Tween Bridge Solar Farm

5.3 Report to Inform Habitat Regulations Assessment

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

APFP Regulation 5(2)(g)

Document Reference: 5.3

November 2025

Revision 2

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1 Summary

1.1.1. This 'shadow' HRA has been prepared by Tyler Grange Group Ltd on behalf of RWE Renewables UK Solar and Storage Ltd. It has been prepared to accompany an application under Section 37 of the Planning Act 2008 to the Secretary of State for the Department of Energy Security and Net Zero for a Development Consent Order for the Tween Bridge Solar Farm.

1.1.2. The following Natura 2000 sites were screened in for sHRA:

- Humber Estuary SPA (7.7 km north);
- Humber Estuary Ramsar (1.3km northeast)
- Humber Estuary SAC (1.3km north);
- Thorne Moor SAC (0.53ha located within the Scheme on the northern boundary, with other sections adjacent to the northern boundary);
- Thorne and Hatfield Moors SPA (0.53 ha located within the Scheme on the northern boundary, with other sections adjacent to the northern boundary).
- Hatfield Moor SAC (0.1 km south)

1.1.3. Potential LSEs include impacts form construction as a consequence of damage, run-off, air quality, noise and disturbance and also from loss of functionally linked land associated with Humber Estuary SPA / Ramsar.

1.1.4. Mitigation measures have been proposed with further details being provided in the **Outline Ecological Construction Management Plan [Document Reference: 7.5]** and **Outline Landscape Ecological Management Plan (LEMP)[Document Reference: 7.6]**.

1.1.5. These mitigations, if implemented successfully, would enable the Scheme to be constructed, operated and decommissioned with no likely significant effects on the features of the above designations which were screened in for Appropriate Assessment.

1.1.6. Furthermore, once applied, the mitigation measures would render any potentially significant effects as either neutral or at such a negligible level that they would not

result in any in combination effects arising from the cumulative developments considered in **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6].**

2 Introduction

2.1.1. This 'shadow' Habitats Regulations Assessment (sHRA) has been prepared by Tyler Grange (TG) Group Ltd. on behalf of RWE Renewables UK Solar and Storage Ltd. It has been prepared to accompany an application under Section 37 of the Planning Act 2008 to the Secretary of State (SoS) for the Department of Energy Security and Net Zero (DESNZ) for a Development Consent Order (DCO) known as 'the Scheme'.

2.1.2. The Order Limits consist of approximately **1,831 ha** of agricultural land, the majority of which consists of arable farmland with cereal and non-cereal crops. Fields are bounded by ditches as well as fences, hedgerows and tree lines. Modified grassland used as pastoral land is also present within the Order Limits as well as a woodland copse and a number of ponds.

2.1.3. The operational Tween Bridge Wind Farm is located within the Order Limits, and consists of twenty-two operational wind turbines. The Stainforth and Kneadby Canal crosses the Order Limit from west to east.

2.1.4. In the wider context, the 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 Order Limits.

Figure 2-1: Site Context and Order Limits (Aerial Imagery © Google Earth 2025)

2.1.5. The proposals for the Order Limits are for the creation of a ground mounted solar farm and battery energy storage systems (BESS), together with associated infrastructure.

2.1.6. Two options in the design layout are considered for a fixed and tracker design and fixed design with further details set out in **ES Chapter 2 Scheme Description [Document Reference: 6.4.2]**. However, the parameters of the development are the same with only minor differences. As such the 'Assessment of Likely Effects' and 'Residual Effects' assess both design options as there are no significant differences.

2.1.7. The construction phase assumes the Scheme will be built out over up to a 54 month-period (2028- 2032) in either a single phased approach (development of Land Parcels completed one after another with the potential for breaks between development of Land Parcels) or through multiple phases (development of Land Parcels concurrently). For the multiple phase construction option, no more than two land parcels (within land parcels A-E) would be built out at the same time. ES

Environmental Aspect Chapters determine in the methodology 'Assessment Approach' section which of the two options for the construction phasing approach would give rise to the 'worst-case scenario' for the purpose of their assessment. The current connection date for the Scheme, within the NESO Connection Agreement, is 2029. As with all electricity generation projects, this date is under review by NESO as part of the ongoing connections reform process.

2.1.8. If the NESO Connection Agreement remains with the connection date of 2029, it would be possible to operate a phased start to operational generation. This phased approach would connect each Land Parcel to the RWE on-site 400kV substation when construction of that Land Parcel was completed. In this operational scenario there would be partial Scheme operation from 2029-2032 (3 years). From 2032 onwards the full Scheme would be generating at full operational capacity. The full Scheme would operate for 40 years until 2072. If the NESO Grid Connection date varies, which is not within the Applicants direct control, the timeframe where there could be partial operation of the Scheme could reduce or fail to materialise. In this situation the full operational Scheme would operate for 40 years from its new grid connection date. In either connection scenario there will be full operational generation for 40 years, which would be the worst-case scenario operational time period for the Scheme.

2.1.9. Following 40 years of a fully operational Scheme, it is proposed that the Scheme will be decommissioned. This decommissioning with take approximately 24 months and will be in a phased approach.

2.1.10. The Order Limits lies outside designated sites with the exception of a small 0.53ha area of Thorne & Hatfield Moors Special Protection Area (SPA), Thorne Moor Special Area of Conservation (SAC), Thorne, Crowle and Goole Moors Site of Special Scientific Interest (SSSI) and Hatfield Chase Ditches SSSI, which is located in Land Parcel A. Whilst the Thorne & Hatfield Moors SPA/SAC/SSSI lies within the Order Limit, it is outside the development footprint and this area is to be buffered from any development. Therefore no Scheme works are scheduled within these designated sites.

2.1.11. Details of the European statutory designated sites that occur within 10km of the Order Limits boundary, which is defined as the Zone of Influence (ZoI), are on Figure 2-2 below and include:

- Humber Estuary SPA;

- Humber Estuary Ramsar;
- Humber Estuary SAC;
- Thorne & Hatfield Moors SPA;
- Thorne Moor SAC; and
- Hatfield Moor SAC.

2.1.12. The Scheme will result in the loss of habitat that is used by species that are a qualifying feature of some of the above designated sites and is functionally linked to the SPA, specifically non-breeding birds, and without mitigation could also impacts the water quality and quantity leaving the Order Limits boundary, which could have a detrimental impact to the designated sites detailed above.

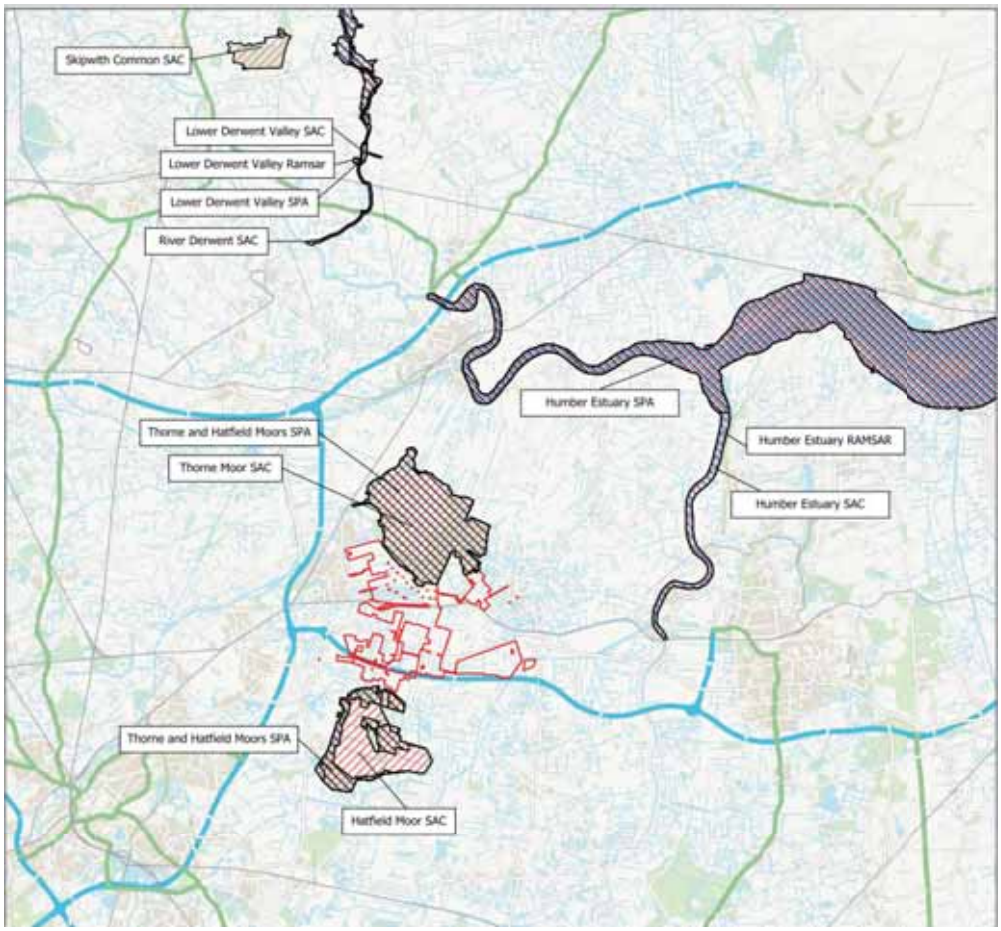

Figure 2-2: European Conservation Designations within ZoI to the Order Limits

2.1.13. In addition to the designated sites located within 10km, an extended search was also made for any European designated sites that are up to 30km away:

- Lower Derwent Valley SPA - 17.2km north;
- Lower Derwent Valley RAMSAR - 17.1km north;
- Lower Derwent Valley SAC - 17.1km north;
- Skipwith Common SAC - 22.2km north;
- River Derwent SAC - 13.8 km north.

2.1.14. However, given the distances of the above designated sites, it is only those designated for mobile species that are relevant. The Lower Derwent Valley SAC and Skipwith Common SAC are designated for a variety of habitats and so can be screened out of further assessment. The River Derwent SAC is designated due to comprising habitats, and also white-clawed crayfish, sea, river and brook lampreys, bullhead, Atlantic salmon and otter as a qualifying feature. However, given the distance from the Order Limits and lack of hydrological connectivity, this SAC can also be screened out.

2.1.15. Lower Derwent Valley SPA and Ramsar is included within this Report to Inform HRA, with this designated site supporting a range of wintering and breeding bird species.

2.2. Planning Context

2.2.1. The National Policy Statement (NPS), taken together with the overarching National Policy Statement for Energy (EN-1) and the Nationally Significant Infrastructure Projects: Advice on Habitats Regulations Assessments produced by the Planning Inspectorate and last updated in March 2025[1], provide the primary policy and guidance for decisions by the Secretary of State on applications they receive for nationally significant renewable energy infrastructure.

[1] Planning Inspectorate. March 2025. Projects: Advice on Habitats Regulations Assessments **produced by the Planning Inspectorate**

2.3. Purpose

2.3.1. This report sets out 'shadow' HRA stage 1 screening and provides information to inform HRA stage 2 Appropriate Assessment (AA).

3 Legislation and Planning Policy

3.1.1. The European Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, 1992, often referred to as the 'Habitats Directive', provides for the protection of key habitats and species considered of European importance (listed under Annex I, II and IV of the Directive). The Birds Directive (formally known as Council Directive 2009/147/EC on the conservation of wild birds) was also adopted in 2009. These directives have been transposed into UK law through The Conservation of Habitats and Species Regulations, hereafter referred to as 'the Habitats Regulations 2017 (as amended)', and incorporated protections for European sites.

3.1.2. It should be noted that the UK's departure from the European Union (EU) does not alter the implementation of this legislation in the UK at the time of writing. Section 6 of the EU (Withdrawal) Act 2018 (as amended) requires retained EU law such as the Conservation of Habitat and Species Regulations 2017 (as amended) to be interpreted in line with "retained case law" which includes retained EU case law.

3.1.3. European sites comprise:

- Special Areas of Conservation (SAC) and candidate SACs (cSACs) designated under the Habitats Directive;
- Special Protection Areas (SPA) and potential SPAs (pSPAs), classified under the Birds Directive;
- Ramsar sites, designated under the Convention on Wetlands of International Importance; and
- European Marine Sites (EMS).

3.1.4. Under the Habitats Regulations, competent authorities are required to consider impacts of any plans / projects which may result in Likely Significant Effect (LSE) and/or adverse effects on the integrity of European sites - either alone or in-

combination with other plans / projects. The assessment of the potential effects is termed an HRA, which is split into four stages, as described below, and shown in **Figure 3-1** of this report:

- **Stage 1** is a screening stage to determine if the proposed development is expected to have an LSE on a European site. If an LSE is determined, AA, Stage 2, is required;
- If required, **Stage 2** refers to an AA which is used to determine whether the project will adversely affect the integrity of any given European site(s) (through also considering proposed avoidance and mitigation measures), in view of their conservation objectives. Conservation objectives specify the overall target for a site's qualifying features (habitats and species / populations listed in Annex I and II) in order for that feature to be maintained or restored, to reach favourable conservation status;
- **Stage 3** is triggered if significant adverse effects are identified in stage 2 that cannot be avoided or mitigated. This stage requires alternative options to be examined to avoid significant impacts on European sites; and
- If it is deemed that the project should proceed for Imperative Reasons of Overriding Public Interest (IROPI), **Stage 4** comprises an assessment of compensatory measures which would be required.

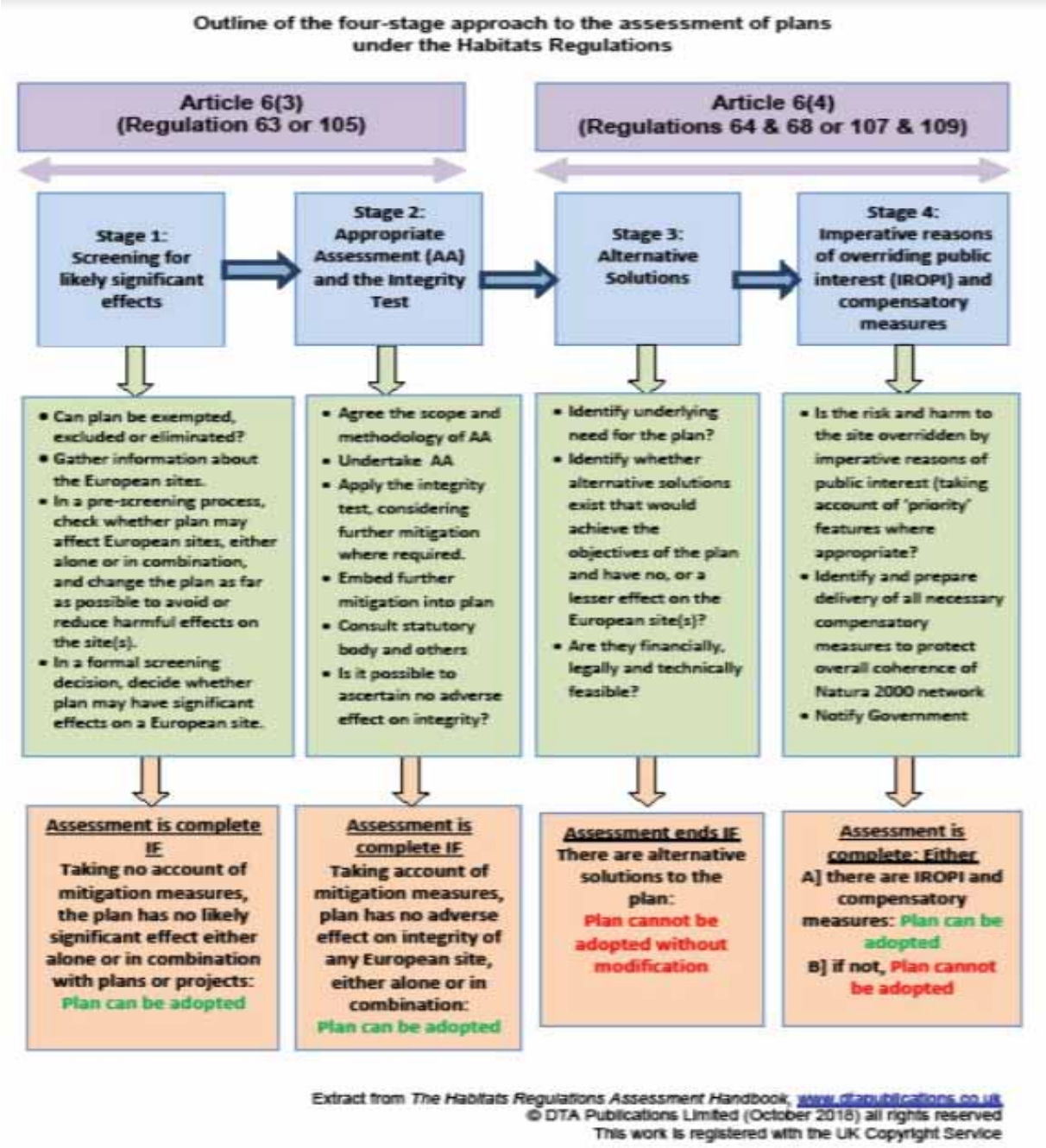

Figure 3-1: HRA stages[2]

2 Reproduced from DTA publications (2018) HRA handbook [Online] Available at: https://www.dtapublications.co.uk [Accessed: 14/11/2022].

3.1.5. The responsibility for undertaking the HRA, if required, lies with the competent authority who is responsible for granting consent for the scheme - in this case, this will be the Secretary of State. However, it is the Applicant's obligation to provide information to the competent authority to enable them to undertake the assessment. In this case, the applicant is RWE Renewables UK Solar and Storage Limited.

3.1.6. This report aims to provide sufficient information relevant to HRA screening (HRA stage 1) and to provide sufficient information for appropriate Assessment (AA) (HRA stage 2) of impacts which are not screened out.

3.2. National Planning Policy

3.2.1. The National Planning Policy Framework (NPPF), (December 2024) requires development plans to identify, map and safeguard international, national and locally designated sites of importance for biodiversity, such as European designated sites. Under the requirements of the NPPF, unless it has been concluded that the proposed development will not adversely affect the integrity of European designated sites, the usual presumption in favour of sustainable development does not apply.

3.3. Local Policy

3.3.1. The Order Limits is located within the boundaries of City of Doncaster Council and North Lincolnshire, with relevant policies detailed below.

Doncaster Council Local Plan (2021-35) [3]

Policy 30: Valuing Biodiversity and Geodiversity (Strategic Policy)

3.3.2. City of Doncaster Council has a range of internationally, nationally, and locally important habitats, sites and species that will be protected through the following principles:

- All proposals shall be considered in light of the mitigation hierarchy in accordance with National Policy.

[3] Doncaster City Council. Doncaster Local Plan. 2021 - 2035

- Proposals which may harm designated Local Wildlife Sites, Local Geological Sites, Priority Habitats, Priority Species, protected species or non-designated sites or features of biodiversity interest, will only be supported where:
    - they use the DEFRA biodiversity metric to demonstrate that a proposal will deliver a minimum 10% net gain for biodiversity;
    - they protect, restore, enhance and provide appropriate buffers around wildlife and geological features and bridge gaps to link these to the wider ecological network;
    - they produce and deliver appropriate long term management plans for local wildlife and geological sites as well as newly created or restored habitats;
    - they can demonstrate that the need for a proposal outweighs the value of any features to be lost; and
    - if the permanent loss of a geological site is unavoidable, then provision will be made for the site to first be recorded by a suitably qualified expert.
- Proposals which may impact Special Areas of Conservation, Special Protection Areas or RAMSAR Sites will only be supported where it can be demonstrated that there will be no likely significant effects and no adverse effects on the integrity of European sites, unless there are no alternative solutions, and it is justified by an "imperative reasons of overriding public interest" (IROPI) assessment under the Habitats Directives.
- Proposals that may either directly or indirectly negatively impact Sites of Special Scientific Interest will not normally be supported. Proposals should seek to protect and enhance Sites of Special Scientific Interest and maintain, strengthen, and bridge gaps to link them to the wider ecological network wherever possible.
- In order to ensure development does not negatively impact on nightjar populations, proposals located within 3km of Thorne and Hatfield Moors Special Protection Area, that impact habitats that nightjars may use for feeding

on, will only be supported where they deliver a net gain in nightjar foraging habitat.

The North Lincolnshire Local Development Framework[4]

Spatial Objective 6: Protecting and Enhancing The World Class Environment

3.3.3. To conserve and enhance our world class environments of the Humber Estuary and Crowle Moors Crowle Moors and improve our other natural, historic and built landscapes as well as guiding changes in a way which reduces and takes proper account of environmental impact, climate change and sea level rise.

CS17: Biodiversity

3.3.4. The council will promote effective stewardship of North Lincolnshire's wildlife through:

- Safeguarding national and international protected sites for nature conservation from inappropriate development.
- Appropriate consideration being given to European and nationally important habitats and species.
- Maintaining and promoting a North Lincolnshire network of local wildlife sites and corridors, links and stepping stones between areas of natural green space.
- Ensuring development retains, protects and enhances features of biological and geological interest and provides for the appropriate management of these features.
- Ensuring development seeks to produce a net gain in biodiversity by designing in wildlife, and ensuring any unavoidable impacts are appropriately mitigated for.
- Supporting wildlife enhancements that contribute to the habitat restoration targets set out in the North Lincolnshire's Nature Map and in national, regional and local biodiversity action plans.

[4] North Lincolnshire Local Development Framework. June 2011

- Improving access to and education/interpretation of biodiversity sites for tourism and the local population, providing their ecological integrity is not harmed.

4 Methodology

4.1.1. This report provides information relevant to HRA screening (stage 1) and AA (stage 2) and aims to determine if the Scheme is likely to have an LSE on any European sites screened in and the mitigation required.

4.1.2. The approach and methodology have also been determined following the detailed consultation process detailed in the **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6].**

4.1.3. Detailed methodology at each stage is set out below.

4.1.4. To inform the scope of the Stage 1 Screening and potential for LSEs, the detail within the Ecology ES Chapter was used for reference.

4.1.5. The methodology utilised for the non-breeding bird surveys used to determine the potential for impact on bird populations forming part of nearby Special Protection Areas (SPA) and Ramsar is outlined in **Chapter 7 Ecology and Nature Conservation [Document Reference 6.2.7]**.

4.1.6. The methodology used to determine the potential for impacts on water quality and quantity is also detailed within **Chapter 7 Ecology and Nature Conservation [Document Reference 6.2.7]**.

4.2. HRA Stage 1: Screening

4.2.1. Screening aims to determine if the Scheme is expected to have any LSEs on European sites. An effect is considered 'likely significant' if, in the absence of mitigation, it cannot be excluded based on objective information and it might undermine a European site's conservation objectives.

4.2.2. To assess whether LSEs may occur, the following information is provided:

- Identification of relevant European sites and their respective qualifying features (presented in **Section 4, European sites**);

- Identification and understanding of the conservation objectives of the identified sites (presented in **Section 4, European site**s);
- Where relevant, an estimation of the likely magnitude, duration, location and extent of effects on European sites if any are anticipated (presented in **Section 5, HRA screening (stage 1);** and
- Identification of whether any element of the Scheme will have an LSE on any qualifying feature, either alone or in-combination with other projects and plans (presented in **Section 5, HRA screening (stage 1)**).

4.2.3. This assessment has been informed by thorough review of the Scheme (set out in **Section 1** above) and **the ES.** In addition, the following resources were reviewed to inform this report:

- The Habitats Regulations 2017 (as amended);
- UK government guidance on the use of Habitats Regulations Assessment[5];
- Joint Nature Conservation Committee for citations of European sites and associated conservation objective and site improvement plan documents[6];
- Natural England's web resources for citations of European sites and associated conservation objectives and site improvement plan documents;
- Multi-Agency Geographic Information for the Countryside (MAGIC) interactive maps for locations of statutory sites (DEFRA 2020) within a 30km search radius of the site[7];
- Doncaster Council Local Plan; and
- North Lincolnshire Core Strategy.

4.2.4. In order to establish the European sites which may be affected by the Scheme, a 10km search radius was used from the site boundary, which was defined as the

5 Ministry of Housing, Communities and Local Government (2019) Guidance Appropriate assessment: Guidance on the use of Habitats Regulations Assessment, [Online] Available at: https://www.gov.uk/guidance/appropriate-assessment [Accessed: April 2023].
6 JNCC (2020) Joint Nature Conservation Committee for citations of internationally designated sites, [Online] Available at: https://jncc.gov.uk/our-work/uk-protected-areas/ [Accessed April 2023].
7 [Online] Available at: https://magic.defra.gov.uk/ [Accessed April 2023]

Zone of Influence (ZoI). An additional search for designated sites that support mobile species was also undertaken up to 30km from the Order Limits boundary

4.2.5. **Figure 2-2** shows the locations of the European Conservation Designations within the 10km search radius.

4.2.6. The CJEU in the case of People Over Wind, Peter Sweetman v Coillte Teoranta ruled that "*in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site*"[8]. Hence it is not acceptable for the stage 1 screening assessment to rely on avoidance or reduction (mitigation) measures. Therefore, if it cannot be concluded that there will be no LSE in the absence of mitigation measures at the screening stage, HRA stage 2 (AA) is required.

4.3. In-combination Assessment

4.3.1. This report considers the potential for 'in-combination effects' on European sites from the Scheme. The list of cumulative sites used is the same as that used for the cumulative impact assessment completed as part of the ES.

4.4. Assessment of Effects and Mitigation Measures

4.4.1. An assessment of the potential effects for European sites in view of their conservation objectives is made, in terms of the magnitude, duration, location and extent of effects, both alone and in-combination with other developments.

4.4.2. Mitigation measures can include both avoidance measures and reduction measures, but the former approach is preferred.

4.5. Integrity Test

4.5.1. The integrity test requires the competent authority to ascertain if the Scheme (alone and in-combination with other plans / projects) will not have a significant adverse effect on a European site's integrity, which is defined as:

8 Court of Justice of the European Union (CJEU) (2018) Judgement of 12.4.2018 - Case C-323/17 People Over Wind and Sweetman

"*The coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the level of populations for the species for which it was classified.*"[9]

4.6. Consultation

4.6.1. Consultations with the following statutory bodies to inform the Ecological Assessment use to inform this sHRA were undertaken:

- Natural England (NE);
- Doncaster Council; and
- North Lincolnshire Council.

4.6.2. The ES provides a table of issues consulted on as part of the ES process, together with copies of advice provided by NE via Discretionary Advice Service (DAS).

5 European Sites

5.1.1. The site falls within the Zone of Influence for six European Conservation Designations identified by MAGIC, listed in **Table 5-1** below. Qualifying features and threats of each European conservation designated site are provided in **Table 5-2**.

