrs)	End time (24 hrs)	Sunrise (24 hrs)	Wind Speed	Wind Direction	Rain	Cloud Height	Cloud Cover	Visibility	Frost	Snow	Temperature (°C)
1	1	28/04/2022	06:00	08:30	05:36	1	NE	0	2	8/8	2	0	0	Not provided
1	2	10/05/2022	06:30	10:30	05:12	2	S	0	2	8/8	2	0	0	Not provided
1	3	29/04/2022	08:30	11:00	05:34	1	NE	0	2	5/8	2	0	0	Not provided
1	4	29/04/2022	06:00	08:30	05:34	1	NE	0	2	7/8	2	0	0	Not provided
1	5	27/04/2022	07:30	11:00	05:38	1-2	N	0	2	8/8	2	0	0	Not provided
1	6	28/04/2022	08:40	11:00	05:36	1	NE	0	2	8/8	2	0	0	Not provided
1	7	27/04/2022	07:30	11:00	05:38	1-2	N	0	2	8/8	2	0	0	Not provided
1	8	26/04/2022	07:30	10:45	05:40	1	N	0	2	8/8	2	0	0	Not provided
2	1	18/05/2022	05:25	10:30	04:59	1	SW	0	2	0/8	2	0	0	Not provided
2	2	26/05/2022	05:10	10:10	04:48	1	SW	0	2	7/8	2	0	0	Not provided
2	3	30/05/2022	05:00	10:00	04:44	1	SW	0	2	8/8	2	0	0	Not provided
2	4	30/05/2022	05:00	10:00	04:44	1	SW	0-1	2	8/8	2	0	0	Not provided
2	5	17/05/2022	05:15	10:30	05:00	2	SW	0	2	2/8	2	0	0	Not provided
2	6	18/05/2022	05:15	10:30	04:59	1	SW	0	2	0/8	2	0	0	Not provided
2	7	17/05/2022	05:15	10:30	05:00	2	SW	0	2	2/8	2	0	0	Not provided
2	8	17/05/2022	05:15	10:30	05:00	1	SW	0	2	1/8	2	0	0	Not provided
3	1	07/07/2022	05:00	09:30	04:45	1-2	SW	0	2	5/8	2	0	0	Not provided
3	2	16/06/2022	05:00	10:00	04:34	1	WNW	0	2	1/8	2	0	0	Not provided
3	3	16/06/2022	05:00	10:00	04:34	1	W	0	2	0/8	2	0	0	Not provided
3	4	05/07/2022	05:00	09:00	04:43	2	WNW	0	2	7/8	2	0	0	Not provided
3	5	07/06/2022	05:00	10:30	04:37	1	NW	0	2	6/8	2	0	0	Not provided
3	6	07/07/2022	05:00	09:30	04:45	1-2	SW	0	2	6/8	2	0	0	Not provided
3	7	07/06/2022	05:00	10:30	04:37	1	NW	0	2	8/8	2	0	0	Not provided
3	8	07/06/2022	05:00	10:30	04:37	1	NW	0	2	1/8	2	0	0	Not provided
<u>1</u>	<u>1a</u>	<u>27/04/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>05:37</u>	<u>2</u>	<u>SE</u>	<u>0</u>	<u>2</u>	<u>2/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>1</u>	<u>2a</u>	<u>27/04/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>05:37</u>	<u>2</u>	<u>SE</u>	<u>0</u>	<u>2</u>	<u>2/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>

<u>1</u>	4a	<u>05/05/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>05:21</u>	<u>3</u>	<u>SW</u>	<u>0</u>	<u>2</u>	<u>5/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>1</u>	6a	<u>27/04/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>05:37</u>	<u>2</u>	<u>SE</u>	<u>0</u>	<u>2</u>	<u>2/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>1</u>	7a	<u>05/05/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>05:21</u>	<u>3</u>	<u>SW</u>	<u>0</u>	<u>2</u>	<u>5/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>1</u>	9	<u>22/04/2023</u>	<u>06:30</u>	<u>11:00</u>	<u>05:48</u>	<u>1</u>	<u>SW</u>	<u>1</u>	<u>1</u>	<u>8/8</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>2</u>	1a	<u>19/05/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:57</u>	<u>0</u>	<u>NA</u>	<u>0</u>	<u>2</u>	<u>8/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>2</u>	2a	<u>23/05/2023</u>	<u>06:30</u>	<u>11:00</u>	<u>04:51</u>	<u>1</u>	<u>NE</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>2</u>	4a	<u>19/05/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:57</u>	<u>0</u>	<u>NA</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>2</u>	6a	<u>21/05/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:54</u>	<u>1</u>	<u>NE</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>2</u>	7a	<u>19/05/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:57</u>	<u>0</u>	<u>NA</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>2</u>	<u>9</u>	<u>19/05/2023</u>	<u>06:30</u>	<u>11:00</u>	<u>04:57</u>	<u>0</u>	<u>NE</u>	<u>1</u>	<u>1</u>	<u>8/8</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
		<u>21/05/2023</u>	<u>06:30</u>	<u>11:00</u>	<u>04:54</u>	<u>1</u>	<u>NE</u>	<u>0</u>	<u>1</u>	<u>0/8</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
		<u>23/05/2023</u>	<u>06:30</u>	<u>11:00</u>	<u>04:51</u>	<u>1</u>	<u>NE</u>	<u>0</u>	<u>1</u>	<u>0/8</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>3</u>	1a	<u>17/06/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:33</u>	<u>1</u>	<u>E</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>3</u>	2a	<u>14/06/2023</u>	<u>06:30</u>	<u>11:00</u>	<u>04:33</u>	<u>3</u>	<u>NE</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>3</u>	4a	<u>14/06/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:33</u>	<u>3</u>	<u>NE</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>3</u>	6a	<u>16/06/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:33</u>	<u>1</u>	<u>E</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
		<u>17/06/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:33</u>	<u>1</u>	<u>E</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>3</u>	7a	<u>14/06/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:33</u>	<u>3</u>	<u>NE</u>	<u>0</u>	<u>2</u>	<u>0/8</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
<u>3</u>	<u>9</u>	<u>16/06/2023</u>	<u>06:30</u>	<u>10:45</u>	<u>04:33</u>	<u>1</u>	<u>E</u>	<u>0</u>	<u>1</u>	<u>1/8</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>
		<u>17/06/2023</u>	<u>06:00</u>	<u>11:00</u>	<u>04:33</u>	<u>1</u>	<u>E</u>	<u>0</u>	<u>1</u>	<u>0/8</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>Not provided</u>

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
Mod. breeze	4	NE	Light rain	3				
Fresh breeze	5	ENE	Heavy rain	4				
Strong breeze	6	E						
Mod. gale	7	Etc	Visibility		Snow		Frost	
Fresh gale	8		Poor	0	None	0	None	0
Strong gale	9		< 1km	1	On site	1	Ground	1
Whole gale	10		>1km	2	High ground	2	All day	2
Storm	11							