5.1.2. Designated sites which are identified for consideration within the screening assessment (HRA Stage 1) have been identified following the below criteria, which have been adapted from Highways England guidance[10]:

- Criterion 1: A designated site or functionally linked land (i.e. land that is used by mobile qualifying species) within, or within 10km of the proposed development (30km for European designated sites that support mobile species was also undertaken).

9 The Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019) Guidance: Appropriate Assessment, [Online] Available at: https://www.gov.uk/guidance/appropriate-assessment [Accessed: April 2023]

[10] Highways England (2020) Design Manual for Roads and Bridges LA 115 Habitats Regulations Assessment, Revision 1.

- Criterion 2: The proposed development crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as a designated site (i.e. is hydrologically linked);
- Criterion 3: The proposed development has a potential hydrogeological linkage to a designated site; and
- Criterion 4: Any designated sites within 10 km of the proposed development with relevant QIs which may be impacted by changes in air quality (i.e. aerially linked).

Table 5-1: European Statutory Designated Sites within the search radius of 10km

Site Name	Designation	EU Code	Area (ha)	Distance and Direction from Site
Humber Estuary	SPA	UK9006111	37630	7.7km north
	SAC	UK0030170	36657	5.6km northeast
	Ramsar	663	37,988	5.6km northeast
Thorne and Hatfield Moors	SPA	UK9005171	2438	0.53 ha within the site
Thorne Moor	SAC	UK0012915	1911	0.53 ha within the site
Hatfield Moor	SAC	UK0030166	1359	0.1 km south

5.1.3. In addition to the above, European designated sites that are located within 30km of the Order Limits and which are designated due to comprising relevant mobile species that have not been scoped out earlier, include:

- Lower Derwent Valley SPA - 17.2km north;
- Lower Derwent Valley Ramsar - 17.1km north;

5.1.4. The non-breeding and breeding bird surveys did not record any significant numbers of the Lower Derwent SPA and Ramsar species utilising the Order Limits.

5.1.5. The distance of this SPA and Ramsar to the Order Limits also ensures any impacts are unlikely. As such, these designated sites are not considered further and are screened out of the sHRA.

5.1.6. Given that the Order Limits does not lie within the ZoI for any other European sites, and none are present within 10km of the Order Limits, effects on European sites other than those listed in **Table 5-1** have been scoped out of this assessment and are discussed no further within this report.

5.1.7. **Table 5-2**. below sets out the qualifying features and threats relating to each of the European conservation designated sites assessed as part of the HRA, which includes all potential threats and not just as a consequence of the Scheme.

Table 5-2: Qualifying Features and Threats for European Designations assessed as part of the HRA

Site Name	Qualifying Features	Threats[11]
Humber Estuary SPA	This site is designated as a Special Protection Area under Article 4.1 of the Directive 79/409/EEC for the following species: **Wintering** Avocet *Recurvirostra avosetta* (1.7% of the GB Population 5 year peak mean 1996/7-2000/01); Bittern *Botaurus stellaris* (4.0% of the GB Population 5 year peak mean 1998/99-2002/03); Hen harrier *Circus cyaneus* (1.1% of the GB Population 5 year peak mean 1997/98-2001/02);	Threats to the various components of the estuary include habitat degradation, both to the qualifying SAC habitats and supporting SPA habitats, through recreational usage. The SPA component is also under threat through the loss of functionally linked land associated with development. Construction activities also put all components under

[11] Information on threats to designations were taken from their respective Natura 2000 Standard Data Forms, Site Improvement Plans and/ or Supplementary Advice Documentation.

	Golden Plover *Pluvialis apricaria* (12.3% of the GB Population 5 year peak mean 1996/97-2000/01); Bar-tailed godwit *Limosa lapponica* (4.4% of the GB Population 5 year peak mean 1996/97-2000/01); **On passage** Ruff *Philomachus pugnax* (1.4% of the GB Population 5 year peak mean 1996-2000); **In the breeding season** Bittern *Botaurus stellaris* (10.5% of the GB Population 3 year peak mean 2000-2002); Marsh harrier *Circus aeruginosus* (6.3% of the GB Population 5 year peak mean 1998-2002); Avocet *Recurvirostra avosetta* (8.6% of the GB Population 5 year peak mean 1998-2002); Little tern *Sterna albifrons* (2.1% of the GB Population 5 year peak mean 1998-2002); This site is also designated as a Special Protection Area under Article 4.2 of the Directive 79/409/EEC for the following species: **Wintering** Shelduck *Tadorna tadorna* (1.5% of subspecies/ Population 5 year peak mean 1996/97-2000/01); Knot *Calidris canutus* (6.3% of the subspecies/ Population 5 year peak mean 1996/97-2000/01); Dunlin *Calidris alpina* (1.7% of the subspecies/ Population 5 year peak mean 1996/97- 2000/01);	threat through uncontrolled pollution/run-off. Located beyond the distance that impacts could occur from air quality and noise. Abiotic (slow) natural processes Invasive non-native species Changes in biotic conditions Changes in abiotic conditions

	Black-tailed godwit *Limosa limosa* (3.2% of the subspecies/ Population 5 year peak mean 1996/97- 2000/01); Redshank *Tringa totanus* (3.6% of the subspecies/ Population 5 year peak mean 1996/97- 2000/01); **On passage** Knot *Calidris canutus* (4.1% of the subspecies/ Population 5 year peak mean 1996-2000); Dunlin *Calidris alpina* (1.5% of the subspecies/ Population 5 year peak mean 1996- 2000); Black-tailed godwit *Limosa limosa* (2.6% of the subspecies/ Population 5 year peak mean 1996- 2000.); Redshank *Tringa totanus* (5.7% of the subspecies/ Population 5 year peak mean 1996- 2000); The site also qualifies under Article 4.2 of Directive 79/409/EEC for its 'internationally important assemblage of birds over winter', which include: Dark-bellied brent goose *Branta bernicla bernicla*; Shelduck *Tadorna tadorn*; Wigeon *Anas penelope*; Teal *Anas crecca*; Mallard *Anas platyrhynchos;* Pochard *Aythya ferina;* Scaup *Aythya marila;* Goldeneye *Bucephala clangula;*	

	Bittern *Botaurus stellaris;* Oystercatcher *Haematopus ostralegus* Avocet *Recurvirostra avosetta;* Ringed plover *Charadrius hiaticula;* Golden plover *Pluvialis apricaria;* Grey plover *P. squatarola;* Lapwing *Vanellus vanellus* Knot *Calidris canutus* Sanderling *C. alba* Dunlin *C. alpina* Ruff *Philomachus pugnax;* Black-tailed godwit *Limosa limosa* Bar-tailed godwit *L. lapponica* Whimbrel *Numenius phaeopus;* Curlew *N. arquata* Redshank *Tringa tetanus;* Greenshank *T. nebularia*; and Turnstone *Arenaria interpres.*	
Humber Estuary Ramsar	The Humber Estuary is designated a Ramsar due to comprising the following Ramsar criteria[12]: Criterion 1 – estuarine habitat Criterion 3 – breeding colony of grey seals Criterion 3 – breeding natterjack toad	Disturbance to vegetation through cutting / clearing Vegetation succession

[12] JNCC. 31 August 2007. Information Sheet on Ramsar Wetlands (RIS) . Humber Estuary

	Criterion 5 – waterfowl assemblage in non-breeding season Criterion 6 – golden plover (passage) Criterion 6 – red knot (passage and wintering) Criterion 6 – dunlin (passage and wintering) Criterion 6 – black-tailed godwit (passage and wintering) Criterion 6 – redshank (passage and wintering) Criterion 6 – Shelduck (wintering) Criterion 6 – golden plover (wintering) Criterion 6 – bar-tailed godwit (wintering) Criterion 8 – migration route for river lamprey and sea lamprey.	Water diversion for irrigation/domestic/industrial use Overfishing Pollution – domestic sewage Pollution – agricultural fertilisers Recreational/tourism disturbance (unspecified) Coastal squeeze causing loss of intertidal habitats and saltmarsh due to sea level rise and fixed defences.
Humber Estuary SAC	The site is designated as an SAC for the presence of the following Annex I habitats which are a primary reason: 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide The following Annex I habitats are also present as a qualifying feature, but not a primary reason for selection 1110 Sandbanks which are slightly covered by sea water all the time 1150 Coastal lagoons 1310 Salicornia and other annuals colonizing mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Industrial or commercial areas; Pollution to groundwater (point sources and diffuse sources); Human induced changes in hydraulic conditions; Abiotic (slow) natural processes; Changes in abiotic conditions. Construction activities also put all components under threat through uncontrolled pollution/run-off.

	2110 Embryonic shifting dunes 2120 "Shifting dunes along the shoreline with *Ammophila arenaria* (""white dunes"")" 2130 "Fixed coastal dunes with herbaceous vegetation (""grey dunes"")" * Priority feature 2160 Dunes with *Hippopha rhamnoides* The following Annex II habitats are also present as a qualifying feature, but not a primary reason for selection 1095 Sea lamprey *Petromyzon marinus* 1099 River lamprey *Lampetra fluviatilis* 1364 Grey seal *Halichoerus grypus*	
Thorne and Hatfield Moors SPA	**ARTICLE 4.1 QUALIFICATION (79/409/EEC)** During the breeding season the area regularly supports nightjar *Caprimulgus europaeus* (66 breeding pairs), 1.9% of the GB breeding population 5 count peak mean 1993, 1995-1998	Other urbanisation, industrial and similar activities. Outdoor sports and leisure activities, recreational activities. Construction activities also put all components under threat through uncontrolled pollution/run-off.
Thorne Moors SAC	**Annex I habitats** Degraded bogs still capable of regeneration Active raised bogs Thorne Moor is England's largest area of raised bog, lying a few kilometres from the smaller Hatfield Moors, both within the former floodplain of the rivers feeding the Humber estuary (Humberhead Levels), and includes the sub-components Goole Moors and Crowle Moors**.**	Outdoor sports and leisure activities, recreational activities. Air pollution, air-borne pollutants. Human induced changes in hydraulic conditions. Biocenotic evolution, succession.

		Other human intrusions and disturbances Construction activities also put all components under threat through uncontrolled pollution/run-off. Invasive non-native species.
Hatfield Moors SAC	**Annex I habitats** 7120 Degraded raised bogs still capable of natural regeneration Like Thorne Moors, Hatfield Moors is a remnant of the once-extensive bog and fen peatlands within the Humberhead Levels, and is still the second-largest area of extant lowland raised bog peat in England	Outdoor sports and leisure activities, recreational activities. Other human intrusions and disturbances. Invasive non-native species. Air pollution, air-borne pollutants. Human induced changes in hydraulic conditions. Biocenotic evolution, succession. Construction activities also put all components under threat through uncontrolled pollution/run-off.

5.1. Conservation Objectives

5.1.1. Conservation objectives are set out by NE to help public bodies comply with the law and to protect European sites.

5.1.2. Conservation objectives for the European protected sites are set out below in **Table 5-3**. '*To ensure that the integrity of the site is maintained or restored as*

appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds directive by maintaining or restoring':

5.1.3. The conservation objectives for both the Humber Estuary SPA and Thorne and Hatfield Moors SPA are the same and are detailed on the table below**.**

Table 5-3: Humber Estuary SPA and Thorne and Hatfield Moors SPA **Conservation Objectives**

SPA Conservation Objectives
• Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features; • The structure and function of the habitats of the qualifying features; • The supporting processes on which the habitats of the qualifying features rely; • The population of each of the qualifying features; and • The distribution of the qualifying features within the site.

5.1.4. The conservation objectives for the Humber Estuary SAC are detailed on the table below.

Table 5-4: Humber Estuary SAC Conservation Objectives

SAC Conservation Objectives
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.

5.1.1. The conservation objectives for Thorne Moors SAC and Hatfield Moors SAC are the same and are detailed on the table below.

Table 5-5: Thorne Moors SAC and **Hatfield Moors SAC Conservation Objectives**

SAC Conservation Objectives
Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats ¬ • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely

5.1.2. Ramsar sites do not have conservation objectives detailed in the same way as they are for SPAs and SACs, although there is an overall Humber Management Scheme (HMS)[13] that provides a coordinated approach for the management of the Humber Estuary European Marine Site (EMS). With support from both statutory and non-statutory organisations, actions are developed and delivered to bring the estuary into what is known as 'favourable condition'.

6 HRA Screening (Stage 1)

6.1.1. The aim of the HRA Screening is to establish whether construction or operation of the Scheme is likely to result in a LSE on European Sites, either alone or in combination with other projects / plans.

6.1.2. In this stage, the following information is required:

- Identification of internationally designated sites;
- Identification / understanding of conservation objectives of each interest/ qualifying feature;
- Estimation of the likely magnitude, duration, location and extent of effects of the changes on internationally designated sites, as far as can be reasonably predicted; and

[13] The Humber Management Scheme

- Identification of whether any element of the development will have an LSE on any feature or interest, either alone or in combination with other projects / plans.

6.2. Site Context

6.2.1. Figure 2-1 illustrates the location of the Order Limits in relation to the European Sites concerned and they are summarised below.

Thorne Moor SAC & Hatfield Moors SACs

6.2.2. Both SAC's are designated for their 'degraded raised bogs still capable of natural regeneration'. Hatfield Moors SAC is situated approximately 100m south of the Order Limits. A small section of the northeastern boundary of the Order Limit extends into Thorne Moor SAC. Whilst this small 0.53ha area is included within the Order Limits, no development works are proposed within the SAC. The Order Limits is dominated by intensively managed arable farmland and the habitat survey did not identify any areas of bog habitat. Areas of peat are shown as present within the Order Limits based on geological and Natural England maps. However, no evidence of peat/heath/bog mire communities were recorded during the habitat surveys.

LSEs during Construction

6.2.3. The SAC is linked to the Order Limits by a network of drainage ditches and impacts could occur to this SAC from any changes in water quality and quantity. Polluting incidences and run-off could detrimentally impact the SAC including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

6.2.4. Impacts from air quality during construction, including dust and vehicle emissions, could detrimentally impact the qualifying features.

LSEs during Operation

6.2.5. Operational effects are defined as effects following the construction of the Scheme. Operational effects generally relate to the change to land use and/or operational disturbance of habitats or species within or adjacent to the Order

Limits, on either a temporary or permanent basis. Some effects may reduce with habituation or remain for the lifetime of The Scheme.

6.2.6. There are no operational effects relating to land take or habitat loss additional to those already addressed under Construction.

6.2.7. In addition, as the Scheme is for renewable energy generation and energy storage there will be no impacts as a consequence of increases in population size or recreation.

Thorne & Hatfield Moors SPA

6.2.8. This is designated for its population of breeding nightjar and is divided into two different areas that comprise the same boundaries as the SAC detailed above. The southern section is located approximately 100m south of the Order Limits and a small section of the northeastern boundary of the Order Limit extends into the northern section, although no development works are proposed within the SPA.

6.2.9. The survey scope and the scope for assessment of impacts to nightjar was agreed with Natural England, with information provided by them through two different DAS responses, as well as an online Teams meeting (see Appendix 4). In addition, Natural England's comments on the PEIR Chapter, which included detail on the approach for nightjar was used to inform the ES and this Report to Inform HRA.

6.2.10. Nightjar surveys of the SPA were undertaken in 2022, as part of ongoing monitoring works for the Tween Bridge Wind Farm instructed by RWE. Please refer to **Technical Appendix 7.4 [Document Reference 6.3.7.4]** within **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6]** for full details. In summary, surveys found 58 churring males in Thorne and Crowle Moors (to the north of the Order Limits), which is the highest number on record since 2017. Surveys of Hatfield Moors (south of the Order Limits) found 52 churring males or territories which is the highest number since survey began in 2005. Surveys were focused within the SPA boundaries but no churring males/territories were noted within the Order Limits or immediately adjacent.

6.2.11. Following information from Natural England, nightjar data was requested from the nightjar study undertaken in the area *'LIFE+ - 'That's Life' Monitoring of European Nightjar'.* This data was received in May and June 2025 and has informed this assessment and is included in **Appendix 7.4 Nightjar Survey Results [Document**

Reference 6.3.7.4] within **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6].**

6.2.12. Radio-tracking studies were carried over this period with a number of male nightjar tagged and tracked from the Thorne and Hatfield Moors SPA.

6.2.13. The records provided that been reviewed appear to show territories that occur on the edges of the moorland sites (Thorne and Hatfield). The locations cluster in areas outside of the Scheme strongly suggesting that nesting did not occur within the Order Limits boundary. This is supported by the Breeding Bird Survey results and would be consisted with the known nesting preferences for this species i.e. heathland, moorland and young conifer woodland.

6.2.14. Some of the less clustered, outer territory location points fall within the Order Limits and it can be reasonably presumed that these outliers are more closely associated with foraging behaviour. Several studies have highlighted the importance of habitats beyond the song territories **[Ref: 7-47]** for foraging Nightjar. The same study also demonstrated the importance of having foraging and nesting habitats in close proximity and that these are not always the same habitat type. Additional research **[Ref: 7-48]** showed that Nightjar avoided conifer plantations and arable for improved grassland for foraging.

LSEs during Construction

6.2.15. No development is proposed within the SPA boundary, so no impacts from land take will occur.

6.2.16. Habitats within the Order Limits have limited potential for the species, consisting of intensively managed arable farmland, which holds little value as a habitat or foraging resource for this specialist species and therefore the loss of this habitat will not be significant for nightjar.

6.2.17. No moorland habitat was found within the Order Limits and usage by this species is restricted to occasional use as a foraging resource along boundaries that will be retained and protected.

6.2.18. No development is proposed within the SPA boundary, so no impacts from land take will occur.

6.2.19. No moorland habitat was found within the Order Limits and usage by this species is restricted to occasional use as a foraging resource along boundaries that will be retained and protected.

6.2.20. Given the close proximity of the SPA to the Order Limits boundary, should construction take place during the time nightjar are present between April and August[14], there is potential that disturbance impact from construction could occur from noise and lighting.

6.2.21. Polluting incidences and run-off could detrimentally impact the SPA including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

6.2.22. Impacts from air quality during construction, including dust and vehicle emissions, could detrimentally impact the qualifying features.

LSEs during Operation

6.2.23. There are no operational effects relating to land take or habitat loss additional to those already addressed under Construction.

6.2.24. In addition, as the Scheme is for renewable energy generation and energy storage there will be no impacts as a consequence of increases in population size or recreation.

Humber Estuary SAC

6.2.25. The SAC is located approximately 5.6km from the Order Limits. This SAC is designated for its estuarine habitats including coastal plain-mudflats and sandflats. It also supports populations of sea and river lampreys as well as grey seals which are qualifying features of the SAC.

LSEs during Construction

6.2.26. No direct impacts are anticipated on the predominantly coastal and maritime habitats and species the SAC supports, due to the separation distance of over

[14] Nightjar Bird Facts | Caprimulgus Europaeus

5.6km. Whilst drains and ditches within and adjacent to the Order Limits could support lamprey species, no records of them were returned within the data search and therefore they are considered unlikely to be present. However, buffers around drains and watercourses as well as measures set out within the eCMP would ensure the habitat is retained and protected suitable to support lamprey and their free movement in the future.

6.2.27. The potential impacts from airborne pollutants and any changes in water quality and quantity could impact this SAC and the species that are present including sea and river lamprey.

LSEs during Operation

6.2.28. There are no operational effects relating to land take or habitat loss additional to those already addressed under Construction.

6.2.29. In addition, as the Scheme is for renewable energy generation and energy storage there will be no impacts as a consequence of increases in population size or recreation.

Humber Estuary SPA

6.2.30. The Humber Estuary SPA is situated approximately 7.7km northeast of the Order Limits. Species associated with the Humber Estuary SPA and Ramsar recorded within the Order Limits included: Mallard, teal, lapwing, golden plover, grey plover, curlew, hen harrier and marsh harrier.

6.2.31. Within the Wider Survey Area (WSA) which comprised surrounding fields up to 600m from the Order Limits in line with best practice, target species comprised: mallard, teal, golden plover, hen harrier and marsh harrier.

6.2.32. Additionally, species associated with the Humber Estuary SPA were listed in the WSA and included marsh harrier, hen harrier, lapwing, mallard and teal.

6.2.33. **Table 6-1 and 6-2** below summarises peak counts of each qualifying species recorded within the Order Limits and are a direct extract from Appendix 1.

Table 6-1: SPA qualifying species recorded within and outside of the Order Limits during 2022/23. Note that nocturnal and diurnal surveys were

combined and peak count of the two is provided, alongside the percentage of the *most up to date (2023/24) WeBS 5-year mean totals.*[15]

Species	2022				2023		
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Within the Order Limits							
Curlew Humber Estuary 5 year mean 2022/23 **2,473**	0	0	0	0	0	0	2 (0.08%)
Golden plover Humber Estuary 5 year mean 2022/23 **21,160**	53 (0.25%)	0	0	37 (0.17%)	21 (0.10%)	0	0
Green sandpiper Humber Estuary 5 year mean 2022/23	1 **(7.14%)**	1 **(7.14%)**	1 **(7.14%)**	0	1 **(7.14%)**	0	0

[15] Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M., and Frost, T.M. 2025.
Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme.
BTO/RSPB/JNCC/NatureScot. Thetford.

14							
Greylag goose Humber Estuary 5 year mean 2022/23 **2,569**	375 (14.60%)	0	19 (0.74%)	0	0	0	8 (0.31%)
Lapwing Humber Estuary 5 year mean 2022/23 **15,951**	390 (2.44%)	25 (0.16%)	31 (0.19%)	127 (0.8%)	260 (1.63%)	32 (0.20%)	32 (0.20%)
Little egret Humber Estuary 5 year mean 2022/23 **215**	0	1 (0.47%)	1 (0.47%)	0	0	0	1 (0.47%)
Mallard Humber Estuary 5 year mean 2022/23 **1,459**	**92 (6.31%)**	**24 (1.64%)**	0	12 (0.82%)	**27 (1.85%)**	**64 (4.39%)**	6 (0.41%)
Pink-footed goose	**330 (1.41%)**	**360 (1.54%)**	0	0	0	0	0

Humber Estuary 5 year mean 2022/23 **23,330**							
Shoveler Humber Estuary 5 year mean 2022/23 **317**	0	0	0	0	2 (0.63%)	0	0
Teal Humber Estuary 5 year mean 2022/23 **9,994**	0	2 (0.02%)	0	3 (0.03%)	6 (0.06%)	0	4 (0.04%)
Outside of the Order Limits							
Golden plover	76	480	21	20	1	0	38
Green sandpiper	0	0	0	1	0	0	0
Greylag goose	150	0	0	0	0	155	34
Lapwing	260	136	1	71	14	6	13
Little egret	1	2	1	1	1	0	0
Mallard	60	2	5	42	21	17	10

Pink-footed goose	700	42	0	0	0	21	0
Shoveler	1	0	0	0	0	0	0
Teal	0	0	0	0	23	3	9
Common crane	3	0	0	0	0	0	2

Table 6-2: SPA qualifying species and species part of the wider waterbird assemblage recorded within and outside of the Order Limits during the Winter Walkover and Nocturnal Bird Surveys combined during 2023/24.

Note that nocturnal and diurnal surveys were combined and the maximum peak count of the two is provided alongside the percentage of the most up to date (2023/24) WeBS 5-year mean totals.[16]

Species	2023				2024			
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Within the Order Limits								
Curlew WeBS 5-year mean for the Humber Estuary **2,473**	0	0	0	0	0	0	2 (0.16%)	2 (0.16%)

[16] Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M., and Frost, T.M. 2025.
Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

Dunlin WeBS 5-year mean for the Humber Estuary **22,346**	0	6 (0.027 %)	27 (0.121 %)	0	0	0	0	0
Little egret WeBS 5-year mean for the Humber Estuary **226**	0	1 (0.442 %)	0	0	0	0	1 (0.442%)	0
Green sandpiper WeBS 5-year mean for the Humber Estuary **19**	0	0	0	**1 (5.26 %)**	0	0	0	0
Greylag goose WeBS 5-year average for the Humber Estuary **2285** [17] [18]	0	**210 (9.19%)**	**157 (6.87 %)**	12 (0.52%)	0	**27 (1.18%)**	**76 (3.33%)**	9 (0.39%)

[17] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

[18] Contains Goose and Swan Monitoring Programme (GSMP) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. GSMP is a partnership, run by and jointly funded by BTO, JNCC and NS, with fieldwork conducted by both volunteer and professional surveyors.

Golden plover (WeBS 5-year mean for the Humber Estuary **21,623)**	0	0	82 (0.38 %)	2 (0.00 9%)	84 (0.389%)	0	6 (0.028%)	0
Lapwing WeBS 5-year mean for the Humber Estuary **11,859**	5 (0.042 %)	**220 (1.855 %)**	**371 (3.129 %)**	53 (0.447 %)	79 (0.666%)	**147 (1.24%)**	11 (0.093%)	4 (0.034%)
Mallard WeBS 5-year mean for the Humber Estuary 1,459	2 (0.14%)	**33 (2.26 %)**	**78 (5.35 %)**	**125 (8.567 %)**	**49 (3.357%)**	**92 (6.305 %)**	**16 (1.096%)**	10 (0.685%)
Oystercatcher WeBS 5-year mean for the Humber Estuary 7,218	0	0	0	0	0	0	2 (0.028%)	0
Pink-footed goose WeBS 5-year mean for the Humber Estuary **27,329**	0	**1600* (5.85 %)**	**620 (2.27 %)**	194 (0.71%)	0	**1530 (5.63%)**	0	0

Teal WeBS 5-year mean for the Humber Estuary **9,994**	0	0	0	2 (0.020%)	12 (0.120%)	2 (0.020%)	2 (0.020%)	1 (0.010%)
Wigeon WeBS 5-year average for the Humber Estuary **6,452**	0	6 (0.093%)	0	0	0	42 (0.651%)	0	0
Outside of the Order Limits								
Little egret	2	2	6	4	0	0	0	0
Greenshank	1	0	1	0	0	0	0	0
Greylag goose	0	184	36	64	0	0	22	1
Golden plover	0	3	20	0	1	0	0	0
Lapwing	54	48	28	12	27	66	29	2
Mallard	49	57	28	30	8	63	47	2
Pink-footed goose	0	1120	0	668	14	0	0	0
Teal	3	4	5	18	8	9	6	2

6.2.34. Based on the Year 1 and Year 2 survey results, the non-breeding bird assemblage recorded within the Order Limits is typically representative of farmland habitats.

6.2.35. An assessment of significance has been undertaken to determine if the Order Limits are considered to be 'functionally linked' to the Humber Estuary SPA, which

is situated approximately 7.7km northeast. Functional linkage is not defined in case law but is generally considered to be relevant when over 1% of a given SPAs population of qualifying features are regularly present and the site is considered 'important' in the life cycle of the qualifying species.

6.2.36. Greylag goose, lapwing, mallard, and pink-footed goose exceeded the 1% threshold of their WeBS 5-year mean[19] from the Humber Estuary SPA within the Order Limits, indicating potential use of Functionally Linked Land (FLL).

6.2.37. Although greylag geese are not a qualifying feature of the SPA[20], in accordance with advice from Natural England within their DAS response data 04.04.25 (see Appendix 5), as numbers recorded exceeded the 1% threshold of their WeBS 5-year mean, impacts to loss of functionally linked land for this species is assessed.

6.2.38. Although the numbers of golden plover recorded in the Order Limits demonstrates that the Order Limits is not functionally linked to the SPA for this species, the numbers in the Wider Survey Area indicate that the habitats there could be functionally linked to the SPA.

Other Features Considered in Screening

6.2.39. Common crane were recorded during the surveys, but only three were recorded on the ground during surveys in September 2022, three in October 2022 and two in March 2023, although all these recordings were not within the Order Limits itself, but within the WSA (see Appendix 1).

6.2.40. Two common cranes were also recorded flying over the Order Limits in January 2024 from the direction of Hatfield Moors SSSI, but not landing within the Order Limits boundary.

[19] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

[20] JNNC. STANDARD DATA FORM for sites within the 'UK national site network of European sites' – Humber Estuary

6.2.41. Based on the survey results, the Order Limits is not functionally linked to any designated site for common cranes and the Order Limits do not comprise important habitat for this species.

6.2.42. Although the number of golden plover recorded within the Order Limits demonstrates that the Order Limits is not functionally linked to the SPA for this species, given the number recorded in the wider survey area, measures have been provided for this species too.

6.2.43. The breeding bird surveys undertaken in 2022, 2023 and 2025 demonstrate that the Order Limits does not comprise important habitat or functionally linked land for breeding species associated with the Humber Estuary SPA. Occasional Marsh Harrier were recorded flying over with no breeding activity recorded.

LSEs during Construction

6.2.44. Potential impacts on non-breeding birds associated with the Humber Estuary SPA include loss of functionally linked land for lapwing, mallard, pink-footed goose and greylag goose and disturbance to these species and golden plover in adjacent land during construction.

6.2.45. Field boundaries including ditches, drains and hedgerows will be retained and protected, and these habitats will be enhanced as part of the mitigation, with species diverse grassland along field margins and hedgerow planting. Details including management practices are set out within the **eCMP [Document Reference: 7.9.5]** and **LEMP [Document Reference 7.9.6]**. Ditch habitats will be retained and therefore remain available for water birds such as mallard and teal, and hen harrier and marsh harrier will be able to continue to hunt along field boundaries, which will be enhanced. However, these species could be temporarily disturbed during construction.

LSEs during Operation

6.2.46. There are no operational effects relating to land take or habitat loss additional to those already addressed under Construction.

6.2.47. In addition, as the Scheme is for renewable energy generation and energy storage there will be no impacts as a consequence of increases in population size or recreation.

Humber Estuary Ramsar

6.2.48. The Humber Estuary Ramsar is situated approximately 5.6km northeast. Species associated with the Humber Estuary Ramsar recorded within the Order Limits included: golden plover and dunlin (see Appendix 1).

6.2.49. Within the Wider Survey Area (WSA) which comprised surrounding fields up to 600m from the Order Limits in line with best practice, Ramsar species comprised: golden plover.

6.2.50. The numbers of golden plover recorded within the Order Limits are detailed above with regards to the Humber Estuary SPA. Although the numbers of golden plover recorded in the Order Limits demonstrates that the Order Limits is not functionally linked to the SPA for this species, the numbers in the Wider Survey Area, indicate that the habitats there could be functionally linked to the SPA and therefore of importance to the Ramsar too.

6.2.51. Dunlin were recorded on three occasions during all surveys, with a peak count of 27 on one occasion, which equates to 0.121% of the Humber Estuary population. As such, the Order Limits is not functionally linked to this species, although the habitats are used occasionally (see Appendix 1).

6.2.52. Based on the habitats present within the Order Limits, there is no potential for Grey seal.

LSEs during Construction

6.2.53. Potential impacts on non-breeding birds associated with the Humber Estuary Ramsar are the same as detailed for the SPA, include disturbance to golden plover outside of the Order Limits during construction due to the numbers recorded in the WSA during surveys.

6.2.54. No direct impacts are anticipated on the predominantly coastal and maritime habitats and species the Ramsar supports, due to the separation distance of over 5.6km. Whilst drains and ditches within and adjacent to the Order Limits could support lamprey species, no records of them were returned within the data search and therefore they are considered unlikely to be present. However, buffers around drains and watercourses as well as measures set out within the eCMP would ensure

the habitat is retained and protected suitable to support lamprey and their free movement in the future.

6.2.55. The potential impacts from airborne pollutants and any changes in water quality and quantity could impact sea and river lamprey that utilise the Ramsar.

LSEs during Operation

6.2.56. There are no operational effects relating to land take or habitat loss additional to those already addressed under Construction.

6.2.57. In addition, as the Scheme is for renewable energy generation and energy storage there will be no impacts as a consequence of increases in population size or recreation.

LSEs during Decommissioning – All Internationally Designated Sites

6.2.58. Decommissioning effects are considered to be similar to those already described in relation to the construction phase, namely direct and indirect disturbance, temporary/permanent habitat loss and vegetation removal. Updated ecological desk study and species-specific surveys will therefore be undertaken prior to decommissioning in order to record the presence of protected and notable species and habitats, identify potential effects and any necessary protection and mitigation measures in order to comply with planning policy and wildlife legislation applicable at the time. Further detail is provided in section 6.

Potential Likely Significant Effects

6.2.59. **Table 6-3** below summarises the potential impact pathways and LSEs considered as part of this assessment. The following section outlines the potential LSEs on the nearby European protected sites.

Table 6-3: European sites assessed as part of the screening stage

Designated Site	Qualifying Feature	Potential Impact	Screened in / out

Thorne and Hatfield Moors SPA	Breeding nightjar	Disturbance to nightjar utilising adjacent Moors during construction phase, including from noise. Degradation of habitat quality within the SPA during construction, including dust and run-off. Changes to hydrological regime during construction	Screened in
Thorne and Hatfield Moors SAC	Degraded raised bogs still capable of natural regeneration	Degradation of habitat quality to SAC during construction, including dust and run-off. Changes to hydrological regime during construction.	Screened in
Humber Estuary SPA	Avocet (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Bittern (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Hen harrier (wintering)	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Golden plover (wintering)	Order Limits not functionally linked, but disturbance to foraging/roosting habitat adjacent to Order Limits in use by this species.	Screened **in**

	Bar-tailed godwit (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Ruff (passage)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Bittern (breeding)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Marsh harrier (breeding)	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Avocet (breeding)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Little tern (breeding)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Shelduck (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Knot (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Dunlin (wintering)	No habitat with potential to support species within Order	Screened out

		Limits. SPA too far to be directly impacted.	
	Black-tailed godwit (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Redshank (wintering)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Knot (passage)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Dunlin (passage)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Black-tailed godwit (passage)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Redshank (passage)	No habitat with potential to support species within Order Limits. SPA too far to be directly impacted.	Screened out
	Assemblage qualification (non-breeding season)		
	Dark-bellied brent goose	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened o**ut**

	Pink-footed goose	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Screened in
	Shelduck	No habitat with potential to support species within site	Screened out
	Wigeon	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Teal	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Mallard	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Screened in
	Pochard	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Scaup	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Goldeneye	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out

	Bittern	No habitat with potential to support species within site	Screened out
	Oystercatcher	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Avocet	No habitat with potential to support species within site	Screened out
	Ringed plover	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Golden plover	Order Limits not functionally linked, but disturbance to foraging/roosting habitat adjacent to Order Limits in use by this species.	Screened in
	Lapwing	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Screened in
	Knot	No habitat with potential to support species within site	Screened out
	Sanderling	No habitat with potential to support species within site	Screened out
	Dunlin	No habitat with potential to support species within site	Screened out
	Ruff	No habitat with potential to support species within site	Screened out

	Black-tailed godwit	No habitat with potential to support species within site	Screened out
	Bar-tailed godwit	No habitat with potential to support species within site	Screened out
	Whimbrel	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Curlew	Only low numbers recorded and Order Limits not functionally linked for this species. SPA too far to be directly impacted.	Screened out
	Redshank	No habitat with potential to support species within site	Screened out
	Greenshank	No habitat with potential to support species within site	Screened out
Humber Estuary Ramsar	Criterion 3 – breeding colony of grey seals	No habitat with potential to support species within site	Screened out
	Criterion 3 – breeding natterjack toad	No habitat with potential to support species within site	Screened out
	Criterion 5 – waterfowl assemblage in non-breeding season	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Screened in
	Criterion 6 – golden plover (passage)	Order Limits not functionally linked, but disturbance to foraging/roosting habitat adjacent to Order Limits in use by this species.	Screened in

	Criterion 6 – knot (passage and wintering)	No habitat with potential to support species within site	Screened out
	Criterion 6 – dunlin (passage and wintering)	No habitat with potential to support species within site	Screened out
	Criterion 6 – black-tailed godwit (passage and wintering)	No habitat with potential to support species within site	Screened out
	Criterion 6 – redshank (passage and wintering)	No habitat with potential to support species within site	Screened out
	Criterion 6 – Shelduck (wintering)	No habitat with potential to support species within site	Screened out
	Criterion 6 – golden plover (wintering)	Order Limits not functionally linked, but disturbance to foraging/roosting habitat adjacent to Order Limits in use by this species	Screened in
	Criterion 6 – bar-tailed godwit (wintering)	No habitat with potential to support species within site	Screened out
	Criterion 8 – migration route for river lamprey and sea lamprey	No direct impacts but potential for dust pollution/degradation of watercourses and could affect migration corridors	Screened in
	Criterion 1 – estuarine habitat	The Scheme is considered to be sufficiently distant from the estuarine habitats associated with the estuary to avoid any direct or indirect impacts.	Screened out

Humber Estuary SAC	1130 Estuaries, 1110 Sandbanks which are slightly covered by sea water all the time, 1150 coastal lagoons 1310 salicornia and other annuals colonizing mud and sand, 1330 Atlantic salt meadows, 2110 embryonic shifting dunes, 2120 shifting dunes along the shoreline with *Ammophilia arenaria*, fixed coastal dunes with herbaceous vegetation, 2160 dunes with *hippopha rhamnoides*, 1095 sea lamprey, 1099 river lamprey 1364 grey seal	Potential for impacts from any changes in water quality or quantity, although the Scheme is considered to be sufficiently distant from the estuarine habitats associated with the estuary to avoid any additional direct or indirect impacts. No direct impacts but potential for dust pollution/degradation of watercourses and could affect migration corridors for river and sea lamprey	Screened in

6.2.60. In addition to the above, greylag geese have been screened in as detailed above, due to potential habitat loss as a consequence of the Scheme.

7 Appropriate Assessment (Stage 2)

7.1. Approach to Appropriate Assessment

7.1.1. Where significant effects are likely, or it is uncertain if there would be likely significant effects, an AA is required.

7.1.2. For an AA, the implication of the plan/project on each affected site must be assessed in light of its conservation objectives. The development of conservation objectives is required by the 1992 Habitats' Directive (92/43/EEC); an objective of this legislation is to achieve 'favourable conservation status' (see **Box 6.1**) of the habitats and / or species features for which the site is designated.

Box 7-1: Favourable conservation status, as defined in the Habitats Directive

Conservation status for habitats is defined in Article 1(e) as:

"[The] *conservation status of natural habitats* [is] *the sum of influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species… The conservation status of natural habitats will be taken as 'favourable' when:*

- *its natural range and areas it covers within that range are stable or increasing; and*
- *the species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and*
- *the conservation status of its typical species is favourable*."

Conservation status for species is defined in Article 1(i) as:

"[The] *conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within* [its] *territory…The conservation status of species will be taken as 'favourable' when:*

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and*
- *the natural range of the species is neither being reduced for the foreseeable future; and*

7.2. Appropriate Assessment

7.2.1. Following the screening, the need for an AA has been identified based on the information included on Table 6.3.

7.2.2. Information to inform an Appropriate Assessment for each of the relevant designated sites is given below. This information includes an impact assessment

comprising descriptions of the qualifying features of the designated sites and their conservation objectives, as well as in-combination mitigation measures.

Impact Assessment

7.2.3. The design of the Scheme includes a range of inherent embedded elements which avoid or reduce the potential for adverse ecological impacts, including retaining existing identified higher value habitat features such as hedgerows, ponds, ditches, and woodlands, and focusing the majority of the Scheme proposals within lower ecological value agricultural land. Additionally, sensitive, or high value ecological features outside the Order Limits, which are described below, have been protected as part of the design which sets in place buffer zones and other safeguarding measures, all of which has been built-in to as part of the iterative design process.

Construction

7.2.4. Given the nature of the Scheme, solar and BESS, construction works will be minimal, with most potential construction impacts likely to occur through construction vehicle movements, security fence installation and the placement of the Panel Areas and BESS on the ground. In addition, potential impacts could occur due to the construction of cables and other infrastructure, although such impacts will, in the main, be temporary.

7.2.5. The potential for adverse effects during the construction phase have been 'designed out' where practicable, and these will be controlled through standard good construction and environmental working practices as an integral part of the Scheme, detailed within the CEMP **[Document Reference: 7.9.1]** and within the eCMP **[Document Reference: 7.9.5]**. Nonetheless, further detail relating to potential ecological impacts during construction prior to the implementation of mitigation is provided below.

Thorne & Hatifeld Moors SPA

7.2.6. This is designated for its population of breeding nightjar.

7.2.7. No infrastructure development is proposed within the SPA boundary, so no impacts from land take will occur.

7.2.8. Habitats within the Order Limits have limited potential for nightjar, consisting of intensively managed arable farmland, which holds little value as a habitat or

foraging resource for this specialist species (see previous section) and therefore the loss of this habitat will not be significant for nightjar.

7.2.9. Higher value boundary habitats that are likely to support invertebrate species will be retained and protected during works, followed by habitat enhancement for this species with the introduction of species-rich neutral grassland around field boundaries, which will also provide strengthened dispersal corridors throughout the landscape for this species.

7.2.10. No moorland habitat was found within the Order Limits and usage by nightjar is restricted to occasional use as a foraging resource along boundaries that will be retained and protected.

7.2.11. Given the close proximity of the SPA to the Order Limits boundary, should construction take place during the time nightjar are present between April and August [21]there is potential that disturbance impact from construction could occur from noise and lighting.

7.2.12. Polluting incidences and run-off during construction could detrimentally impact the SPA including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact, such as to invertebrates that nightjar forage on.

7.2.13. Impacts from air quality during construction, including dust and vehicle emissions, could also detrimentally impact the qualifying features.

Thorne Moor & Hatfield Moors SACs

7.2.14. Both SACs are designated for their 'degraded raised bogs still capable of natural regeneration'. Hatfield Moors SAC is situated 100m south of the Order Limits. A small section of the northeastern boundary of the Order Limit extends into Thorne Moor SAC. Whilst this small 0.53ha area is included within the Order Limits (Land Parcel A), no development works are proposed within the SAC. The Order Limits is dominated by intensively managed arable farmland and the habitat survey did not identify any areas of bog habitat. Areas of peat are shown as present within the

[21] RSPB (2025) Nightjar Bird Facts | Caprimulgus Europaeus https://www.rspb.org.uk/birds-and-wildlife/nightjar

Order Limits based on geological and Natural England maps. However, no evidence of peat/heath/bog mire communities was recorded during the habitat survey. With no construction activities occurring within the SAC boundaries, including the area within the Order Limits, there will be no direct construction impacts (such as habitat loss or land take) on the SAC.

7.2.15. The SAC is linked to the Order Limits by a network of drainage ditches and impacts could occur to this SAC from any changes in water quality and quantity. Polluting incidences and run-off could detrimentally impact the SAC including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

7.2.16. Impacts from air quality during construction, including dust and specifically vehicle emissions, could detrimentally impact the qualifying features.

Humber Estuary SPA

7.2.17. The SPA is designated for its assemblage of birds including wintering, passage and breeding birds. Such birds may use the Order Limits on occasion as part of a wider territory to forage and roost. Habitats which they can utilise include agricultural and arable fields, and if more than 1% of the qualifying number of each individual species is found to be present then this is considered to be functionally linked land. As suitable habitat is present within the Order Limits and results have recorded these habitats to be used by SPA bird species, there is the potential for likely significant effects to lapwing, mallard, pink-footed geese and greylag geese through loss of habitat.

7.2.18. Given the numbers of golden plover within the survey area, impacts could also take place to this species through a loss of habitat and disturbance during construction.

7.2.19. Given the low numbers recorded (i.e. below significance threshold of 1% of SPA population) – and general absence of suitable habitat, the following wintering species do not require any specific mitigation: curlew, marsh harrier, hen harrier and teal.

7.2.20. The results of the breeding bird surveys undertaken in 2023 and 2025 demonstrate that the Order Limits does not comprise important habitat or

functionally linked land for breeding species associated with the Humber Estuary SPA.

7.2.21. The field boundaries including ditches, drains and hedgerows will be retained and protected, and these habitats will be enhanced with species diverse grassland along field margins and hedgerow planting that will enhance foraging opportunities for breeding and wintering bird species. Details including management practices are set out within **LEMP [Document Reference: 7.9.6]**.

7.2.22. Given the distance of the SPA from the Order Limits there will be no impacts from direct land take or airborne emissions, including dust with dust only considered to be significant within 200m. However, as the Order Limits are functionally linked to a number of species for which the SPA is designated the construction of the Scheme could result in impacts from noise, disturbance and habitat loss to these species including, pink-footed geese, mallard, lapwing and greylag geese.

7.2.23. Although given the distance of the SPA form the Order Limits impacts from water quality and quantity are not likely, the extensive ditch network in the area could result in impacts arising from any changes in water quality and quantity. Polluting incidences and run-off could detrimentally impact the SAC including the flora and fauna it supports. Furthermore, run-off including from mud and debris arising from construction works entering the surface water / land drainage system, causing blockages and restricting flow could result in a negative impact.

Humber Estuary Ramsar

7.2.24. The Ramsar is designated for its estuarine habitats, populations of grey seals and assemblage of birds including wintering, passage and breeding birds and migrating river and sea lamprey.

7.2.25. No direct impacts are anticipated on the predominantly coastal and maritime habitats and species the Ramsar supports, such as grey seal , due to the separation distance of over 5.6km. Whilst drains and ditches within and adjacent to the Order Limits could support lamprey species, no records of them were returned within the data search and therefore they are considered unlikely to be present. However, buffers around drains and watercourses would ensure the habitat is retained and protected suitable to support lamprey and their free movement in the future.

7.2.26. Field boundaries including ditches, drains and hedgerows will be retained and protected, and these habitats will be enhanced with species diverse grassland

along field margins and hedgerow planting. Details including management practices are set out within **LEMP [Document Reference: 7.9.6]**.

Humber Estuary SAC

7.2.27. The SAC is designated for its estuarine habitats including coastal plain-mudflats and sandflats. It also supports populations of sea and river lampreys as well as grey seals which are qualifying features of the SAC.

7.2.28. No direct impacts are anticipated on the predominantly coastal and maritime habitats and species the SAC supports, due to the separation distance of over 5.6km. Whilst drains and ditches within and adjacent to the Order Limits could support lamprey species, no records of them were returned within the data search and therefore they are considered unlikely to be present. However, buffers around drains and watercourses would ensure the habitat is retained and protected suitable to support lamprey and their free movement in the future.

7.2.29. Field boundaries including ditches, drains and hedgerows will be retained and protected, and these habitats will be enhanced with species diverse grassland along field margins and hedgerow planting. Details including management practices are set out within **LEMP [Document Reference: 7.9.6]**.

Operational

7.2.30. There will be no operational negative effects on any designated sites over and above those described in the Construction section above.

7.2.31. Landscape planting will take place under and around the solar panels and above ground infrastructure (further detail below) and will be managed throughout the lifetime of the Scheme in accordance with the LEMP **[Document Reference: 7.9.6]** to deliver biodiversity benefits and enhanced natural habitats. These benefits will therefore be long-term.

7.2.32. Designated sites within and adjacent to the Scheme will benefit from enhanced habitat connections, opportunities for species dispersal within the Order Limits subject to very low levels of disturbance and the cessation of soil disturbance (ploughing) and inputs of agricultural chemicals to waterways and wetlands.

7.2.33. Improvement to water quality as a consequence of arable reversion and the cessation of agrichemical inputs is likely to result in an enhancement for aquatic flora and fauna.

7.2.34. Once constructed, the Scheme will be fenced and there will be limited disturbance, noise or lighting associated with the Scheme. The operational solar facility will not be lit, with lighting for example typically restricted to the entrance doorways of the small number of structures that require occasional maintenance visits and designed to minimise light spill. The operational Scheme is likely to result in less overall human activity and disturbance than is associated with current normal farming practices, to which local bird populations have already become relatively tolerant. Periodic cleaning and maintenance of PV modules will take place although will be temporary and not considered significant.

Decommissioning

7.2.35. Baseline conditions within the Order Limits are likely to change over the 40 years of operation, and prediction of these conditions at this point is considered unreliable in terms of predicting likely future decommissioning effects on biodiversity. However, potential impacts from decommissioning are considered to be similar to those already described in relation to the construction phase, namely direct and indirect disturbance, temporary/permanent habitat loss and vegetation removal.

Mitigation Measures

7.2.36. The 'Information to Inform an AA' looks at potential mitigation measures which would be required to determine if the magnitude, duration, location and extent of effects can be reduced/removed. These have been designed following the consultation undertaken with Natural England and detailed in the **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6].**

7.2.37. Full details on construction methods is detailed in the **Outline eCMP [Document Reference 7.9.5]** and **CEMP [Document Refence: 7.9.1],** with a summary below.

7.2.38. These mitigation measures would form part of the planning consent, including related DCO requirements, for the Scheme, if approved. Mitigation measures can include both avoidance measures and reduction measures, but the former

approach is preferred. Mitigation measures for each qualifying feature of the SPA/Ramsar/SAC are considered separately, below.

7.2.39. Construction is to be undertaken in phases and has been designed minimise disturbance and vehicle movements in order to reduce potential effects from disturbance and air quality / pollution.

7.2.40. Habitat protection buffers will be maintained throughout the construction phase and will be implemented as part of the **Outline eCMP [Document Reference 7.9.5]**a **CEMP [Document Refence: 7.9.1]**, and identified with appropriate fencing in line British Standards BS5837:2012 to prevent accidental damage and signage along with team briefings at 'tool box talks'.

7.2.41. Measures are to be implemented during construction to prevent impacts from contaminated run-off, including from silt and mud, preventing impacts to water quality and quantity within designated sites and habitats that could be used by species that originate from the designated sites.

7.2.42. Standard measures will also be undertaken to prevent impacts from lighting, noise and airborne pollutants such as from dust, with further detail below.

7.2.43. **Damage** - Throughout the construction period, the site manager will be responsible for ensuring that the protective fencing of retained habitats remains in place and fit for purpose. The maintenance of all such protection measures will be the responsibility of the site manager, however, an experienced ecologist acting as an ECoW will be available to attend the Order Limits, if required, throughout the construction period should any issues arise. This will prevent impacts to adjacent. Retained designated sites.

7.2.44. **Air pollution** –Air pollution from non-road mobile machinery (NRMM) is unlikely to affect local air quality significantly. However there are potential impacts on sensitive habitats when NRMM are located near designated sites. These impacts could occur when NRMM are within a 200m proximity of these sites. As detailed in **ES Chapter 14 Air Quality [Document Reference 6.2.14]** if there are fewer than 1,000 movements per day, no significant effect is anticipated. Nevertheless any vehicles and NRMM operating within 200m will remain as distant as practicable from the designation boundaries.

7.2.45. This will be controlled through locating site compounds away from any of these areas, the implementation of signs within the Order Limits to designate any areas where sensitive habitats are located. Workers will be informed during inductions, toolbox talks, and regular briefings about the importance of minimising vehicle use in these areas, ensuring operations are conducted in a manner that adheres to ecological protection guidelines.

7.2.46. **Lighting** - In order to prevent disturbance to nocturnal species no construction works will occur after dusk, except for potential Horizontal Directional Drilling (HDD) (see below for further detail). Shorter hours will be undertaken during winter months, due to less daylight hours, with working hours starting one hour after sunrise and still finishing one hour after sunset where possible.

7.2.47. It is therefore anticipated that no construction lighting will be required for the majority of works with the exception of HDD. Any dusk to dawn light which could occur would likely be restricted to vehicle headlights entering or leaving the Order Limits at the start of end of the working day which would be nominal and restricted in both extend and duration.

7.2.48. In the event any lighting is required, such as for security, this will follow the measures detailed above, e.g. utilise cool white light (2700K) LED lamps; and avoid the lighting of hedgerows and retained offsite habitats through sensitive placement of lighting and choice of luminaire.

7.2.49. Some nightwork may be required as part of HDD, subject to requirements of rail networks, but if this is the case lighting will be directed to only where it is needed to avoid any retained sensitive habitats and will only be short-term and temporary. As such, potential impacts from this work would not be significant.

7.2.50. **Noise** – The majority of construction activity will comprise earth excavation and movement of plant through the Order Limits. It is expected that the majority of construction activity will be below 70dB and would therefore not cause any disturbance response to birds which may be utilising retained or adjacent land, including golden plover. Consequently, no specific mitigation is considered necessary for noise impacts with regards to the Humber Estuary SPA/Ramsar and SAC.

7.2.51. Given the proximity of Thorne and Hatfield Moors SPA to the Order Limits and the fact it is designated for breeding nightjar, impacts from noise could occur during construction in proximity to the SPA boundary.

7.2.52. To prevent impacts, the following measures will be adopted and included in the **Outline eCMP [Document Reference 7.9.5]**.

- Ensuring vehicles and machinery are regularly serviced and in good condition;
- Speed limits;
- Installing silencers or attenuators where applicable;
- Replacing older equipment with quieter alternatives;
- Using broadband reversing alarms;
- Not leaving engines idling when not in use; and
- Siting any generators in the east of the Order Limits.

7.2.53. In addition, construction will be timed to avoid being undertaken during sensitive periods adjacent to the Thorne and Hatfield Moors SPA when nightjar could be present, generally between April to August, with no construction to take place within 50m of this SPA within this period.

7.2.54. **Visual Disturbance** – as qualifying birds of the nearby Humber Estuary SPA/Ramsar are known to use adjacent land, there is a risk that construction activity comprising regular human presence and plant movement could disturb birds in adjacent land. Some of this land is visually separated/screened from the proposed construction areas by existing hedgerows/built form, which would negate the need for any additional screening. In some instances, however, and depending on the phasing of construction activity, there may be areas where construction activity would not be visually screened from adjacent land and would, therefore, require a degree of mitigation.

7.2.55. In these instances, the appointed ECoW will review the proposed working areas and risk to birds in adjacent land (if a given phase would require works at a time of year when sensitive estuary birds would be present, taken to be September – March in any given year) and advise if additional screening in the form of

hoarding/hessian mesh on the perimeter Heras fencing is necessary. Such features will provide visual separation between the construction areas and adjacent land, and mitigate for any visual disturbance risk. It is expected, however, that not all of the Scheme would be 'built out' at the same time, so in the event of any visual disturbance, birds would be able to relocate to undisturbed parts of the Order Limits without conflicting with the conservation objectives of the Humber Estuary SPA/Ramsar.

7.2.56. **EcOW**. A suitably qualified and experienced ECoW will be appointed prior to the commencement of construction activities and through whom appropriate ecological advice will be provided throughout. The ECoW will be responsible for undertaking and/or coordinating checks for protected species before the various phases of construction and decommissioning activities commence. The ECoW (or appointed 'clerk' on behalf of the ECoW) will also maintain a watching brief and advisory role as necessary throughout the construction phase to ensure compliance with the approved methods and relevant legislation.

7.2.57. **Habitats**. Higher value boundary habitats that are likely to support invertebrate species will be retained and protected during works, followed by habitat enhancement with the introduction of species-rich neutral grassland around field boundaries, which will also provide strengthened dispersal corridors throughout the landscape for wildlife. These measures will create habitats of more importance to nightjar, creating a significant enhancement compared to the existing situation. In addition, these measures will benefit mallard.

7.2.58. Retention and enhancement of ponds and ditches, through improved habitat management, as detailed in the **LEMP [Document Reference: 7.9.6]**, along with the cessation of agricultural farming, will improve water quality of these habitats and enhance opportunities for mallard. These measures will help increase invertebrate numbers and aquatic vegetation, therefore improving foraging opportunities[22].

7.2.59. A non-breeding bird mitigation strategy (see Appendix 2) has been produced and the premise of this is to mitigate for non-breeding birds associated with the Humber Estuary SPA that utilise the habitats within the Order Limits, through the provision of appropriate habitat that is managed for the benefit of the birds,

[22] Mallard Duck Facts | Anas Platyrhynchos

including the retention of some areas of arable and the reversion of existing arable land to a permanent species-diverse pasture..

7.2.60. Multiple parcels have been selected across the Order Limits to provide such mitigation strategy (see Appendix 2). These parcels have been selected so as to:

- broaden the coverage of the mitigation parcels over larger areas, accessing different and unique micro-climates/ground conditions per area; and
- allow birds to move between different areas and not be reliant on a single parcel. The locations are also beneficial as they are not proposed to be 'encompassed' by the proposed Panel Areas but share boundaries with retained area (i.e. the canal and surrounding agricultural land), providing more naturalised and preferred buffers to the mitigation areas. The location of the areas that comprise the mitigation land are illustrated in Figure 2-1.

7.2.61. The mitigation strategy detailed in Appendix 2 demonstrates that there is more than enough land that can provide suitable mitigation for non-breeding birds. The delivery of the mitigation strategy will be secured through a requirement to implement the accompanying **LEMP [Document Reference: 7.9.6]**.

7.2.62. The principles of management are set out in the accompanying **LEMP [Document Reference: 7.9.6]** and comprise:

- Seeding grassland with an appropriate mix and utilizing existing topography (or creating such with equipment) to create shallow scrapes which will not be intended to permanently hold water, but to occasionally hold water over-winter during periods of prolonged rainfall. Such areas are particularly beneficial for the non-breeding birds recorded within the Order Limits and associated with the Humber Estuary;
- Once the grassland is established, the first cut to 15cm undertaken in late summer after core breeding season. The cut will be rotational, so that not all of the mitigation parcels are cut at once – another benefit of having the mitigation response spread across multiple parcels. This will ensure that skylark and other ground-nesting birds have continued access to suitable nesting habitat;

- Second cut to 5cm in Autumn and retained as such until beginning of March (i.e. over the passage and over-wintering season.
- The second cut is important as it will ensure that smaller wading birds such as lapwing and golden plover have adequate access to the soil directly, where these species forage. Grass left too long would impede this ability. Geese would not compete with lapwing and golden plover as they forage upon the grass itself.
- Providing arable land for the duration of the proposals within the Order Limits boundary, to ensure that foraging opportunities for pink footed and greylag geese is secured and provided, in addition to grassland areas. The main principles to be implemented as part of the arable management for the benefit of pink footed and greylag geese will include:
    - Use sugar beet where possible;
    - Use other appropriate crops on rotation when sugar beet is not being grown, such as winter cereal crops, oil seed rape, Post-harvest cereal stubbles, potatoes[**Ref. 7-34**];
    - Post-harvest, the fields should be left until the spring before ploughing to maximise the foraging resource, with the geese foraging on roots chopped into fragments by the harvester, as well as unharvested roots;
    - Avoidance of deep ploughing; Incorporation of a ley crop within the management rotation; Inclusion of permanent grass margins to the fields measuring a minimum 2 metres.

7.2.63. The provision of the land detailed above and the management proposed will ensure that there is sufficient land available for those non-breeding bird species associated with the Humber Estuary SPA and Ramar, resulting in no overall impact to these species as a consequence of the Scheme.

7.2.64. The table below summarises the sites and features 'screened in' for further assessment, potential effects and proposed mitigation.

Table 7-2: Mitigation Measures for Internationally Designated Sites

Site	Qualifying Features	Likely Significant Effects	Embedded/Additional Mitigation and Enhancements
Thorne and Hatfield Moors (SPA)	Breeding nightjar	Disturbance to nightjar utilising adjacent Moors during construction phase Degradation of habitat quality	Timing of construction works in proximity to the SPA to avoid the breeding period of nightjars. Noise reduced during construction and no lighting towards SPA Retention and protection of hedgerows, creation of neutral grassland margins and species-rich neutral grassland in place of intensively managed arable, adoption of Outline eCMP and Outline LEMP
Thorne and Hatfield Moors (SAC)	7120 Degraded raised bogs still capable of natural regeneration	Degradation of habitat quality Changes to hydrological regime	Implementation of appropriate drainage strategy to prevent impacts to water quality and quantity. Improved water quality due to cessation of arable farming. Adoption of and adherence to the Outline eCMP and Outline LEMP
	Golden plover (wintering)	Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of measures detailed in the Outline eCMP will ensure any birds using adjacent land

			outside of the Order Limits are not disturbed Although not required, habitat creation created as part of additional mitigation to comprise large areas of open, permanent pasture with scrapes.
	Assemblage qualification (non-breeding season)		
	Pink-footed goose (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Embedded mitigation not sufficient to mitigate for loss of open land which is required by this species. Additional mitigation to comprise large areas of open, permanent pasture with scrapes and arable managed for their benefit. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Greylag goose (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting	Embedded mitigation not sufficient to mitigate for loss of open land which is required by this species. Additional mitigation to comprise large areas of open, permanent pasture

		habitat adjacent to Order Limits	with scrapes and arable managed for their benefit. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Mallard (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Additional mitigation to comprise large areas of open, permanent pasture with scrapes and arable t Drainage strategy and Outline eCMP and LEMP to prevent impacts to water quality and quantity and to improve water quality. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Golden plover (wintering)	Disturbance to foraging/roosting habitat adjacent to Order Limits	Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed. Although not required, additional mitigation to comprise large areas of open, permanent pasture with scrapes will benefit this species.

	Grey plover (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Additional mitigation to comprise large areas of open, permanent pasture with scrapes. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Lapwing (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Embedded mitigation not sufficient to mitigate for loss of open land which is required by this species. Additional mitigation to comprise large areas of open, permanent pasture with scrapes. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Whimbrel (wintering)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Additional mitigation to comprise large areas of open, permanent pasture with scrapes. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.

Humber Estuary Ramsar	Criterion 5 – waterfowl assemblage in non-breeding season	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Embedded mitigation not sufficient to mitigate for loss of open land which is required by this species. Additional mitigation to comprise large areas of open, permanent pasture with scrapes and arable. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Criterion 6 – golden plover (passage)	Loss of over-wintering foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	Embedded mitigation not sufficient to mitigate for loss of open land which is required by this species. Additional mitigation to comprise large areas of open, permanent pasture with scrapes. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Criterion 6 – golden plover (wintering)	Loss of over-wintering	Embedded mitigation not sufficient to mitigate for loss of open land

		foraging/roosting habitat Disturbance to foraging/roosting habitat adjacent to Order Limits	which is required by this species. Additional mitigation to comprise large areas of open, permanent pasture with scrapes. Adoption of Outline eCMP will ensure any birds using adjacent land outside of the Order Limits are not disturbed.
	Criterion 8 – migration route for river lamprey and sea lamprey	No direct impacts but potential for dust pollution/degradation of watercourses and could affect migration corridors	Adoption of Outline eCMP

Operational

7.2.65. Once operational the provision of landscaping and ecological buffers around ditches and hedgerows and their long-term maintenance and management will ensure that impacts on the adjacent statutory designated sites are avoided and that foraging opportunities for species such as nightjar are enhanced compared to the current situation. No impact pathways exist which would warrant the need for additional mitigation measures.

7.2.66. The cessation of intensive arable management, resulting in a reduction in agrichemical use in the Order Limits boundary could have a significant improvement to water quality within the ditch network present that extends to the designated sites creating an enhancement for aquatic fauna and flora. This could improve the water quality in the area and increase foraging opportunities for nightjar and other species.

7.2.67. The buffers to be provided to ditches and the designated sites will also reduce potential impacts to invertebrates, including solar arrays being mistaken for open water.

7.2.68. The Scheme will not result in the inclusion of permanent lighting, preventing impacts to any nocturnal invertebrates.

7.2.69. The Scheme will have no impacts as a consequence of increases in population size or recreation.

Decommissioning

7.2.70. Baseline conditions within the Order Limits are likely to change over the 40 years of operation, and prediction of these conditions at this point is considered unreliable in terms of predicting likely future decommissioning effects on biodiversity. As such, updated ecological desk study and species-specific surveys will be undertaken prior to decommissioning in order to record the presence of protected and notable species and habitats, identify potential effects and any necessary protection and mitigation measures in order to comply with planning policy and wildlife legislation applicable at the time.

7.2.71. Long term land management within the Order Limits post decommissioning phase will be largely based and managed in adherence to agricultural / land management government policies and agri-environmental grant opportunities available at that time.

7.2.72. An Outline plan provided with DCO Submission Outline Decommissioning Environmental Management Plan (DEMP) [Document Reference 7.9.3] (secured by requirement of the DCO which would be finalised once the party responsible for undertaking decommissioning works on the Order Limit has been appointed) will form an integral element of the decommissioning phase. This will set out the methods by which decommissioning will be managed to avoid, minimise, and mitigate any adverse effects on the local and wider environment. Further information is provided below.

In Combination Integrity Test

7.2.73. It is considered that adverse effects on the integrity of the designated sites detailed can be ruled out, based on the assessment of residual effects to passage / non-breeding birds arising from the Scheme in combination with the potential

effects arising from other projects identified as detailed in the Cumulative Impacts Chapter of the ES –**Chapter 17 [Document Reference: 6.2.6]**.

7.2.74. This assessment has been made in consideration of the timing and scale of the projects included in the in combination assessment, the mitigation proposed for those projects and considering the mitigation and assessment results pertaining to the Scheme including:

- Onsite mitigation for loss of habitats used by passage and non-breeding birds: golden plover, lapwing, pink-footed geese and greylag geese, including the provision of large areas of neutral grassland and also arable provision, with both habitats managed specifically for these bird species that are associated with the Humber Special Protection Area (SPA) and have been recorded utilising the Order Limits.

- Adoption of measures to avoid / mitigate habitat loss, run-off, pollution, air quality, noise and disturbance during the construction phase outlined within the Outline Ecological Construction Management Plan (eCMP) [Document Reference 7.9.5] and decommissioning detailed in the Decommissioning Environmental Management Plan (DEMP) [Document Reference 7.9.3]. These measures will prevent impacts to retained habitats and the designated sites in the area, including Thorne and Hatfield Moors SPA, Thorne Moors Special Area of Conservation (SAC) , Hatfield Moors SAC, Humber Estuary SPA / Ramsar and SAC.

- Adoption of the Outline Landscape Ecological Management Plan (LEMP) [Document Reference 7.9.6] for the lifetime of the proposed development to ensure the quality of habitat provided on site for passage / non-breeding birds associated with Humber Estuary SPA / Ramsar and nightjar, which are associated with Thorne and Hatfield Moors SPA, is maintained. The measures will additionally assist with providing biodiversity gains.

7.2.75. In addition to the above, the Scheme will result in the cessation of intensive agricultural management in the area, such as the regular application of agrichemical input, soil exposure and disturbance through cropping and ploughing. Therefore, water quality both within the Order Limits and wider area, including the adjacent European designated sites will improve.

7.2.76. Given the nature of the proposals, solar, there will be no impacts as a consequence of the proposals from recreation or increases in population size to any European designated site.

7.2.77. The implementation of the above mitigation measures allows the competent authority to conclude that there will be no Likely Significant Effects arising from the proposed Scheme, on the Conservation Objectives or the qualifying features of the designated sites either alone or in-combination.

Monitoring

7.2.78. Details of required monitoring are described, either for the purposes of validating the findings of the AA, or as an early warning which would enable any actions resulting in an unexpected adverse impact to be stopped, paused, reduced, altered or removed.

7.2.79. A Condition Assessment of habitats on site would be undertaken as part of the LEMP **[Document Reference: 7.9.6]** (standard monitoring would be a condition assessment at years 1,2,3,5,20 and 30). Where the condition of habitats does not meet the criteria set out in the LEMP remedial action to restore the habitat would be undertaken following agreement with the relevant Local Planning Authorities and Natural England, as necessary.

8 Conclusions

8.1.1. Mitigation measures have been proposed as summarised in Table 7-2 and if implemented successfully will enable the Scheme to be constructed and operated with no likely significant effects to the qualifying features of the designations detailed which were screened in for Appropriate Assessment.

8.1.2. Furthermore, once applied the mitigation will render any potentially significant effects as either neutral or at a negligible level that would mean they would be unlikely to lead to any in combination effects arising from the cumulative developments considered as part of the ES.

8.1.3. As such, with the implementation of the mitigation measures detailed the Scheme will have no impacts either alone or in combination with any other plan or project.

Appendix 1: Non-Breeding Bird Survey Report (Year 1 and Year 2)

Tween Bridge NSIP Solar Farm

on behalf of Pegasus Planning Ltd.

Technical Appendix 7.2: Breeding Bird Survey Report

avian ecology

Document Control				
Project Name:	Tween Bridge NSIP Solar Farm			
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V1	19/07/2023	Draft	K. Love *BSc (Hons)*	N. Robinson *MSc BSc (Hons) ACIEEM*
V2	04/11/2025	Final issue	K. Love *MSc, BSc (Hons)*	J. Stevens *BSc (Hons)*

CONTENTS

Annex 4: Wider Survey Area Estimated Territories

1 INTRODUCTION

1.1 Project Background

1.1.1 Avian Ecology Limited (AEL) was commissioned by Pegasus Planning Limited in 2022, 2023 and 2025 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 'Order Limits') as illustrated on **Figure 1.**

1.1.3 This report subsequently provides detailed survey methodology and results of the breeding bird survey undertaken in three survey periods from April 2022 to July 2022, April 2023 to June 2023 and March 2025 to July 2025. This report has been prepared in order to provide baseline breeding bird information to inform an assessment of effects from The Scheme upon breeding ornithological features, as presented within the Ecology and Nature Conservation Chapter 7 of the Environmental Statement[1] (ES).

1.1.4 The objectives of this report are to:

- provide baseline information on breeding ornithological features within the Order Limits; and,
- identify the presence of notable breeding bird species within the Order Limits.

1.1.5 The results of breeding bird surveys undertaken in 2022 and 2023 were included in the Preliminary Environmental Information Report (PEIR) for a preliminary Order Limits boundary. Surveys in 2025 comprised land within the Order Limits which were not surveyed in 2022/23.

1.1.6 Only common bird species names are referred to within the main text of this Appendix. **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 Order Limits Overview

1.2.1 The Order Limits encompasses a series of connected agricultural land parcels, predominately composed of arable management. The fields are bounded by a network of watercourses, hedgerows, fences, and tree lines. A broadleaved woodland plantation copse is present within the area, along with several ponds.

1.2.2 The Tween Bridge Wind Farm, comprising 22 operational wind turbines, is located within the Order Limits. The Stainforth and Keadby Canal also intersects the centre of the Order Limits, running from west to east.

1.2.3 Several internationally and nationally designated sites of ornithological importance lie within proximity to the Order Limits. Within 10 km are key international sites such as the Humber Estuary SPA and Ramsar site, and the Thorne & Hatfield Moors SPA, all of which are designated for their ornithological importance.

1.2.4 In the wider context, the 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 Order Limits.

[1] Environmental Statement Chapter 7: Ecology and Nature Conservation Document Reference 6.2.7

1.2.5 A small 0.53ha of the 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 Order Limits and are designated for breeding birds including populations of nightjar.

1.2.6 **Table 1.1** below provides a summary of designated sites with breeding ornithological interests located within 5km of the Order Limits boundary, and sites of the National Site Network (European sites) located within 10km of the Order Limits boundary.

1.2.7 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 10.12km south-east, 12.30km north-east and 17.05km north of the 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 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 Order Limits boundary and 100m south	Breeding qualifying features: • European nightjar (breeding)
Humberhead Peatlands NNR	Directly adjacent to the Order Limits boundary and 100m south	Breeding bird assemblage includes nightjar and woodlark. Over 75 species have been recorded breeding.
Hatfield Moors SSSI	95.8m 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	1.63km west	A large number of breeding bird species.
Humber Estuary Ramsar	5.53km 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,

Designation	Distance	Ornithological Interests
		• Little tern (breeding).

2 METHODOLOGY

2022 Breeding Bird 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*., 1998[2]). The survey comprised a series of three staggered survey visits undertaken at least seven days apart.

2.1.2 The survey area was based on an preliminary Order Limits boundary, which incorporated eight distinct areas within the Order Limits boundary (**Figure 1**), as well as a 100m buffer ('wider survey area') observed from the Order Limits boundary to record the presence of species listed under Schedule 1 of the Wildlife & Countryside Act 1981[3] (as amended).

2.1.3 During the surveys, all 'Notable Species' (see below) were recorded on suitably scaled field maps using standard BTO species codes[4] 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 individual (e.g. single singing male holding territory) or pair, these were classed as a single territory to avoid overestimating breeding pairs.

2.1.4 Breeding evidence was classified according to standard criteria (see **Table 2.1**), but territory totals represent broad estimates rather than intensive territory mapping, in line with good practice for site-wide breeding bird surveys (broadly following that of the breeding bird survey methods described in Gilbert *et al.,* 1998).

2.1.5 'Notable Species' relevant to the Scheme that were recorded and mapped during the breeding bird survey comprised Birds of Conservation Concern (BoCC) Amber and Red List Species (Stanbury *et al.,* 2021[5]), birds listed under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006[6], Annex 1[7]/Schedule 1 species and Lincolnshire/Doncaster Local Biodiversity Action Plan (LBAP) species[8,9].

2.1.6 Due to the extent of the survey area, the eight distinct areas (i.e. Areas 1 to 8 as shown on **Figure 1**) were surveyed over a number of consecutive days and analysed independently.

2.1.7 Results for all eight areas were then combined to provide a final count of Notable Species breeding within the Order Limits (**Table 3.1**) and wider survey area (**Annex 4**). Only the estimated number of breeding territories for Notable Species is provided, given these are the most relevant species to the design and assessment of development proposals.

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[2] Gilbert, G., Gibbons, D.W & Evans, J. (1998) *Bird monitoring methods. A manual of techniques for key UK species*. RSPB, Sandy.
[3] Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). https://www.legislation.gov.uk/ukpga/1981/69/schedule/1 (Accessed: 21st August 2025)
[4] https://www.bto.org/sites/default/files/u10/downloads/taking-part/species_codes.pdf (Accessed : 21st August 2025)
[5] 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 (Accessed: 21st August 2025)
[6] http://publications.naturalengland.org.uk/publication/4958719460769792 (Accessed: 21st August 2025)
[7] 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: 21st August 2025)
[8] https://www.nelincs.gov.uk/wp-content/uploads/2016/02/201110-LincolnshireBAP-3rd-edition.pdf (Accessed: 21st August 2025)
[9] https://www.doncaster.gov.uk/services/environmental/doncaster-biodiversity-action-plan (Accessed: 21st August 2025)

2.1.8 Presence of common and widespread species that are not classified as Notable Species (i.e. BoCC Green List Species and non-native species), and are hereafter referred to as 'Secondary Species', were also recorded for each survey visit; however, locations and activities were not mapped during the survey effort due to the spatial scale of the Order Limits and priority being given to identify Notable Species.

2.1.9 Observations included species potentially breeding in the wider area, even where habitats within the Order Limits were not suitable for those particular species (e.g. foraging gulls within proximity of a known colony). Additionally, non-breeding birds visiting the Order Limits (e.g., gulls feeding in fields) and birds flying over were also recorded.

2.1.10 All breeding bird survey visits were undertaken by a suitably competent and experienced ornithologist. 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**.

Table 2:1: Criteria for Breeding Evidence (adapted from Sharrock, 1974[10]; Gillings et al., 2013[11]).

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.

Table 2.2: Breeding bird survey effort - 2022.

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 Breeding Bird Survey

2.1.11 Following the completion of the 2022 breeding bird survey, alterations to the preliminary Order Limits boundary were made to accommodate changes in scheme design.

[10] 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.
[11] 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.

2.1.12 Areas of the Order Limits that were not included in the 2022 survey (i.e. Areas 1a, 2a, 4a, 6a, 7a and 9), as illustrated in **Figures 1** to **10,** were subsequently surveyed between April 2023 and June 2023.

2.1.13 Data from 2023 was collected using the same methods as in 2022. All survey visits were carried out by from dawn and finished by 11:00hrs. Surveys were conducted by a competent and experienced ornithologist in conditions suitable for survey (avoiding heavy rain and strong winds). A summary of survey effort is presented in **Table 2.3** and detailed survey conditions are presented in **Annex 2**.

2.1.14 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 Order Limits[12] (**Table 3.1**) and wider survey area (**Annex 4**).

Table 2.3: 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

2025 Breeding Bird Survey

2.1.15 Following the completion of the 2022 and 2023 breeding bird surveys, alterations to the preliminary Order Limits boundary were made to accommodate changes in scheme design.

2.1.16 Areas of the Order Limits that were not included in the 2022/23 surveys (i.e. Areas 10 to 15), as illustrated in **Figures 1 to 10,** were subsequently surveyed between March 2025 and July 2025.

2.1.17 Data from 2025 was collected using similar methods as in 2022/23, however surveys were based on guidance from Bird Survey & Assessment Steering Group (2023)[13]. The survey comprised a series of six staggered survey visits predominantly undertaken at least seven days apart for each surveyed area.

2.1.18 Five survey visits were carried out from 05:00 to 05:30 hrs, with the majority finished by 11:00hrs. One of the six visits was conducted in the evening (i.e. pre and post sunset) to pick up species not readily recorded by conventional surveys early in the morning (e.g. various owl species).

2.1.19 All surveys were carried out by competent and experienced ornithologists in conditions suitable for survey (avoiding heavy rain and strong winds. A summary of survey effort is presented in **Table 2.4**, with detailed survey conditions presented in **Annex 3**.

2.1.20 Results from 2025 were then combined with the data from 2022 and 2023 to provide a final count of species breeding within the Order Limits (**Table 3.1**) and wider survey area (**Annex 4**).

[12] Previous results included in the Preliminary Environmental Information Report (PEIR) were based on a preliminary Order Limits that are since superseded in **Table 3.1.**

[13] Bird Survey & Assessment Steering Group. (2023). Bird Survey Guidelines for assessing ecological impacts, v.1.1.1. https://birdsurveyguidelines.org (Accessed: 21st July 2025)

Table 2.4: Breeding bird survey effort - 2025.

Survey Visit	Date	Start time (24hrs)	End time (24hrs)	Sunrise / sunset (24hrs)
1	26/03/2025 to 31/03/2025	05:00 to 05:30	11:00	05:46 to 06:38[14]
2	16/04/2025 to 23/04/2025	05:00 to 05:30	11:00	05:45 to 06:01
3	02/05/2025 to 08/05/2025	05:30 to 05:40	11:00 to 11:50	05:14 to 05:20
4	26/05/2025 to 30/05/2025	18:00	23:00	21:16 to 21:20
5	04/06/2025 to 13/06/2025	05:00 to 05:30	11:00 to 11:30	04:33 to 04:38
6	08/07/2025 to 20/07/2025	05:00 to 05:30	11:00 to 11:15	04:33 to 04:35

Limitations

2022/2023 breeding bird surveys

2.1.21 Surveys in 2022 and 2023 were based on an adapted version of the BTO CBC technique (Gilbert *et al.,* 1998). Therefore, such surveys only comprised three survey visits, as opposed to six visits in 2025 from which surveys were based on Bird Survey & Assessment Steering Group (2023) guidance. As such, surveys also did not include an evening survey and therefore it is possible that the detection probability for potential crepuscular species may have been reduced. However, it is considered that the survey effort is satisfactory in order to determine the breeding species assemblage present within the survey areas of 2022 and 2023, and that any further potential crepuscular species present would likely be associated with field boundary features that are not proposed to be impacted by the Scheme.

2.1.22 A small area of the wider survey area (Area 8a), as illustrated in **Figure 2** was not directly accessed during survey visits. This area comprised a limited section of open, agricultural field, which was considered unlikely to support breeding Schedule 1 species. The survey area adopted provided extensive coverage of adjacent and comparable habitats within the remainder of the Order Limits, within which infrastructure associated with the Scheme is proposed to be sited.

2.1.23 The breeding bird assemblage within non-surveyed parts of the 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.

2.1.24 Following the 2022 and 2023 surveys, updated status assessments for 28 species have also been made for breeding seabirds in the UK (Stanbury *et al*. 2024)[15]. This is not considered to be a constraint to the assessment as such species were not recorded breeding and were already incorporated into the 2025 survey, with the 2022/23 survey results also comprising no additional species since added that could be considered potentially vulnerable to negative impacts from the Scheme.

2025 breeding bird survey

[14] Note: hours shift because clocks change forward 1 hour on 30 March 2025.

[15] Stanbury, A.J., Burns, F., Aebischer, N.J., Baker, H., Balmer, D.E., Brown, A., Dunn, T., Lindley, P., Murphy, M., Noble, D.G. and Owens, R. (2024). *The status of the UK's breeding seabirds: an addendum to 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, 117:.471-487. Available online at https://britishbirds.co.uk/seabird-bocc5a (Accessed:8th July 2025)

2.1.25 The survey timings for the first two visits were not specifically recorded; however, all commenced between 05:00 and 05:30 and were concluded by 11:00. As all surveys commenced prior to sunrise, this is not considered to be a substantial limitation.

2.1.26 The Bird Survey & Assessment Steering Group (2023) suggests that dawn breeding bird surveys should typically commence within 30 minutes of sunrise and end by 11:00. The majority of visits commenced within the recommended start time (or prior to sunrise as stated above for the first two visits), however four days during visit 5 and 6 commenced outside the optimal time period (range: 9 to 27 minutes). Additionally, seven survey days were also concluded after 11:00 (range: 15 to 50 minutes) during visits 3, 5 and 6. With the majority of dawn surveys however fully conducted during optimal survey times, and with the species assemblage for all areas considered to be robustly analysed using data from six visits, it is not considered that the timing of dawn visits will impact the assessment.

2.1.27 The six staggered survey visits were predominantly undertaken at least seven days apart for each surveyed area; however, Area 12 was surveyed six days apart between visits 4 and 5. This is not considered to impact the assessment.

2.1.28 In summary, none of the limitations encountered are considered to affect the ability to undertake a robust assessment of impacts upon breeding ornithological features.

3 RESULTS

3.1.1 The combined total breeding bird assemblage recorded within the collective survey area is considered representative of the locale and the agricultural and field boundary habitats present. A total 29 Notable Species recorded breeding within the survey area as summarised in **Table 3.1**.

3.1.2 Breeding evidence for 28 Notable Species was recorded within the Order Limits, which included:

- One species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (hobby);
- No species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive);
- 12 Red List species (grey partridge, cuckoo, lapwing, skylark, mistle thrush, tree sparrow, house sparrow, yellow wagtail, greenfinch, linnet, corn bunting and yellowhammer);
- 15 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);
- 13 listed as rare and most threatened species under S41 of the NERC Act (2006) (grey partridge, cuckoo, lapwing, skylark, song thrush, tree sparrow, house sparrow, dunnock, yellow wagtail, linnet, corn bunting, yellowhammer and reed bunting);
- 11 species recorded listed under the Lincolnshire LBAP (grey partridge, lapwing, skylark, song thrush, tree sparrow, house sparrow, yellow wagtail, linnet, corn bunting, yellowhammer and reed bunting); and,
- Eight species listed under the Doncaster LBAP (grey partridge, skylark, song thrush, tree sparrow, yellow wagtail, linnet, corn bunting 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 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 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**) National Site Network (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 within the survey area, and the species did not breed within the 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 Order Limits as part of their wider territory e.g., for foraging.

3.1.8 Breeding territories of Notable Species were typically associated with vegetation along field boundaries, which principally comprises of field-margins, hedgerows, scrub, tree-lines, ditches, watercourses, ponds and woodland habitats within or directly adjacent to the Order Limits. These species included mallard, cuckoo, stock dove, woodpigeon, moorhen, kestrel, rook, willow warbler, sedge warbler, whitethroat, wren, song thrush, mistle thrush, tree sparrow, house sparrow, dunnock, greenfinch, linnet, yellowhammer and reed bunting.

3.1.9 Ground-nesting Notable Species that breed in open habitats within the Order Limits comprised of greylag goose (1 territory), grey partridge (9 territories), lapwing (20 territories), skylark (269 territories), yellow wagtail (94 territories), meadow pipit (12 territories) and corn bunting (3 territories).

3.1.10 With the size of the surveyed Order Limits being 1,831 ha (proposed cable routes excluded), the estimated 269 skylark territories results on average to be 0.15 skylark territories per ha.

3.1.11 The cropping regime within the Order Limits comprised winter wheat, maize, spring barley, oilseed rape, potatoes, beans, oats, linseed and sugar beet. Modified grassland pastures were either used for livestock grazing (horse or cattle), or for silage production.

3.1.12 Grey partridge and corn bunting were identified breeding principally along arable and grassland field margins, rather than within open agricultural fields themselves. Grey partridge was also located in tall ruderal field corners of cereal crop arable fields and was recorded throughout the survey area, whilst corn bunting was recorded in Area 13 only. Lapwing was identified in Area 1 and 12 which primarily comprises cereal crop arable fields, with a single modified grassland pasture also present in Area 1. 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 throughout the 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, 8 and 9 largely in cereal crop fields and the associated grassland field margins.

3.1.13 All breeding Notable Species (or potential breeding species) recorded along with an estimated number of the breeding territories within the Order Limits are detailed within **Table 3.1**. With the exclusion of Schedule 1 species, the indicative locations of the territories of Notable Species are provided in **Figures 1 to 10.** Notable Species recorded within the wider survey area are provided in **Annex 4.**

Table 3.1: Breeding bird territories recorded within the Order Limits.

Species	Order Limits Estimated Territories in 2022/23	Order Limits Estimated Territories in 2025	Total Combined Order Limits Estimated Territories (2022/23 and 2025)	Comments
Greylag goose	1	0	1	Confirmed breeding with chicks recorded. Located in open field habitat within Area 6.
Mallard	4	3	7	Confirmed breeding with chicks recorded. Recorded in various pond and wet ditches.
Grey partridge	6	3	9	Confirmed breeding with chicks recorded. Observed throughout field margins and field corners.

Species	Order Limits Estimated Territories in 2022/23	Order Limits Estimated Territories in 2025	Total Combined Order Limits Estimated Territories (2022/23 and 2025)	Comments
Cuckoo	5	0	5	Possible breeding. Recorded in field boundary habitats and woodlands. Note that this species does not 'actively nest' and instead relies on brood parasitism to reproduce.
Stock dove	11	0	11	Probable breeding. Recorded throughout on-Site field boundary habitats and woodland.
Woodpigeon	4	0	4	Probable breeding. Recorded throughout on-Site field boundary habitats and woodland.
Moorhen	1	3	4	Confirmed breeding with chicks recorded. Identified in ditches and ponds.
Lapwing	20	0	20	Probable breeding. Recorded pairs in open arable fields within Area 1, 7a, 9 and 12.
Kestrel	0	1	1	Confirmed breeding with fledged chicks recorded.
Hobby	1	0	1	Confirmed breeding. Nest observed in an oak tree as illustrated on **Figure X.** *Confidential Schedule 1 Species Survey Results.*
Rook	1	0	1	Confirmed breeding. Observed nesting in trees in Area 1.
Skylark	246	23	269	Probable breeding. Recorded singing, calling and as pairs throughout open habitats.
Willow warbler	4	0	4	Confirmed breeding with chicks recorded. Identified along field boundary habitats.
Sedge warbler	16	0	16	Confirmed breeding with chicks recorded. Identified singing throughout field boundary habitats, particularly near ponds and ditches.
Whitethroat	68	9	77	Confirmed breeding with chicks recorded. Recorded singing and calling throughout field boundary habitats.
Wren	79	15	94	Probable breeding. Recorded singing and calling throughout field boundary habitats.
Song thrush	5	1	6	Probable breeding. Observed singing in wooded habitats and trees.
Mistle thrush	1	1	2	Confirmed breeding with chicks recorded. Identified in tree lines and woodlands.
Tree sparrow	1	0	1	Confirmed breeding with chicks recorded. Observed in field boundary habitats.

Species	Order Limits Estimated Territories in 2022/23	Order Limits Estimated Territories in 2025	Total Combined Order Limits Estimated Territories (2022/23 and 2025)	Comments
House sparrow	1	2	3	Confirmed breeding with chicks recorded. Observed in field boundary habitats.
Dunnock	16	5	21	Probable breeding. Identified singing and calling in field boundary habitats.
Yellow wagtail	88	6	94	Confirmed breeding with chicks recorded. Ground nesting species recorded singing and calling in open field habitat.
Meadow pipit	12	0	12	Confirmed breeding with food carrying recorded. Ground nesting species recorded signing in open field habitat.
Greenfinch	1	1	2	Probable breeding. Identified singing and calling in field boundary habitats
Linnet	41	15	56	Confirmed breeding with chicks recorded.
Corn bunting	0	3	3	Probable breeding. Ground-nesting species recorded singing and calling primarily in field margin habitat.
Yellowhammer	28	7	35	Probable breeding. Identified singing and calling in field boundary habitats.
Reed bunting	48	4	52	Confirmed breeding with chicks recorded.

3.1.14 Secondary Species recorded potentially breeding[16] within the Order Limits included the following:

- Canada goose;
- Mute swan;
- Pheasant;
- Red-legged partridge;
- Collared dove;
- Coot;
- Buzzard;
- Great spotted woodpecker;
- Jay;
- Magpie;
- Carrion crow;
- Raven;
- Coal tit;
- Blue tit;
- Great tit;
- Swallow;
- Long-tailed tit;
- Chiffchaff;

[16] It should be noted that breeding status for Secondary Species is not provided here, with breeding activity not confirmed due to the survey effort focussing on Notable Species. Secondary Species listed include those which indicated potential signs of breeding behaviour in habitats considered to be suitable; however, territory analysis has not been conducted.

- Reed warbler;
- Blackcap;
- Garden warbler;
- Treecreeper;
- Blackbird;
- Robin;
- Pied wagtail;
- Chaffinch; and,
- Goldfinch.

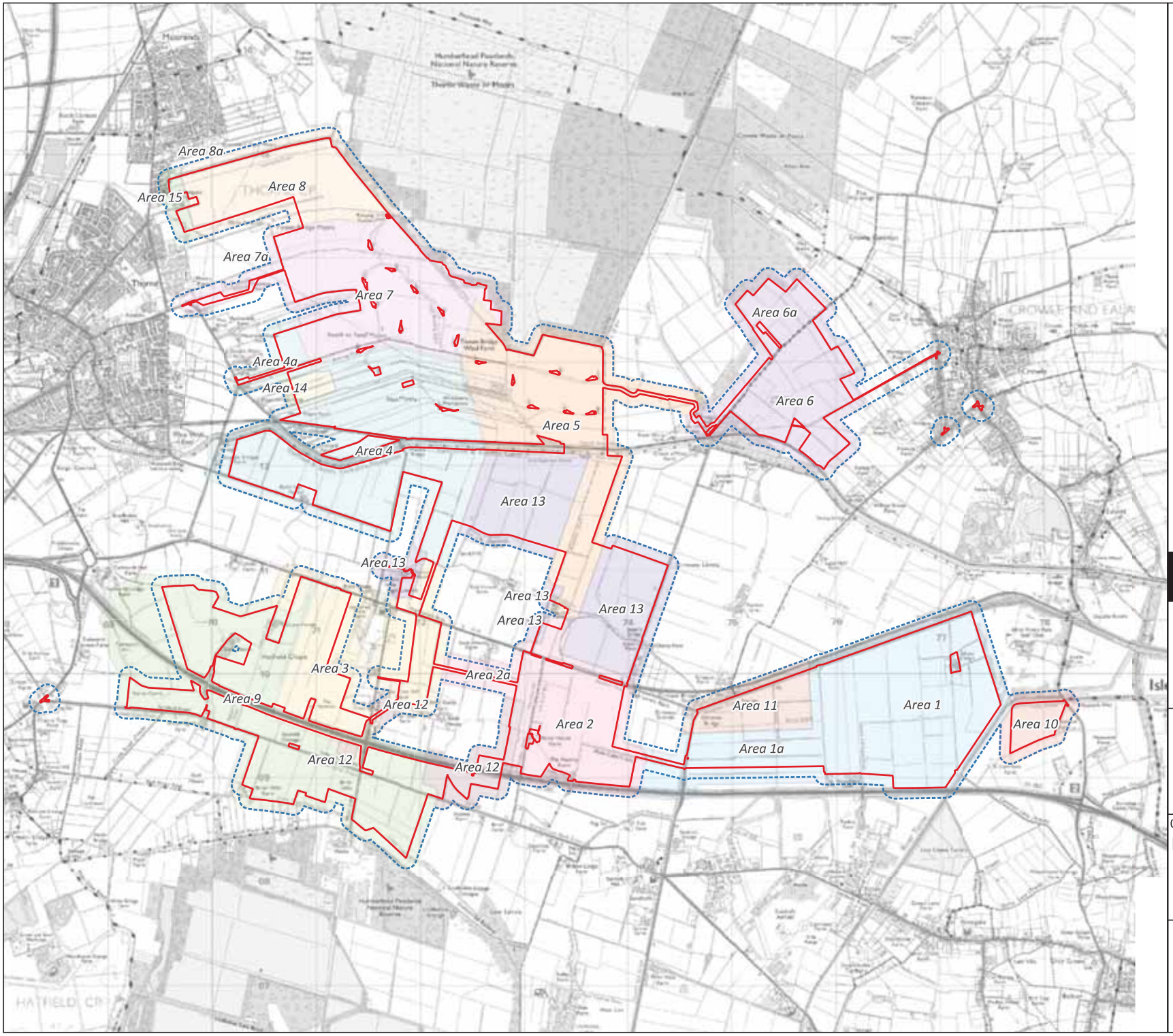
3.1.15 During survey visits, observations of thirty other species were also made, but for which established breeding evidence was not recorded within the Order Limits. This included:

- 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;
- Little egret;
- Sparrowhawk;
- Marsh harrier;
- Red kite;
- Barn owl;
- Tawny owl;
- Kingfisher;
- Green woodpecker;
- Peregrine;
- Jackdaw;
- Woodlark;
- Sand martin;
- House martin;
- Lesser whitethroat;
- Goldcrest;
- Starling;
- Redwing;
- Fieldfare;
- Ring ouzel;
- Stonechat;
- Wheatear;
- Grey wagtail;
- Tree pipit;

- Bullfinch;
- Redpoll; and,
- Crossbill.

3.1.16 Of these, marsh harrier is listed as a breeding species for the Humber Estuary SPA/SPA (Marine Components GB) and comprises the only species listed as a qualifying species for a European designated site (as listed in **Table 1.1)**. Eleven 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, kingfisher, woodlark, redwing, fieldfare and crossbill. A further nine species are listed on Annex 1 of the Directive 2009/147/EC (Birds Directive), including crane, whooper swan, common tern, little egret, marsh harrier, red kite, kingfisher, peregrine and woodlark.

FIGURE 1. BREEDING BIRD SURVEY PLAN (OVERVIEW)



Order Limits

100m Buffer

2023 Survey areas

- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas

- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

TWEEN BRIDGE

Breeding bird survey results - overview

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Date: 07/11/2025

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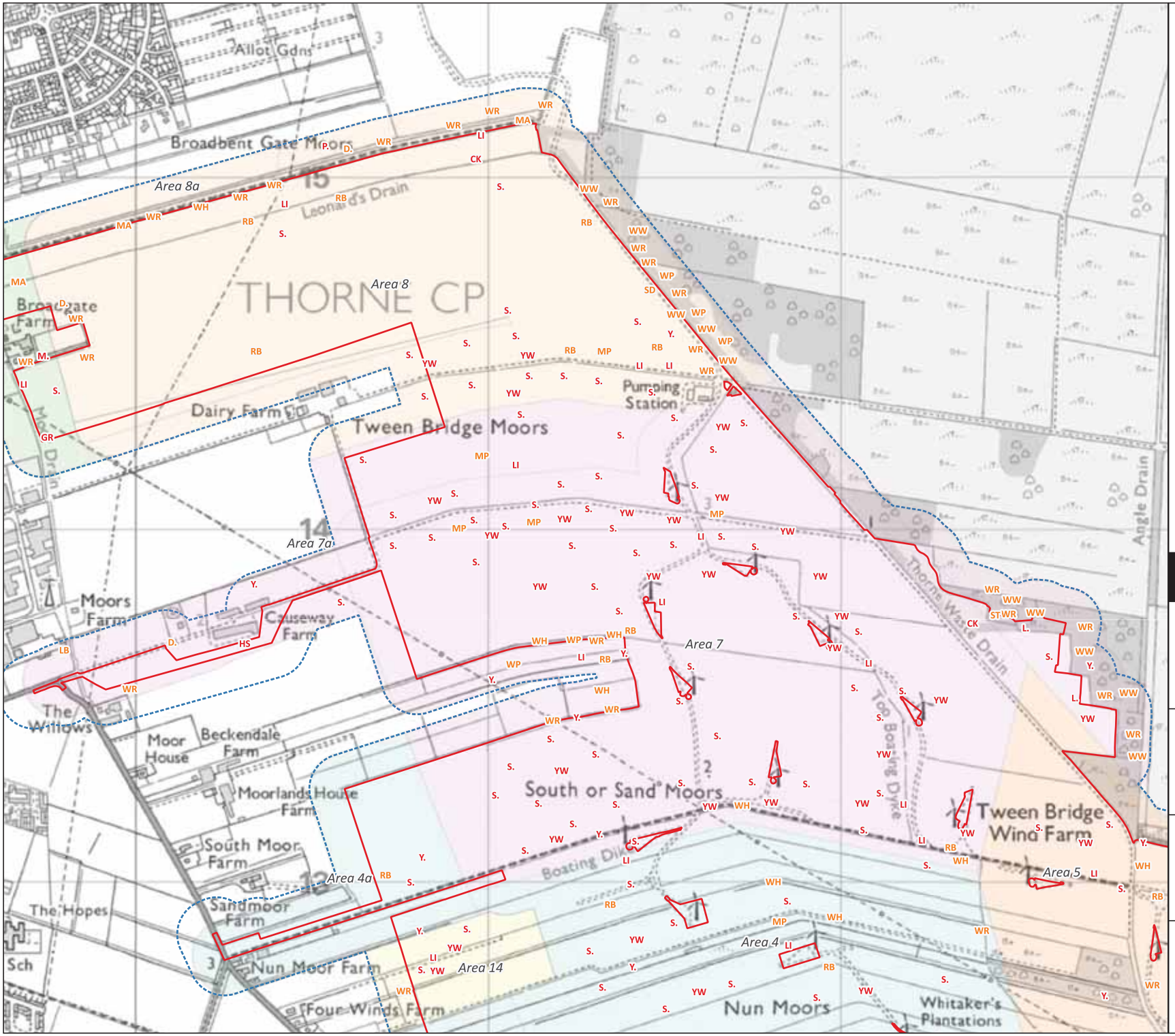
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

FIGURE 2. BREEDING BIRD SURVEY RESULTS – MAP 1



Order Limits

100m Buffer

2023 Survey areas

- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas

- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber

D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
MA - Mallard
MH - Moorhen
MP - Meadow Pipit
RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red

CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 1

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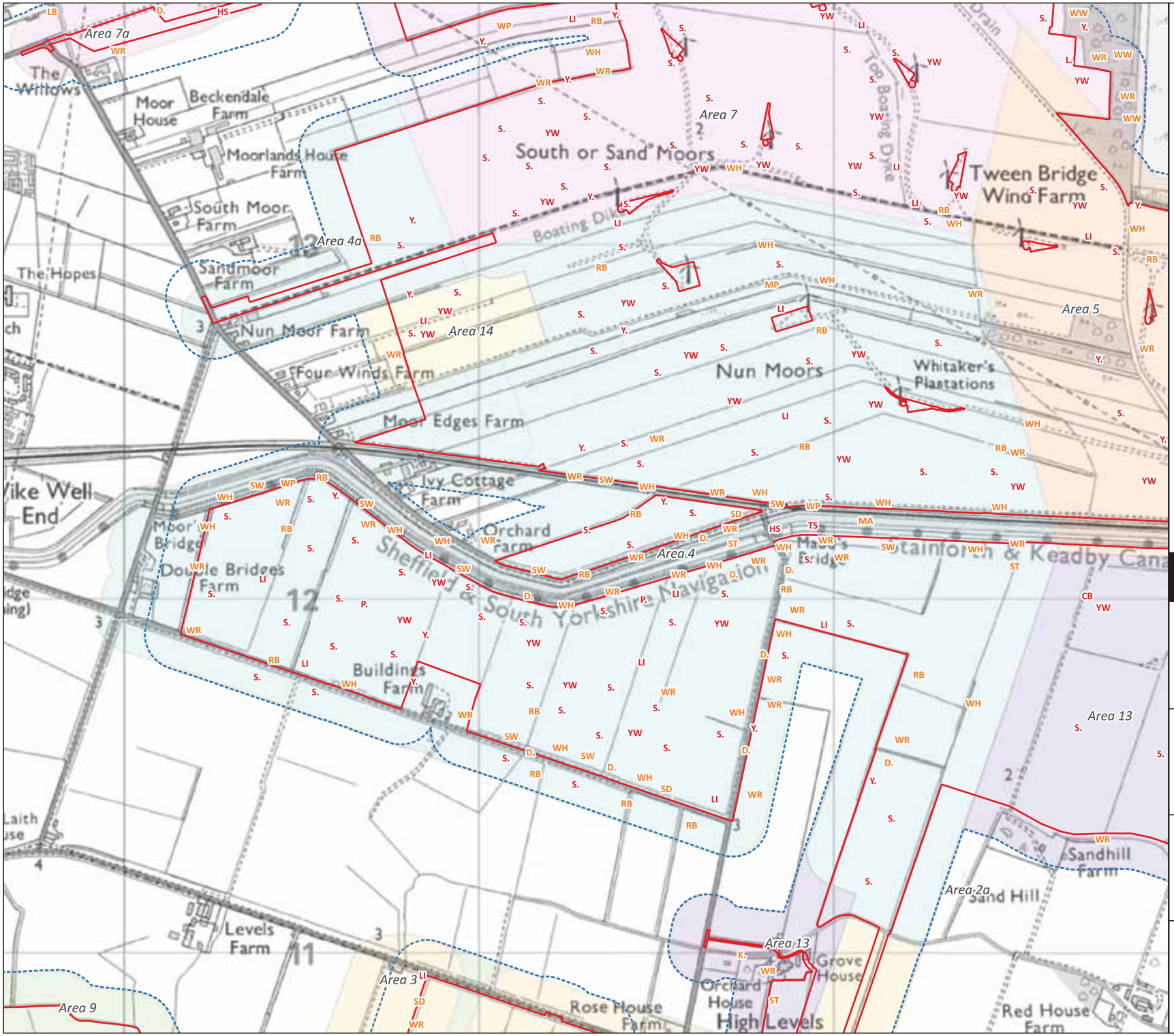
FIGURE 3. BREEDING BIRD SURVEY RESULTS – MAP 2



Order Limits
100m Buffer

2023 Survey areas
- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas
- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber
D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
MA - Mallard
MH - Moorhen
MP - Meadow Pipit
RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red
CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 2

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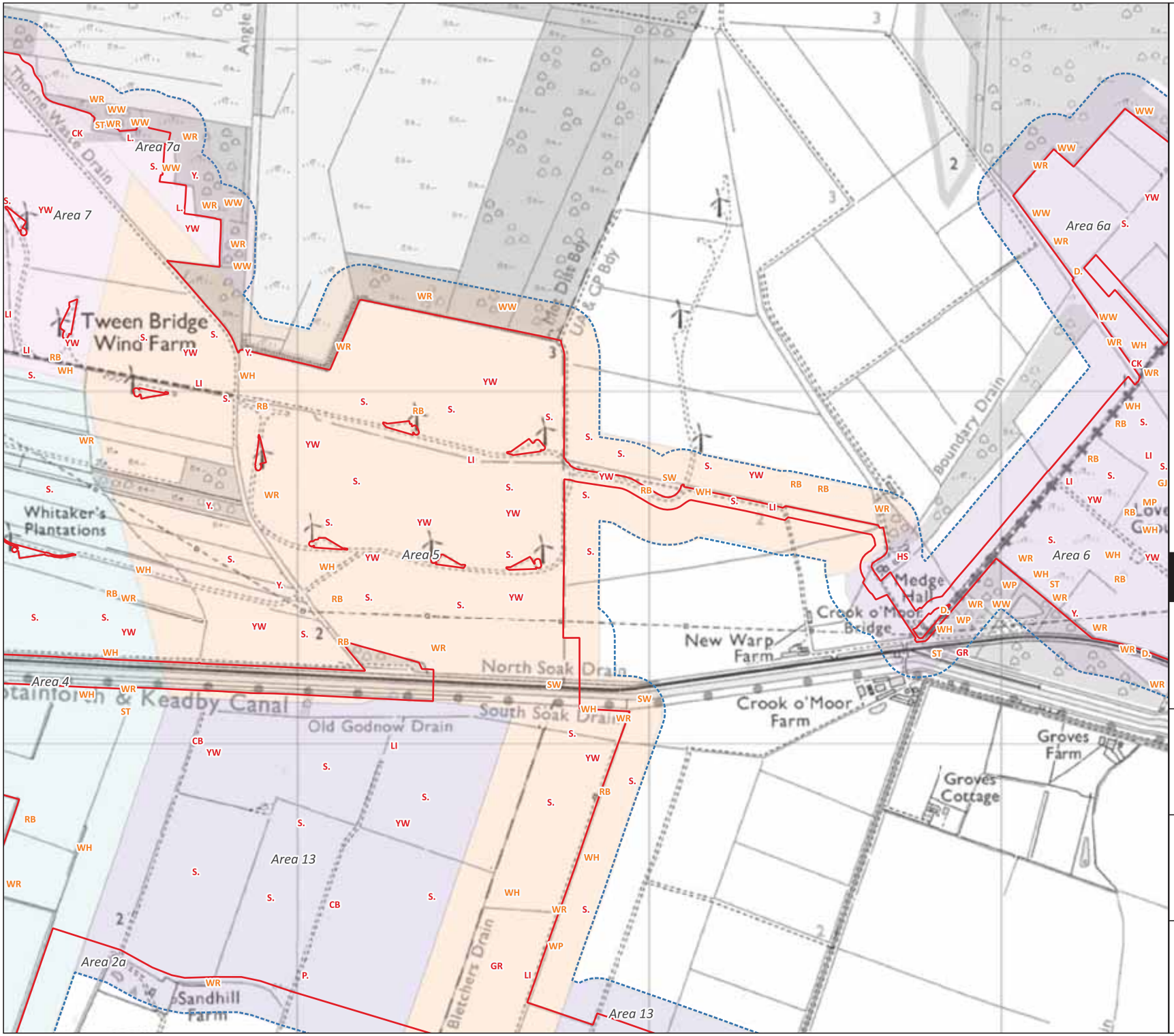
FIGURE 4. BREEDING BIRD SURVEY RESULTS - MAP 3



Order Limits
100m Buffer

2023 Survey areas
- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas
- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber
D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
MA - Mallard
MH - Moorhen
MP - Meadow Pipit
RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red
CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 3

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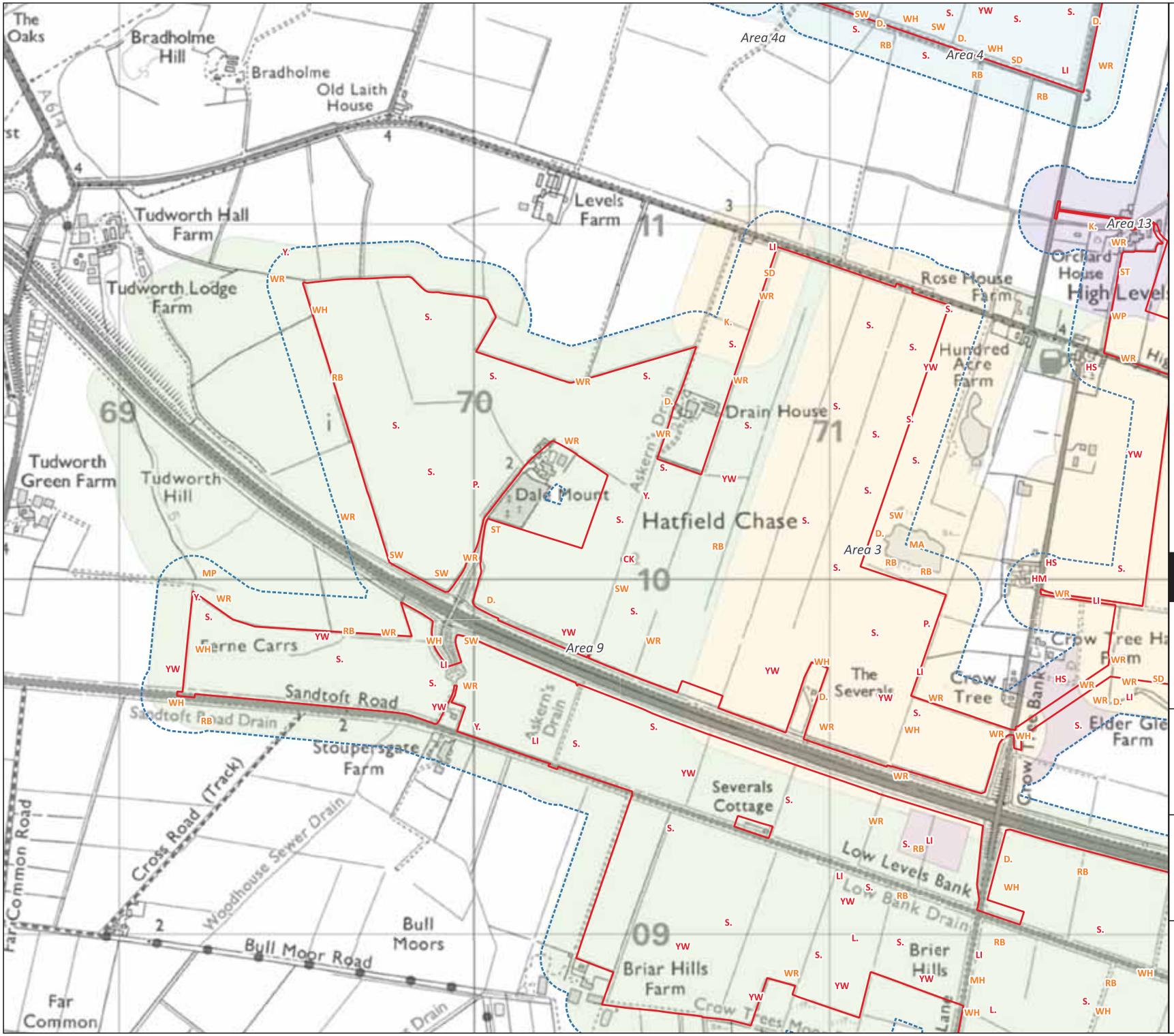
FIGURE 5. BREEDING BIRD SURVEY RESULTS – MAP 4



Order Limits
100m Buffer

2023 Survey areas
- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas
- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber
D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
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RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red
CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 4

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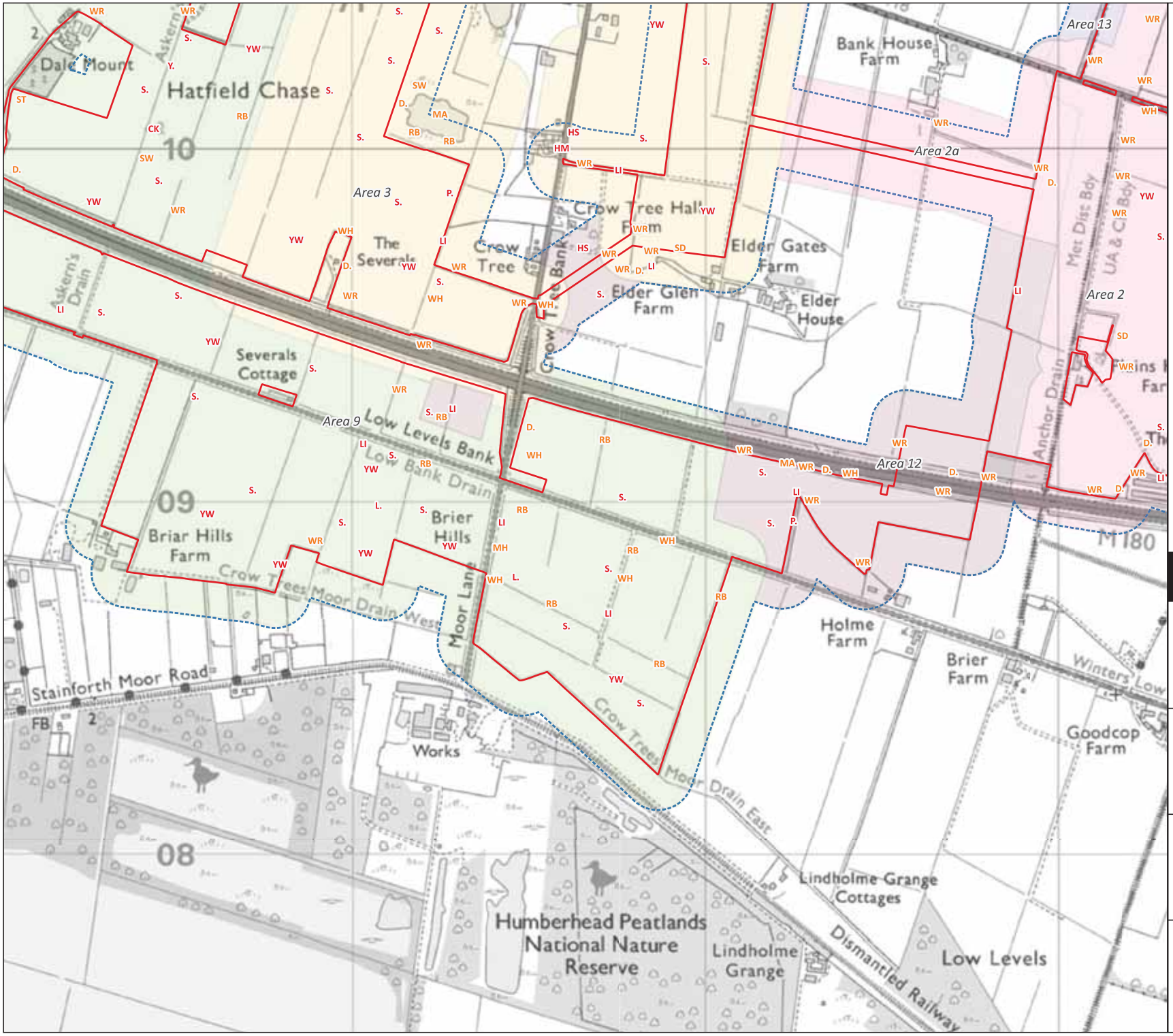
FIGURE 6. BREEDING BIRD SURVEY RESULTS – MAP 5



Order Limits

100m Buffer

2023 Survey areas

- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas

- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber

D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
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WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red

CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 5

Version: 01

Date: 07/11/2025

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0 100 200 m

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

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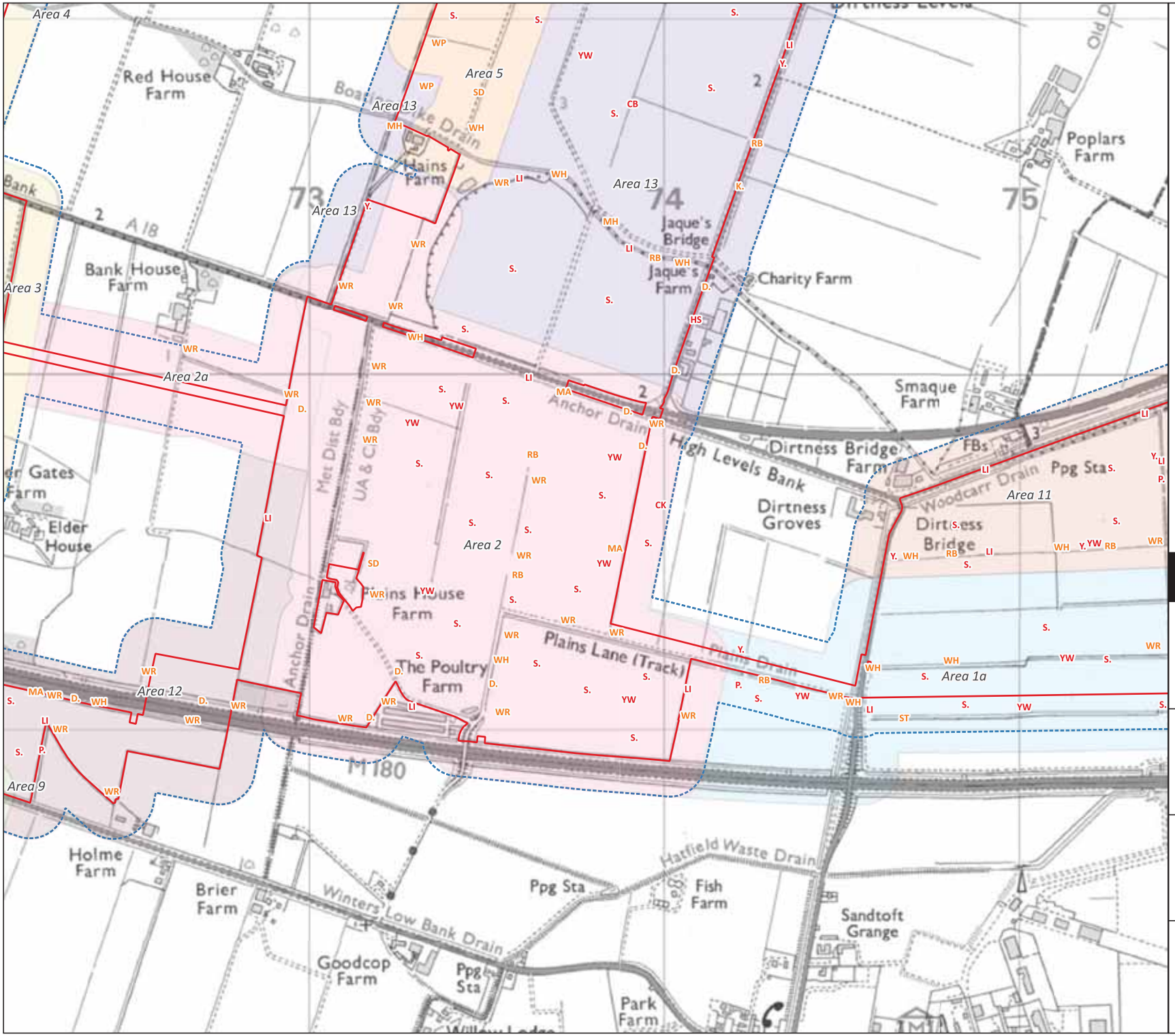
FIGURE 7. BREEDING BIRD SURVEY RESULTS – MAP 6



Order Limits
100m Buffer

2023 Survey areas
- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas
- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber
D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
MA - Mallard
MH - Moorhen
MP - Meadow Pipit
RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red
CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 6

Version: 01

Date: 07/11/2025

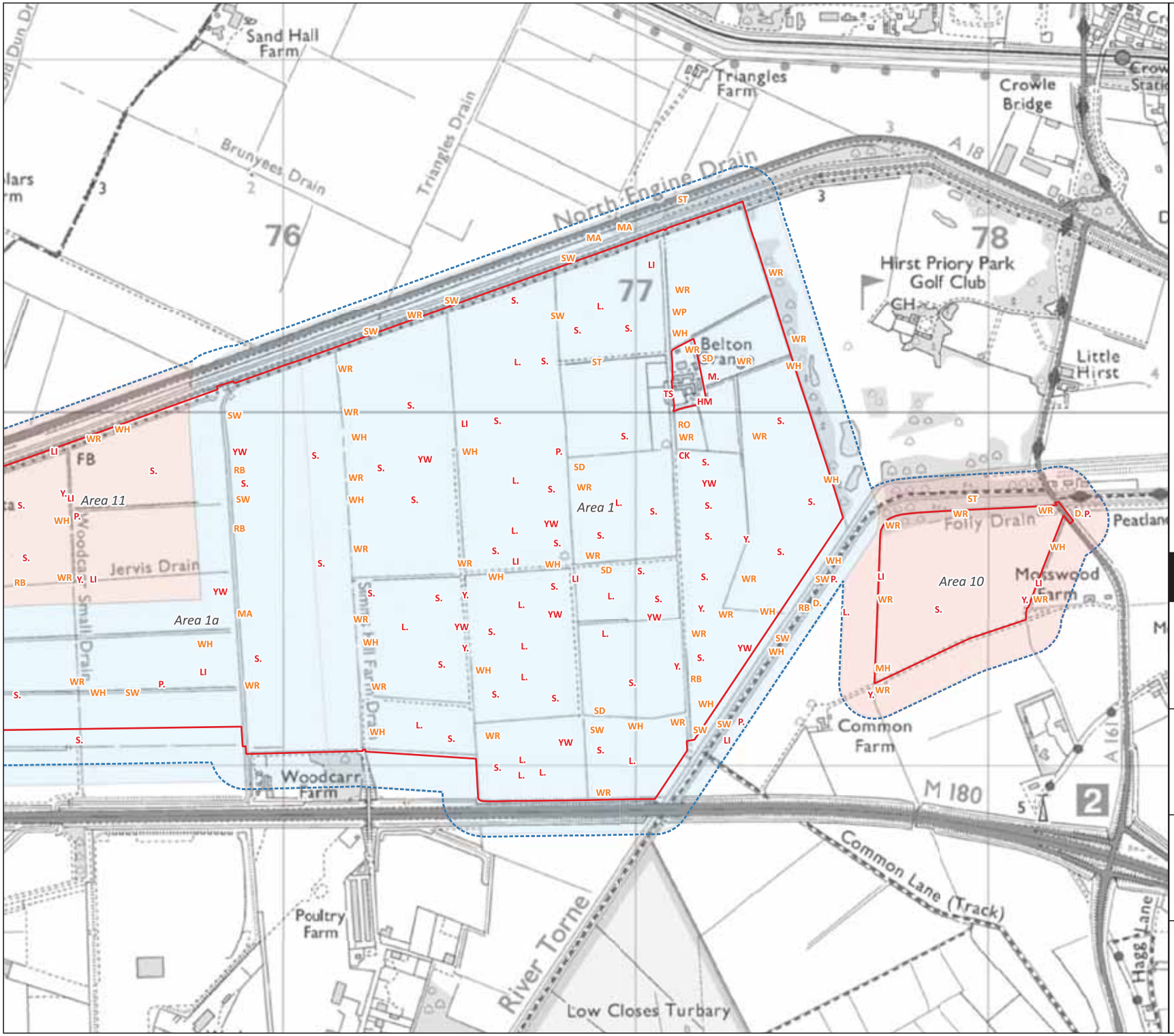
avian ecology

Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 100 200 m

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

FIGURE 8. BREEDING BIRD SURVEY RESULTS – MAP 7



Order Limits
100m Buffer

2023 Survey areas
- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas
- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber
D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
MA - Mallard
MH - Moorhen
MP - Meadow Pipit
RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red
CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
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TWEEN BRIDGE

Breeding bird survey results - Map 7

Version: 01

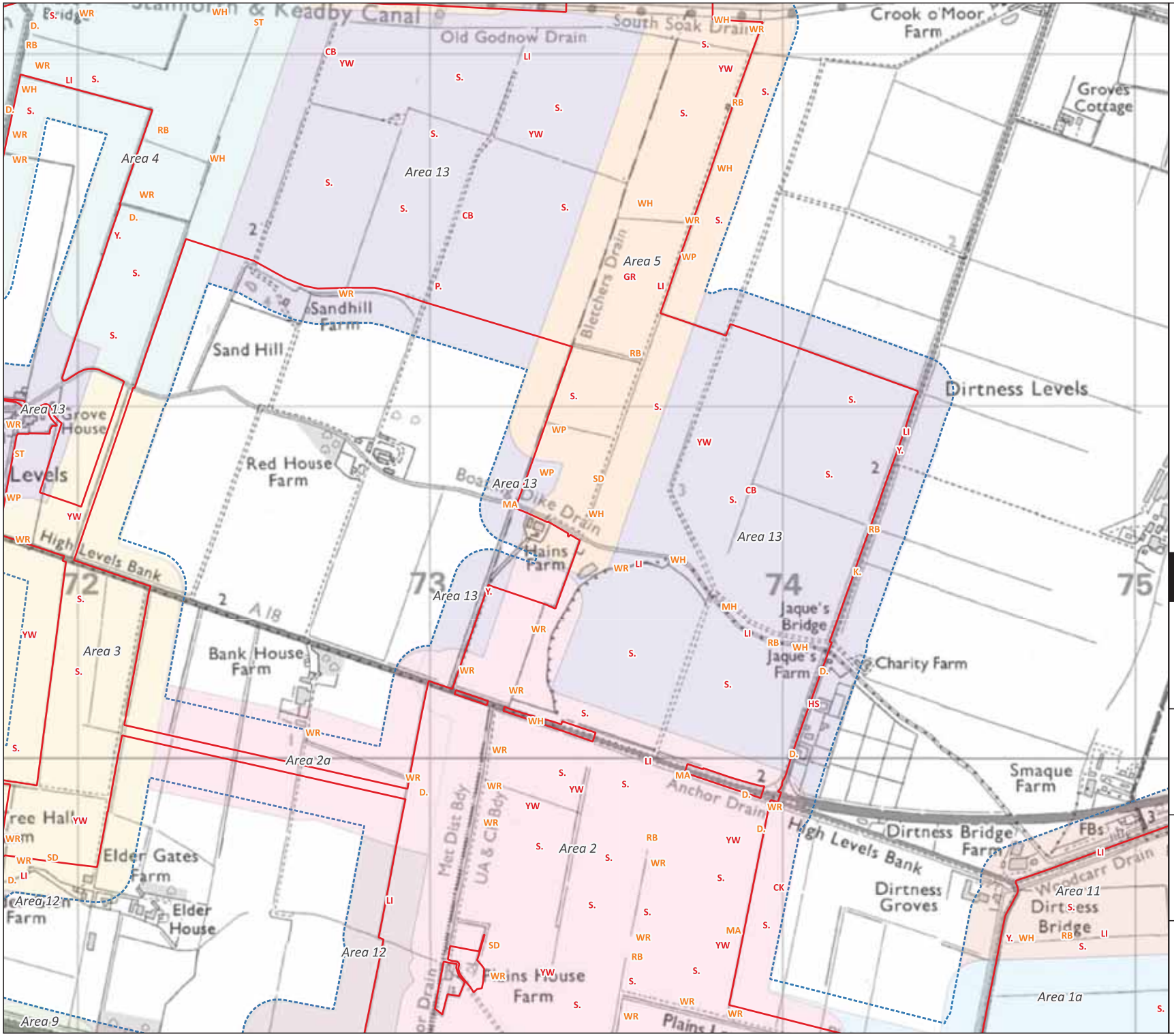
Date: 07/11/2025

avian ecology
Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 100 200 m

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

FIGURE 9. BREEDING BIRD SURVEY RESULTS – MAP 8



TWEEN BRIDGE

Breeding bird survey results - Map 8

Version: 01

Date: 07/11/2025

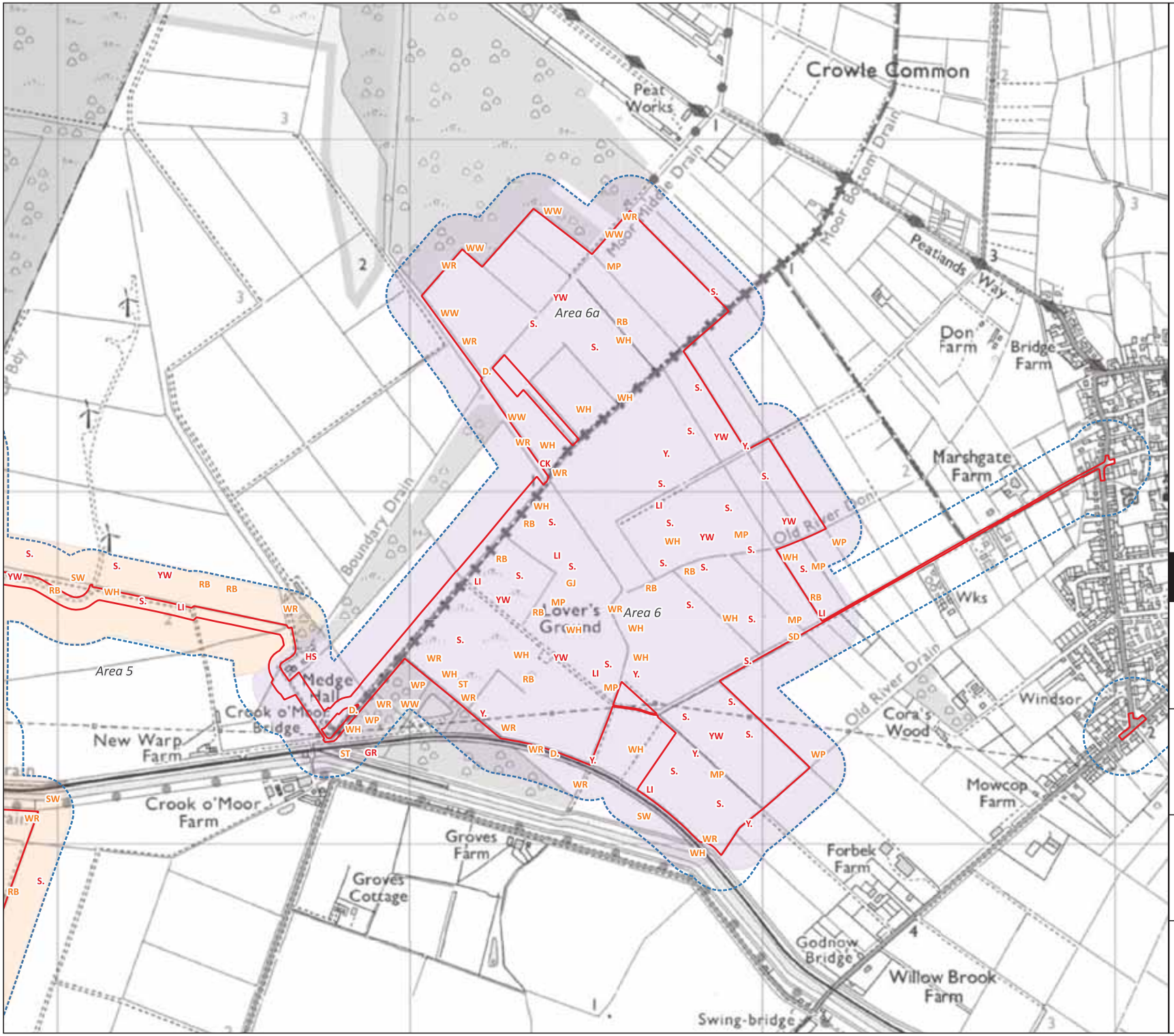
avianecology

Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 100 200 m

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

FIGURE 10. BREEDING BIRD SURVEY RESULTS – MAP 9



Order Limits

100m Buffer

2023 Survey areas

- Area 1 & 1a
- Area 2 & sa
- Area 3
- Area 4
- Area 5
- Area 6 & 6a
- Area 7 & 7a
- Area 8
- Area 9

2025 Survey areas

- Area 10
- Area 11
- Area 12
- Area 13
- Area 14
- Area 15

Amber

D. - Dunnock
GJ - Greylag Goose
K. - Kestrel
LB - Lesser Black
MA - Mallard
MH - Moorhen
MP - Meadow Pipit
RB - Reed Bunting
RO - Rook
SD - Stock Dove
ST - Song Thrush
SW - Sedge Warbler
WH - Whitethroat
WP - Woodpigeon
WR - Wren
WW - Willow Warbler

Red

CB - Corn Bunting
CK - Cuckoo
GR - Greenfinch
HM - House Martin
HS - House Sparrow
L. - Lapwing
LI - Linnet
M. - Mistle Thrush
P. - Grey Partridge
S. - Skylark
TS - Tree Sparrow
Y. - Yellowhammer
YW - Yellow Wagtail

TWEEN BRIDGE

Breeding bird survey results - Map 9

Version: 01

Date: 07/11/2025

avian ecology

Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 100 200 m

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres

N

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:

- 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);
- 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; Stanbury *et al.* 2024);
- Sec41 – species listed as rare and most threatened on the NERC Act (2006) (Species of principle importance for conserving biodiversity in England); and,
- LBAP – species listed under the Lincolnshire or Doncaster Local Biodiversity Action Plans.

Table A1: Summary of bird species.

Common name	Species name	Conservation status
Canada goose	*Branta canadensis*	-
Greylag goose	*Anser anser*	Amber
Pink-footed goose	*Anser brachyrhynchus*	Amber
Mute swan	*Cygnus olor*	Green
Whooper swan	*Cygnus cygnus*	Amber; Sch1.1; Ann1
Shelduck	*Tadorna tadorna*	Amber
Gadwall	*Mareca strepera*	Amber
Mallard	*Anas platyrhynchos*	Amber
Teal	*Anas crecca*	Amber
Tufted duck	*Aythya fuligula*	Green
Grey partridge	*Perdix perdix*	Red; Sec41; LBAP
Pheasant	*Phasianus colchicus*	-
Red-legged partridge	*Alectoris rufa*	-
Nightjar	*Caprimulgus europaeus*	Amber; Sec41; Ann1
Swift	*Apus apus*	Red
Cuckoo	*Cuculus canorus*	Red; Sec41; LBAP
Stock dove	*Columba oenas*	Amber
Woodpigeon	*Columba palumbus*	Amber
Turtle dove	*Streptopelia tutur*	Red; Sec41; LBAP
Collared dove	*Streptopelia decaocto*	Green
Moorhen	*Gallinula chloropus*	Amber
Coot	*Fulica atra*	Green
Crane	*Grus grus*	Amber; Ann1
Little grebe	*Tachybaptus ruficollis*	Green
Great crested grebe	*Podiceps cristatus*	Green
Oystercatcher	*Haematopus ostralegus*	Amber
Avocet	*Recurvirostra avosetta*	Amber; Sch1.1; Ann1
Lapwing	*Vanellus vanellus*	Red; Sec41; LBAP

Common name	Species name	Conservation status
Curlew	*Numenius arquata*	Red; Sec41; LBAP
Woodcock	*Scolopax rusticola*	Red
Snipe	*Gallinago gallinago*	Amber; LBAP
Green sandpiper	*Tringa ochropus*	Amber; Sch1.1
Black-headed gull	*Chroicocephalus ridibundus*	Amber
Lesser black-backed gull	*Larus fuscus*	Amber
Little tern	*Sternula albifrons*	Amber; Sch1.1; Ann1
Common tern	*Sterna hirundo*	Amber; Ann1
Arctic skua	*Stercorarius parasiticus*	Red; LBAP
Cormorant	*Phalacrocorax carbo*	Green
Bittern	*Botaurus stellaris*	Amber; Sch1.1; Sec41; Ann1; LBAP
Grey heron	*Ardea cinerea*	Green
Little egret	*Egretta garzetta*	Green; Ann1
Sparrowhawk	*Accipiter nisus*	Amber
Marsh harrier	*Circus aeruginosus*	Amber; Sch1.1; Ann1
Red kite	*Milvus milvus*	Green; Sch1.1 & 1A; Ann1
Buzzard	*Buteo buteo*	Green
Barn owl	*Tyto alba*	Green; Sch1.1; LBAP
Tawny owl	*Strix aluco*	Amber
Kingfisher	*Alcedo atthis*	Green; Sch1.1; Ann1
Great spotted woodpecker	*Dendrocopos major*	Green
Green woodpecker	*Picus viridis*	Green; LBAP
Kestrel	*Falco tinnunculus*	Amber
Hobby	*Falco subbuteo*	Green; Sch1.1
Peregrine	*Falco peregrinus*	Green; Sch1.1; Ann1
Jay	*Garrulus glandarius*	Green
Magpie	*Pica pica*	Green
Jackdaw	*Coloeus monedula*	Green
Rook	*Corvus frugilegus*	Amber
Carrion crow	*Corvus corone*	Green
Raven	*Corvus corax*	Green
Coal tit	*Periparus ater*	Green
Blue tit	*Cyanistes caeruleus*	Green
Great tit	*Parus major*	Green
Woodlark	*Lullula arborea*	Green; Sch1.1; Sec41; Ann1; LBAP
Skylark	*Alauda arvensis*	Red; Sec41; LBAP
Sand martin	*Riparia riparia*	Green
Swallow	*Hirundo rustica*	Green
House martin	*Delichon urbicum*	Red
Cetti's warbler	*Cettia cetti*	Green; Sch1.1
Long-tailed tit	*Aegithalos caudatus*	Green
Willow warbler	*Phylloscopus trochilus*	Amber
Chiffchaff	*Phylloscopus collybita*	Green

Common name	Species name	Conservation status
Sedge warbler	*Acrocephalus schoenobaenus*	Amber
Reed warbler	*Acrocephalus scirpaceus*	Green
Grasshopper warbler	*Locustella naevia*	Red; Sec41
Blackcap	*Sylvia atricapilla*	Green
Garden warbler	*Sylvia borin*	Green
Lesser whitethroat	*Curruca curruca*	Green
Whitethroat	*Curruca communis*	Amber
Goldcrest	*Regulus regulus*	Green
Wren	*Troglodytes troglodytes*	Amber
Treecreeper	*Certhia familiaris*	Green
Starling	*Sturnus vulgaris*	Red; Sec41; LBAP
Song thrush	*Turdus philomelos*	Amber; Sec41; LBAP
Mistle thrush	*Turdus viscivorus*	Red
Redwing	*Turdus iliacus*	Amber; Sch1.1
Blackbird	*Turdus merula*	Green
Fieldfare	*Turdus pilaris*	Red; Sch1.1
Ring ouzel	*Turdus torquatus*	Red; Sec41
Robin	*Erithacus rubecula*	Green
Nightingale	*Luscinia megarhynchos*	Red; LBAP
Whinchat	*Saxicola rubetra*	Red
Stonechat	*Saxicola rubicola*	Green
Wheatear	*Oenanthe oenanthe*	Amber
Tree sparrow	*Passer montanus*	Red; Sec41; LBAP
House sparrow	*Passer domesticus*	Red; Sec41; LBAP
Dunnock	*Prunella modularis*	Amber; Sec41; LBAP
Yellow wagtail	*Motacilla flava*	Red; Sec41; LBAP
Grey wagtail	*Motacilla cinerea*	Amber
Pied wagtail	*Motacilla alba yarellii*	Green
Meadow pipit	*Anthus pratensis*	Amber
Tree pipit	*Anthus trivialis*	Red; Sec41
Chaffinch	*Fringilla coelebs*	Green
Bullfinch	*Pyrrhula pyrrhula*	Amber; Sec41; LBAP
Greenfinch	*Chloris chloris*	Red
Linnet	*Linaria cannabina*	Red; Sec41; LBAP
Redpoll	*Acanthis cabaret*	Red; Sec41
Crossbill	*Loxia curvirostra*	Green; Sch1.1
Goldfinch	*Carduelis carduelis*	Green
Corn bunting	*Emberiza calandra*	Red; Sec41; LBAP
Yellowhammer	*Emberiza citrinella*	Red; Sec41; LBAP
Reed bunting	*Emberiza schoeniclus*	Amber; Sec41; LBAP

ANNEX 2: BREEDING BIRD SURVEY EFFORT-2022 AND 2023

Wind Speed (Beaufort)		**Wind 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	**Visibility**		**Snow**		**Frost**	
Mod. gale	7		Poor	0	None	0	None	0
Fresh gale	8		< 1km	1	On site	1	Ground	1
Strong gale	9		>1km	2	High ground	2	All day	2

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
2022													
1	1	28/04/2022	06:00	08:30	05:36	1	NE	0	2	8/8	2	0	0
1	2	10/05/2022	06:30	10:30	05:12	2	S	0	2	8/8	2	0	0
1	3	29/04/2022	08:30	11:00	05:34	1	NE	0	2	5/8	2	0	0
1	4	29/04/2022	06:00	08:30	05:34	1	NE	0	2	7/8	2	0	0
1	5	27/04/2022	07:30	11:00	05:38	1-2	N	0	2	8/8	2	0	0
1	6	28/04/2022	08:40	11:00	05:36	1	NE	0	2	8/8	2	0	0
1	7	27/04/2022	07:30	11:00	05:38	1-2	N	0	2	8/8	2	0	0
1	8	26/04/2022	07:30	10:45	05:40	1	N	0	2	8/8	2	0	0
2	1	18/05/2022	05:25	10:30	04:59	1	SW	0	2	0/8	2	0	0
2	2	26/05/2022	05:10	10:10	04:48	1	SW	0	2	7/8	2	0	0
2	3	30/05/2022	05:00	10:00	04:44	1	SW	0	2	8/8	2	0	0
2	4	30/05/2022	05:00	10:00	04:44	1	SW	0-1	2	8/8	2	0	0
2	5	17/05/2022	05:15	10:30	05:00	2	SW	0	2	2/8	2	0	0
2	6	18/05/2022	05:15	10:30	04:59	1	SW	0	2	0/8	2	0	0
2	7	17/05/2022	05:15	10:30	05:00	2	SW	0	2	2/8	2	0	0
2	8	17/05/2022	05:15	10:30	05:00	1	SW	0	2	1/8	2	0	0
3	1	07/07/2022	05:00	09:30	04:45	1-2	SW	0	2	5/8	2	0	0
3	2	16/06/2022	05:00	10:00	04:34	1	WNW	0	2	1/8	2	0	0
3	3	16/06/2022	05:00	10:00	04:34	1	W	0	2	0/8	2	0	0
3	4	05/07/2022	05:00	09:00	04:43	2	WNW	0	2	7/8	2	0	0
3	5	07/06/2022	05:00	10:30	04:37	1	NW	0	2	6/8	2	0	0
3	6	07/07/2022	05:00	09:30	04:45	1-2	SW	0	2	6/8	2	0	0
3	7	07/06/2022	05:00	10:30	04:37	1	NW	0	2	8/8	2	0	0
3	8	07/06/2022	05:00	10:30	04:37	1	NW	0	2	1/8	2	0	0
2023													

1	1a	27/04/2023	06:00	11:00	05:37	2	SE	0	2	2/8	2	0	0
1	2a	27/04/2023	06:00	11:00	05:37	2	SE	0	2	2/8	2	0	0
1	4a	05/05/2023	06:00	11:00	05:21	3	SW	0	2	5/8	2	0	0
1	6a	27/04/2023	06:00	11:00	05:37	2	SE	0	2	2/8	2	0	0
1	7a	05/05/2023	06:00	11:00	05:21	3	SW	0	2	5/8	2	0	0
1	9	22/04/2023	06:30	11:00	05:48	1	SW	1	1	8/8	1	0	0
2	1a	19/05/2023	06:00	11:00	04:57	0	NA	0	2	8/8	2	0	0
2	2a	23/05/2023	06:30	11:00	04:51	1	NE	0	2	0/8	2	0	0
2	4a	19/05/2023	06:00	11:00	04:57	0	NA	0	2	0/8	2	0	0
2	6a	21/05/2023	06:00	11:00	04:54	1	NE	0	2	0/8	2	0	0
2	7a	19/05/2023	06:00	11:00	04:57	0	NA	0	2	0/8	2	0	0
2	9	19/05/2023	06:30	11:00	04:57	0	NE	1	1	8/8	1	0	0
		21/05/2023	06:30	11:00	04:54	1	NE	0	1	0/8	1	0	0
		23/05/2023	06:30	11:00	04:51	1	NE	0	1	0/8	1	0	0
3	1a	17/06/2023	06:00	11:00	04:33	1	E	0	2	0/8	2	0	0
3	2a	14/06/2023	06:30	11:00	04:33	3	NE	0	2	0/8	2	0	0
3	4a	14/06/2023	06:00	11:00	04:33	3	NE	0	2	0/8	2	0	0
3	6a	16/06/2023	06:00	11:00	04:33	1	E	0	2	0/8	2	0	0
		17/06/2023	06:00	11:00	04:33	1	E	0	2	0/8	2	0	0
3	7a	14/06/2023	06:00	11:00	04:33	3	NE	0	2	0/8	2	0	0
3	9	16/06/2023	06:30	10:45	04:33	1	E	0	1	1/8	1	0	0
		17/06/2023	06:00	11:00	04:33	1	E	0	1	0/8	1	0	0

ANNEX 3: BREEDING BIRD SURVEY EFFORT - 2025

Visit	Area	Date	Start Time (24 hrs)	End time (24 hrs)	Sunrise/Sunset (24 hrs)	Wind Speed	Wind Direction	Rain	Cloud Height	Cloud Cover	Visibility	Frost	Snow
1	10	31/03/2025	05:00 – 05:30	11:00	06:38	0	NA	0	NA	0/8	2	0	0
1	11	25/03/2025	05:00 – 05:30	11:00	05:53	3	SW	0	2	8/8	2	0	0
1	12	26/03/2025	05:00 – 05:30	11:00	05:51	0	NA	0	2	3/8	1-2	0	0
1	13	27/03/2025	05:00 – 05:30	11:00	05:48	1	S	0	2	2/8	2	0	0
1	14	28/03/2025	05:00 – 05:30	11:00	05:46	3	W	0	2	4/8	2	0	0
1	15	28/03/2025	05:00 – 05:30	11:00	05:46	3	W	0	2	4/8	2	0	0
2	10	16/04/2025	05:00 – 05:30	11:00	06:01	3	SE	0	2	2/8	2	0	0
		17/04/2025	05:00 – 05:30	11:00	05:58	1	SW	0	2	1/8	2	0	0
2	11	17/04/2025	05:00 – 05:30	11:00	05:58	1	SW	0	2	1/8	2	0	0
2	12	21/04/2025	05:00 – 05:30	11:00	05:49	1	E	0	NA	0/8	1-2	0	0
2	13	21/04/2025	05:00 – 05:30	11:00	05:49	1	E	0	NA	0/8	2	0	0
2	14	22/04/2025	05:00 – 05:30	11:00	05:47	1	SW	0	2	1/8	2	0	0
2	15	22/04/2025	05:00 – 05:30	11:00	05:47	1	SW	0	2	1/8	2	0	0
3	10	06/05/2025	05:10	11:50	05:18	2	NE	0	2	4/8	2	0	0
3	11	07/05/2025	05:40	11:10	05:16	1	NE	0	2	4/8	2	0	0
3	12	07/05/2025	05:40	11:10	05:16	1	NE	0	2	4/8	2	0	0
3	13	07/05/2025	05:40	11:10	05:16	1	NE	0	2	4/8	2	0	0
		08/05/2025	05:30	11:00	05:14	3	NE	0	2	8/8	2	0	0

3	14	08/05/2025	05:00	11:00	05:14	3	NE	0	2	8/8	2	0	0
3	15	08/05/2025	05:30	11:00	05:14	3	NE	0	2	8/8	2	0	0
4	10	27/05/2025	18:00	23:00	21:16	2	W	1	2	8/8	2	0	0
		28/05/2025	18:00	23:00	21:18	4	SW	0	2	4/8	2	0	0
4	11	29/05/2025	18:00	23:00	21:19	6	SW	0	2	8/8	2	0	0
4	12	29/05/2025	18:00	23:00	21:19	6	SW	0	2	8/8	2	0	0
		30/05/2025	18:00	23:00	21:20	4	SW	0	2	4/8	2	0	0
4	13	30/05/2025	18:00	23:00	21:20	4	SW	0	2	4/8	2	0	0
4	14	28/05/2025	18:00	23:00	21:18	4	SW	0	2	4/8	2	0	0
4	15	28/05/2025	18:00	23:00	21:18	4	SW	0	2	4/8	2	0	0
5	10	04/06/2025	05:00	11:00	04:38	2	NW	2	2	8/8	2	0	0
		05/06/2025	05:00	11:30	04:37	1	SW	0-1	2	8/8	2	0	0
5	11	06/06/2025	05:15	11:00	04:36	1	SW	1	2	8/8	2	0	0
5	12	06/06/2025	05:15	11:00	04:36	1	SW	1	2	8/8	2	0	0
5	13	13/06/2025	05:30	11:00	04:33	3	S	0	NA	0/8	2	0	0
5	14	13/06/2025	05:30	11:00	04:33	3	S	0	NA	0/8	2	0	0
5	15	13/06/2025	05:30	11:00	04:33	3	S	0	NA	0/8	2	0	0
6	10	20/07/2025	05:00	11:15	04:33	2	S	0	2	4/8	2	0	0
6	11	08/07/2025	05:15	11:00	04:35	3	NW	0	NA	0/8	2	0	0
6	12	08/07/2025	05:15	11:00	04:35	3	NW	0	NA	0/8	2	0	0
6	13	10/07/2025	05:30	11:00	04:34	4	W	0	NA	0/8	2	0	0
6	14	10/07/2025	05:30	11:00	04:34	4	W	0	NA	0/8	2	0	0
6	15	10/07/2025	05:30	11:00	04:34	4	W	0	NA	0/8	2	0	0

ANNEX 4: WIDER SURVEY AREA ESTIMATED TERRITORIES

Species	Wider Survey Area Estimated Territories (2022/23)	Wider Survey Area Estimated Territories (2025)	Total Combined Wider Survey Area Estimated Territories (2022/23 and 2025)
Mallard	5	0	5
Grey partridge	2	3	5
Cuckoo	3	0	3
Stock dove	1	0	1
Woodpigeon	12	0	12
Lapwing	0	1	1
Lesser black-backed gull	1	0	1
Kestrel	1	1	2
Skylark	24	1	25
House martin	2	0	2
Willow warbler	13	0	13
Sedge warbler	11	3	14
Whitethroat	14	4	18
Wren	57	8	65
Song thrush	4	1	5
Tree sparrow	1	0	1
House sparrow	4	1	5
Dunnock	8	3	11
Yellow wagtail	6	0	6
Meadow pipit	2	0	2
Greenfinch	1	0	1
Linnet	7	4	11
Yellowhammer	8	2	10
Reed bunting	13	2	15

Appendix 2: Non-Breeding Bird Mitigation Strategy

Non-Breeding Bird Mitigation

Tween Bridge

August 2025

TG Report No. 16413_R03e_JD

Tyler Grange

Project No:	Report No.	Date	Revision
16413	R03	August 2025	e

Admin QA	Author	Checked	Approved
-	Joseph Dance BSc (Hons) MCIEEM	Rob Revolta BA MSc MCIEEM	Julian Arthur CEcol MCIEEM CEnv

Contents:

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Section 1: Introduction

1.1. This report has been produced by Tyler Grange Group Ltd (TG) on behalf of RWE Renewables in relation to 'Tween Bridge' solar farm. It has been produced to summarise the proposed mitigation strategy for the project in relation to non-breeding birds. This is informed by the data obtained from the 'Year 1' of the non-breeding bird surveys, completed between 2022 – 2023 and Year 2' non-breeding bird surveys, completed between 2023-2024, presented within Technical Appendix 7.3 of the **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6]**.

1.2. Natural England (NE) was consulted on an earlier iteration of this strategy (DAS A010619 / 441464 and UDS-A017176) via their Discretionary Advice Service (DAS); the strategy has responded to NE's comments.

1.3. The non-breeding bird survey data is provided in **Appendix 7.3 Non-breeding Bird Survey Report (Year 1 and Year 2) [Document Reference 6.3.7.3]**. This data comprise the locations of birds recorded within the survey area (Order Limits [OL] + 600m buffer around) which are listed as a qualifying feature under the Humber Estuary Special Protection Area (SPA). **Table 1 and 2** below also summarise peak counts of each qualifying species recorded within the Order Limits and are a direct extract from Technical Appendix 7.3 of the **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6]**.

Table 1: SPA qualifying species recorded within and outside of the Draft Order Limits during 2022/23. Note that nocturnal and diurnal surveys were combined and peak count of the two is provided, alongside the percentage of the moving (2022/23) WeBS 5-year moving mean totals.

Species	**2022**				**2023**		
	Sep	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**
Within the Draft Order Limits							
Curlew Humber Estuary 5 year mean 2022/23 **2,473**	0	0	0	0	0	0	2 (0.08%)
Golden plover Humber Estuary 5 year mean 2022/23 **21,160**	53 (0.25%)	0	0	37 (0.17%)	21 (0.10%)	0	0
Green sandpiper	**1 (7.14%)**	**1 (7.14%)**	**1 (7.14%)**	0	**1 (7.14%)**	0	0

Humber Estuary 5 year mean 2022/23 **14**							
Greylag goose Humber Estuary 5 year mean 2022/23 **2,569**	375 (14.60%)	0	19 (0.74%)	0	0	0	8 (0.31%)
Lapwing Humber Estuary 5 year mean 2022/23 **15,951**	390 (2.44%)	25 (0.16%)	31 (0.19%)	127 (0.8%)	260 (1.63%)	32 (0.20%)	32 (0.20%)
Little egret Humber Estuary 5 year mean 2022/23 **215**	0	1 (0.47%)	1 (0.47%)	0	0	0	1 (0.47%)
Mallard Humber Estuary 5 year mean 2022/23 **1,459**	**92 (6.31%)**	**24 (1.64%)**	0	12 (0.82%)	**27 (1.85%)**	**64 (4.39%)**	6 (0.41%)
Pink-footed goose Humber Estuary 5 year mean 2022/23 **23,330**	**330 (1.41%)**	**360 (1.54%)**	0	0	0	0	0
Shoveler Humber Estuary 5 year mean 2022/23 **317**	0	0	0	0	2 (0.63%)	0	0
Teal Humber Estuary 5 year mean 2022/23 **9,994**	0	2 (0.02%)	0	3 (0.03%)	6 (0.06%)	0	4 (0.04%)
Outside of the Draft Order Limits							
Golden plover	76	480	21	20	1	0	38
Green sandpiper	0	0	0	1	0	0	0
Greylag goose	150	0	0	0	0	155	34
Lapwing	260	136	1	71	14	6	13

Little egret	1	2	1	1	1	0	0
Mallard	60	2	5	42	21	17	10
Pink-footed goose	700	42	0	0	0	21	0
Shoveler	1	0	0	0	0	0	0
Teal	0	0	0	0	23	3	9
Common crane	3	0	0	0	0	0	2

Table 2. SPA qualifying species and species part of the wider waterbird assemblage recorded within and outside of the Draft Order Limits during the Winter Walkover and Nocturnal Bird Surveys combined during 2023/24.

Note that nocturnal and diurnal surveys were combined and the maximum peak count of the two is provided alongside the percentage of the most up to date (2023/24) WeBS 5-year mean totals.[1]

Species	**2023**				**2024**			
	Sep	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**
Within the Draft Order Limits								
Curlew WeBS 5-year mean for the Humber Estuary **2,473**	0	0	0	0	0	0	2 (0.16%)	2 (0.16%)
Dunlin WeBS 5-year mean for the Humber Estuary **22,346**	0	6 (0.027%)	27 (0.121%)	0	0	0	0	0
Little egret WeBS 5-year mean for the Humber Estuary **226**	0	1 (0.442%)	0	0	0	0	1 (0.442%)	0
Green sandpiper WeBS 5-year mean for the Humber Estuary **19**	0	0	0	**1 (5.26%)**	0	0	0	0
Greylag goose WeBS 5-year average for the Humber Estuary	0	**210 (9.19%)**	**157 (6.87%)**	12 (0.52%)	0	**27 (1.18%)**	**76 (3.33%)**	9 (0.39%)

[1] Calbrade, N.A., Birtles, G.A., Woodward, I.D., Feather, A., Hiza, B., Caulfield, E., Balmer, D.E., Peck, K., Wotton, S.R., Shaw, J.M., and Frost, T.M. 2025.
Waterbirds in the UK 2023/24: The Wetland Bird Survey and Goose & Swan Monitoring Programme. BTO/RSPB/JNCC/NatureScot. Thetford.

2285 [2] [3]								
Golden plover (WeBS 5-year mean for the Humber Estuary **21,623)**	0	0	82 (0.38%)	2 (0.009%)	84 (0.389%)	0	6 (0.028%)	0
Lapwing WeBS 5-year mean for the Humber Estuary **11,859**	5 (0.042%)	**220** **(1.855%)**	**371** **(3.129%)**	53 (0.447%)	79 (0.666%)	**147** **(1.24%)**	11 (0.093%)	4 (0.034%)
Mallard WeBS 5-year mean for the Humber Estuary 1,459	2 (0.14%)	**33** **(2.26%)**	**78** **(5.35%)**	**125** **(8.567%)**	**49** **(3.357%)**	**92** **(6.305%)**	**16** **(1.096%)**	10 (0.685%)
Oystercatcher WeBS 5-year mean for the Humber Estuary 7,218	0	0	0	0	0	0	2 (0.028%)	0
Pink-footed goose WeBS 5-year mean for the Humber Estuary **27,329**	0	**1600*** **(5.85%)**	**620** **(2.27%)**	194 (0.71%)	0	**1530** **(5.63%)**	0	0
Teal WeBS 5-year mean for the Humber Estuary **9,994**	0	0	0	2 (0.020%)	12 (0.120%)	2 (0.020%)	2 (0.020%)	1 (0.010%)
Wigeon WeBS 5-year average for the Humber Estuary **6,452**	0	6 (0.093%)	0	0	0	42 (0.651%)	0	0
Outside of the Draft Order Limits								
Little egret	2	2	6	4	0	0	0	0
Greenshank	1	0	1	0	0	0	0	0
Greylag goose	0	184	36	64	0	0	22	1

[2] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

[3] Contains Goose and Swan Monitoring Programme (GSMP) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. GSMP is a partnership, run by and jointly funded by BTO, JNCC and NS, with fieldwork conducted by both volunteer and professional surveyors.

Golden plover	0	3	20	0	1	0	0	0
Lapwing	54	48	28	12	27	66	29	2
Mallard	49	57	28	30	8	63	47	2
Pink-footed goose	0	1120	0	668	14	0	0	0
Teal	3	4	5	18	8	9	6	2

1.4. Based on the Year 1 and Year 2 survey results, the non-breeding bird assemblage recorded within the Order Limits is typically representative of farmland habitats.

1.5. The Order Limits surround Tween Bridge Wind Farm, which is an operational wind farm with 22 turbines. It is therefore considered that this northern section of the Order Limits is already impacted for non-breeding birds due to displacement caused by the presence of the turbines.

1.6. An assessment of significance has been undertaken to determine if the Order Limits are considered to be 'functionally linked' to the Humber Estuary SPA/Ramsar, which is situated approximately 7.7km northeast. Functional linkage is not defined in case law, but is generally considered to be relevant when over 1% of a given SPAs population of qualifying features are regularly present and the site is considered 'important' in the life cycle of the qualifying species.

1.7. Greylag goose, lapwing, mallard, and pink-footed goose exceeded the 1% threshold of their WeBS 5-year mean[4] from the Humber Estuary SPA within the Order Limits, indicating potential use of Functionally Linked Land (FLL).

1.8. Potential impacts on non-breeding birds associated with the Humber Estuary SPA/Ramsar therefore include loss of functionally linked land for lapwing, pink-footed goose, greylag goose and mallard and disturbance to these species. Consideration for golden plover in adjacent land has also been had due to the numbers recorded, with measures to be implemented during construction to minimise disturbance, The potential for adverse effects during the construction phase have been 'designed out' where practicable, and these will be controlled through standard good construction and environmental working practices as an integral part of the Scheme, detailed within the CEMP **[Document Reference: 7.9.1]** and within the eCMP **[Document Reference: 7.9.5]**.

1.9. In addition to the above, although greylag geese are not a qualifying feature of the SPA[5] as they occur at site levels of more than 1% of the national population according to the most recent Humber Estuary WeBS 5-year average count, impacts to loss of functionally linked land

[4] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2023/24 © copyright and database right 2025. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers.

[5] JNNC. STANDARD DATA FORM for sites within the 'UK national site network of European sites' – Humber Estuary

for this species is assessed within this strategy. This requirement was also confirmed by Natural England within their DAS response dated 04.04.25.

1.10. Mallard, lapwing, pink-footed goose and greylag goose have been noted as present in areas which would currently be subject to solar panel installations during the lifetime of the development. To this end, a mitigation response has been proposed tailored to these species. As detailed in **Appendix 7.3 Non-breeding Bird Survey Report (Year 1 and Year 2) [Document Reference 6.3.7.3]**, these species were recorded in the following habitats:

- Cereal;
- Oilseed rape;
- Stubble;
- Tilled;
- Rough grassland (only lapwing);

Section 2: Mitigation Strategy

2.1. Prior to any construction commencing at the Order Limits the measures detailed within the Outline Ecological Construction Management Plan (eCMP) [Document Reference 7.5] will be implemented to ensure no impacts occur to bird species and the habitats that they utilise.

2.2. The general approach to the mitigation response has been to target areas which are currently used by the qualifying species of note. The overall objective is to turn what is currently agricultural land, with no specific objectives of benefitting non-breeding birds, into land which is secured long-term for the lifetime of the development specifically for the benefit of lapwing, pink-footed goose and greylag goose. These measures will also benefit golden plover, although the Order Limits is not functionally linked for this species.

2.3. Each species detailed above forage on the following resources:

- Lapwing - Worms and insects[6].
- Pink-footed geese - Grain, winter cereals, potatoes and grass[7].
- Greylag geese- Grass, roots, cereal leaves and spilled grain.[8]
- Mallard - Seeds, acorns and berries, plants, insects and shellfish[9].

2.4. There is research, as detailed within REP7-011 of the Cleve Hill Solar Park Habitat Regulations Assessment, that there is no competition between these species as *'golden plover and lapwing feed on surface invertebrates, whereas brent goose feeds on vegetation, meaning there is no competition for foraging resources between these species'* (Paragraph 4.28 of the HRA). Whilst brent goose is not relevant here, pink-footed geese and greylag goose have similar requirements to brent geese, and therefore differing foraging/habitat requirements to lapwing and mallard, so the same principles are considered valid.

2.5. This was confirmed within Natural England's consultation response dated April 2024, in which they stated that acknowledge that 'both waders and geese can be accommodated as they do not compete with each other for food', although NE continued by stating that *'management to maximise the food for one group might impact the other.'* This has been factored into the design and approach on the non-breeding birds detailed below.

[6] Lapwing Bird Facts | Vanellus Vanellus
[7] Pink Footed Goose Facts | Anser Brachyrhynchus
[8] RSPB. Greylag Goose Facts | Anser Anser
[9] Mallard Duck Facts | Anas Platyrhynchos

2.6. At present, the land is intensively farmed for crops, which will result in a high nutrient content and inhibit the biodiversity of the soil in terms of invertebrate populations for lapwing in particular. The approach of the mitigation response is, therefore, to turn existing areas of sub-optimal cropland into permanent pasture sensitively managed for lapwing, mallard, pink-footed goose and greylag goose in particular, but which will undoubtedly have benefits for other non-breeding bird species, such as golden plover, and biodiversity in general. **Table 1** below summarises the principles of the mitigation strategy proposed.

2.7. Scrapes are also proposed to provide additional optimal habitat for all species, including mallard and lapwing, as part of the mitigation design.

2.8. In addition, it is proposed to maintain and secure areas in arable production in order to provide the optimal habitat requirements for pink footed geese and greylag geese.

Habitat Intervention and Rationale	**Management and Rationale**
Reversion of existing agricultural land into a tussocky meadow grassland. An example grass mixture is Emorsgate EM1 or EM2. This will provide suitable breeding habitat for ground-nesting farmland birds and foraging/roosting/loafing habitat for non-breeding birds (primarily pink-footed geese, graylag geese and lapwing). Subject to topography, consideration will also be given to the creation of shallow scrapes (in consultation with engineering/attenuation requirements) in these areas which can be designed to function as either a permanently marshy grassland (Emorsgate EM8), or ephemeral pools. Both of these habitats will be suitable as mitigation for both breeding and non-breeding birds. It would also be preferable to work with the topography of the land and create ground which is not completely flat. This will introduce a natural variation in the cutting height of the grass, leaving some areas longer and some areas possibly scalped, creating arounds of bare ground which will ultimately allow new grass growth to develop. These interventions would introduce more botanically diverse grassland and provide the wetland mosaics in strategic locations, particularly along the central canal corridor.	The management of the grassland can be achieved in a number of ways, set out below. <u>Traditional Hay Management</u> This would comprise bi-annual cuts, with the first cut to 15cm undertaken in late summer after the core breeding season for ground-nesting farmland birds. The arisings would need to be removed from the area following the cut to allow new growth. A second cut should then be taken to 5cm in Autumn (no later than September), at the time when non-breeding birds will be arriving on passage, and kept like this until the beginning of March. This can be achieved with low intensity grazing (see below), or infrequent cuts/topping, and arisings removed. From March and during the breeding season, approximately 50% of the grassland should be less than 5cm in height to benefit early-season nesters such as skylark and lapwing, and approximately 25% of the grassland should be cut between 5cm and 15cm, and the remainder left long.

Providing arable land on rotation for the duration of the proposals, to ensure that foraging opportunities for pink footed geese is secured and provided, in addition to grassland areas.	The main principles to be implemented as part of the rotational arable management for the benefit of pink footed geese will include: ○ Use sugar beet where possible. ○ Use other appropriate crops on rotation when sugar beet is not being grown, such as winter cereal crops, oil seed rape, post-harvest cereal stubbles, potatoes[10]. ○ Post-harvest, the fields should be left until the spring before ploughing to maximise the foraging resource, with the geese foraging on roots chopped into fragments by the harvester, as well as unharvested roots. ○ Avoidance of deep ploughing. ○ Incorporation of a ley crop within the management rotation. ○ Inclusion of permanent grass margins to the fields measuring a minimum 2 metres.

Table 2 – Summary of mitigation measures and management strategy

2.10. In Natural England's recent comments, they state that '*The addition of manure subject to a reasonable agricultural cycle'* would be beneficial. However, it is understood that this is not normal farming practice for this area, due to the area mainly comprising arable with no livestock that create manure. Therefore this is not currently proposed.

2.11. The Scheme layout also ensures that all ditches and pond are retained and enhanced, through improved management removing excessive scrub and vegetation as well as invasive species.

2.12. The cessation of agricultural farming in adjacent habitats will also improve water quality and reduce disturbance, ensuring that foraging opportunities within these features for mallards, and other species, will be improved.

2.13. The locations proposed for the mitigation response have, where possible, been chosen to broadly align with recorded locations of the relevant species and to also provide opportunities

[10] https://www.rspb.org.uk/birds-and-wildlife/pink-footed-goose

spread across the Order Limits. (**Appendix 1**). **Drawing 16413/P07a** attached to this report shows and numbers the parcels detailed for the mitigation responses outlined above.

2.14. **Table 3** below summarises the current baseline/use of these parcels and their hectarage.

Mitigation Parcel	Total Area (ha)	Total Area (ha) with 150m buffer to PV panels, buildings, hedgerows and woodland	Current baseline
M1	10.44	0	Rough grassland set on edge of adjacent SPA, noted to be used by lapwing (peak counts of 45 and 8 birds) and graylag geese (2 birds). Lapwing also recorded in adjacent fields in larger numbers (112 and 32 birds).
M2	13.42	0	Arable land located in proximity to the canal
M3	6.73	1.90	Not noted to be used by target species during Year 1 of surveys, but adjacent to plots of similar habitat.
M4	19.94	2.97	Directly adjacent to plots used by lapwing.
M5	19.24	3.20	Peak count of 360 pink-footed geese recorded within plot, and directly adjacent to other fields where pink-footed geese and lapwing were recorded.
M7	4.76	0.64	Forms one continuous parcel with parcel 8, albeit separated by a hedge and ditch. Had pink-footed geese recorded present.
M8	10.71	1.17	Forms a continuous parcel with parcel 7, albeit separated by a hedge and ditch.
M11	20.84	5.14	Arable land located in proximity to parcels M12 and M13, providing a

			large connected area over 77ha that would not be 'encompassed' by solar development, so would retain attractiveness to over-wintering birds in particular. The field compartments are relatively open, further increasing attractiveness as a mitigation area. The fact that they are prone to flooding is also attractive as it would naturally lend itself to the creation of scrapes suitable for the wading birds of target. Pink-footed geese recorded using fields in close proximity that comprise similar habitats.
M12	34.83	12.83	Arable land located in proximity to parcels 12 and 13, providing a large connected area over 77ha that would not be 'encompassed' by solar development and are relatively open. These compartments are located in one connected area and would allow the birds to move around between seasons and within seasons, depending on the specific ground conditions. Pink-footed geese recorded using fields in close proximity that comprise similar habitats.
M13	29.55	14.03	Arable land located in proximity to parcels 12 and 13, providing a large connected area over 77ha that would not be 'encompassed' by solar development and are relatively open. These compartments are located in one connected area and would allow the birds to move around between seasons and within seasons, depending on the specific ground conditions.

			Pink-footed geese recorded using fields in close proximity that comprise similar habitats.
M15	16.85	3.01	Arable land located to the east of the OL and located away from any solar arrays.
Total	**c. 187.32ha**	**c. 44.88ha**	

Table 3 – Summary of baseline use of mitigation parcels by qualifying bird species, and hectarage.

2.20. Table 3 provides the total area of each potential mitigation parcel, as well as the area of land within the parcel that will be located beyond 150m from any solar arrays, in line with Natural England's comments. It can be seen from looking at the table that over 44.88ha of potential mitigation land can be provided that is located over 150m from any solar arrays.

2.21. However, it must be noted that during the non-breeding bird surveys, some bird species, including pink-footed geese, were recorded utilising habitats that are located in close proximity to barriers, such as tree lines and hedgerows, which would affect open vistas, indicating that birds will utilise habitat to forage within 150m of existing barriers. This took place in a number of locations including in the southeast of the Order Limits within fields that have hedgerows and tree lines as boundaries creating vistas less than 150m in places (see Technical Appendix 7.3 of the **ES Chapter 7 Ecology and Nature Conservation [Document Reference: 6.2.6]**.

2.22. In addition, research has demonstrated that pink-footed geese forage within habitat that is located within 50m of built structures[11].

2.23. Therefore, although over 44.88ha of core mitigation land can be provided beyond 150m of any barriers, there is an additional 142.44ha of land that will be available and managed for the benefit of non-breeding birds within 150m of solar arrays and which contributes to the overall mitigation strategy.

2.24. Bird Days calculations have been completed to inform the extent of mitigation land required and can be seen in Appendix 1. From these calculations, that the maximum extent of non-breeding bird mitigation land required for pink-footed geese, lapwing and greylag geese are:

- Pink-footed geese – 22.98

[11] Jesper Kyed Larsen∗ and Jesper Madsen. Effects of wind turbines and other physical elements on field utilization by pink-footed geese (*Anser brachyrhynchus):* A landscape perspective. Landscape Ecology 15: 755–764, 2000.

- Lapwing – 24.99
- Greylag geese – 12.28
- **Total: 60.25**

2.25. Based on the above figures and considering that geese forage on different resources to lapwing, as confirmed within Natural England's consultation response dated April 2024, and so will utilise the same habitats without competing for the same resource, it can be seen that there is more than sufficient land within the Order Limits to provide the required non-breeding bird mitigation.

2.26. No sufficiently up to date and relevant data has been available to inform bird days calculations for mallard, but it is considered that the extent of mitigation land and the retention and enhancement of all the pond and ditches, ensure that sufficient habitat for this species.

2.27. In total an overall area of approximately 2.14ha of ponds will be available and enhanced and approximately 105.29km of ditches available and enhanced increasing foraging opportunities for mallard and other species.

2.28. This mitigation land will also be utilised as part of the breeding bird mitigation for species such as skylark.

2.29. Further to the above, in line with Natural England's recent comments (December 2024), additional management is proposed within Parcel 1 due to its proximity to Humber Estuary SPA/Ramsar/SSSI and Thorne & Hatfield Moors SPA/Thorne Moor SAC/SSSI **(see Figure 1).** A wet grassland scheme will be implemented with ditch raising and water level management in this location. Suitable removal of tree cover at the edge of the moors will be undertaken to improve suitability of this area for wading birds.

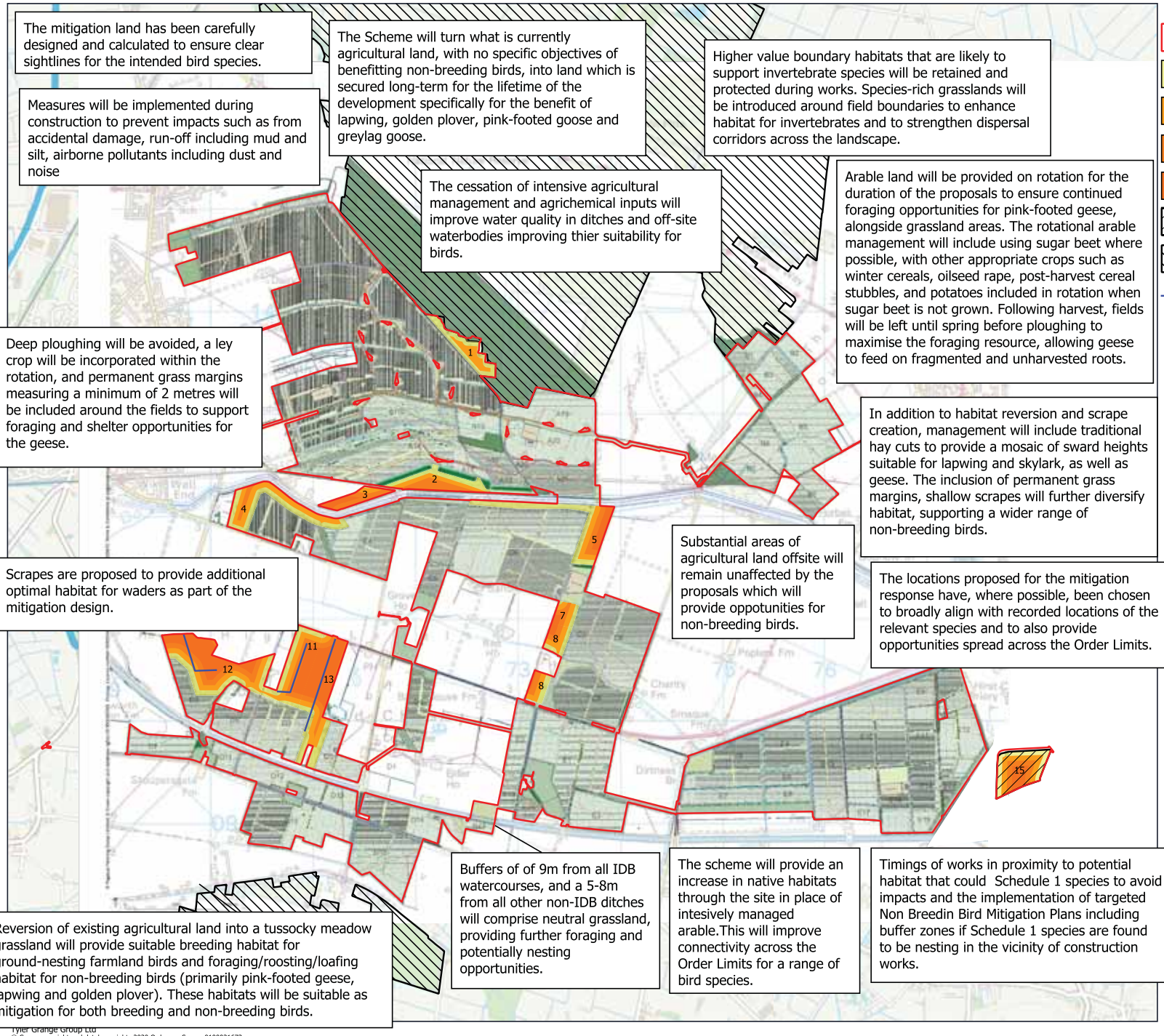
2.30. No management of habitats is proposed within the SPA or SAC, only within the land parcel located outside of designated site boundaries.

2.31. Appropriate management of the northern and southern margins of parcel 1 will also be undertaken to benefit the adjacent SAC, with management to be agreed with Natural England.

2.32. The management of the mitigation land can be secured through the implementation of the Outline Landscape Ecological Management Plan (LEMP) [Document Reference 7.6]

Figures

Figure 1: Non Breeding Bird Mitigation Plan



Project	Tween Bridge
Drawing Title	Figure 1: Non Breeding Bird Mitigation Plan
Scale	As Shown (Approximate)
Drawing No.	16413/P14a
Date	August 2025
Checked	TLR/RR

Tyler Grange
Town House, 3rd Floor, 11-15 Dix's Field, Exeter, EX1 1QA
T: 01392 447 588 E: info@tylergrange.co.uk W: www.tylergrange.co.uk

Appendix 1: Bird Days Calculations

Pink footed goose

Year 1 (2022/23)	
Sep 2022 Peak Count	330
Oct 2022 Peak Count	360
Nov 2022 Peak Count	0
Dec 2022 Peak Count	0
Jan 2023 Peak Count	0
Feb 2023 Peak Count	0
Mar 2023 Peak Count	0
Months surveyed (Sep 2022 to March 2023)	7
Winter Peak Mean=Sum of Monthly Peaks/Number of months	98.57143
Number of Days in Survey Period	195
Bird Days per Winter=Winter Peak Mean×Number of Days in Survey Period	19221.43
Bird Days per Hectare for Pink footed goose	4290
Required Area (hectares)= Bird Days Supported per Hectare / Bird Days per Winter	
Potential Mitigation Area	4.480519

Pink footed goose

Year 2 (2023/24)	
Sep 2023 Peak Count	0
Oct 2023 Peak Count	1600
Nov 2024 Peak Count	620
Dec 2023 Peak Count	194
Jan 2023 Peak Count	0
Feb 2024 Peak Count	1530
Mar 2024 Peak Count	0
Apr 2024 Peak Count	0
Months surveyed (Sep 2022 to March 2023)	8
Winter Peak Mean=Sum of Monthly Peaks/Number of months	493
Number of Days in Survey Period	200
Bird Days per Winter=Winter Peak Mean×Number of Days in Survey Period	98600
Bird Days per Hectare for Pink footed goose	4290
Required Area (hectares)= Bird Days Supported per Hectare / Bird Days per Winter	
Potential Mitigation Area	22.98368

Lapwing

Year 1 (2022/23)	
Sep 2022 Peak Count	390
Oct 2022 Peak Count	25
Nov 2022 Peak Count	31
Dec 2022 Peak Count	127
Jan 2023 Peak Count	260
Feb 2023 Peak Count	32
Mar 2023 Peak Count	32
Months surveyed (Sep 2022 to March 2023)	7
Winter Peak Mean=Sum of Monthly Peaks/Number of months	128.1429
Number of Days in Survey Period	195
Bird Days per Winter=Winter Peak Mean×Number of Days in Survey Period	24987.86
Bird Days per Hectare for Lapwing	1000
Required Area (hectares)= Bird Days Supported per Hectare / Bird Days per Winter	
Potential Mitigation Area	24.98786

Lapwing

Year 2 (2023/24)	
Sep 2023 Peak Count	5
Oct 2023 Peak Count	220
Nov 2024 Peak Count	371
Dec 2023 Peak Count	53
Jan 2023 Peak Count	79
Feb 2024 Peak Count	147
Mar 2024 Peak Count	11
Apr 2024 Peak Count	4
Months surveyed (Sep 2022 to March 2023)	8
Winter Peak Mean=Sum of Monthly Peaks/Number of months	111.25
Number of Days in Survey Period	200
Bird Days per Winter=Winter Peak Mean×Number of Days in Survey Period	22250
Bird Days per Hectare for Lapwing	1000
Required Area (hectares)= Bird Days Supported per Hectare / Bird Days per Winter	
Required Mitigation Area	22.25

Greylag Goose

Year 1 (2022/23)	
Sep 2022 Peak Count	375
Oct 2022 Peak Count	0
Nov 2022 Peak Count	19
Dec 2022 Peak Count	0
Jan 2023 Peak Count	0
Feb 2023 Peak Count	0
Mar 2023 Peak Count	8
Months surveyed (Sep 2022 to March 2023)	7
Winter Peak Mean=Sum of Monthly Peaks/Number of months	57.42857
Number of Days in Survey Period	195
Bird Days per Winter=Winter Peak Mean×Number of Days in Survey Period	11198.57
Bird Days per Hectare for Greylag goose	1000
Required Area (hectares)= Bird Days Supported per Hectare / Bird Days per Winter	
Required Mitigation Area	11.19857

Greylag Goose

Year 2 (2023/24)	
Sep 2023 Peak Count	0
Oct 2023 Peak Count	210
Nov 2024 Peak Count	157
Dec 2023 Peak Count	12
Jan 2023 Peak Count	0
Feb 2024 Peak Count	27
Mar 2024 Peak Count	76
Apr 2024 Peak Count	9
Months surveyed (Sep 2022 to March 2023)	8
Winter Peak Mean=Sum of Monthly Peaks/Number of months	61.375
Number of Days in Survey Period	200
Bird Days per Winter=Winter Peak Mean×Number of Days in Survey Period	12275
Bird Days per Hectare for Greylag goose	1000
Required Area (hectares)= Bird Days Supported per Hectare / Bird Days per Winter	
Potential Mitigation Area	12.275

Total Required Mitigation Area = largest potential mitigation area for each species

Pink footed goose	22.98
Lapwing	24.99
Greylag Goose	12.28
Total Required Mitigation Area For Functionally Linked	60.25

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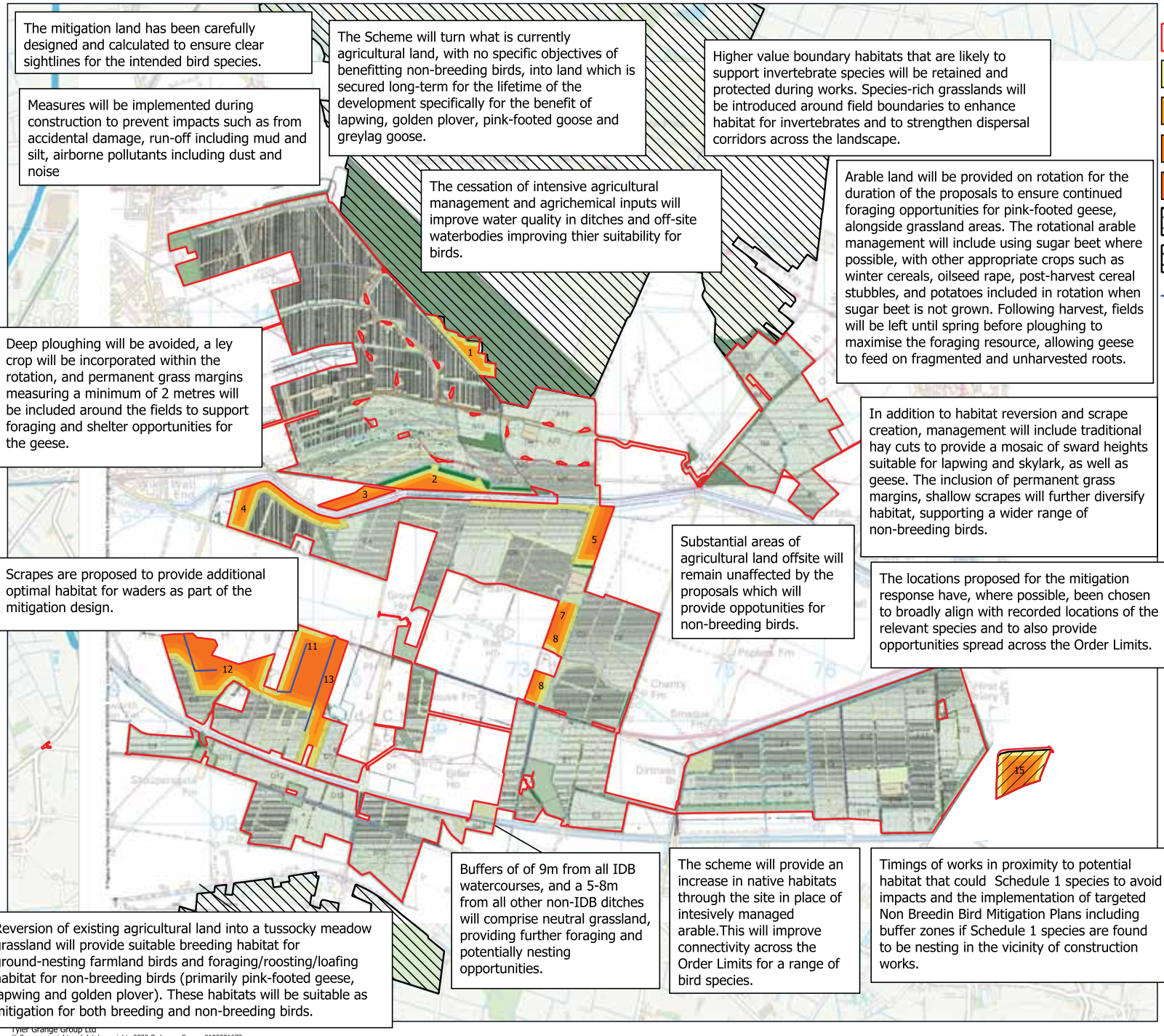
Appendix 3: Non-Breeding Bird Mitigation Plan



Project	Tween Bridge
Drawing Title	Figure 1: Non Breeding Bird Mitigation Plan
Scale	As Shown (Approximate)
Drawing No.	16413/P14a
Date	August 2025
Checked	TLR/RR

Tyler Grange
Town House, 3rd Floor, 11-15 Dix's Field, Exeter, EX1 1QA
T: 01392 447 588 E: info@tylergrange.co.uk W: www.tylergrange.co.uk

Appendix 4: Meeting Minutes - Tyler Grange and Natural England 17.03.25

Tween Bridge

Meeting 17th March 2025 15:00 - -Natural England and Tyler Grange

Attendees:

AM: Alice Megaw – Natural England

JS: Julian Small - Natural England

JA: Julian Arthur – Tyler Grange

RR: Rob Revolta – Tyler Grange

TLR: Tristan Loughrey-Robinson – Tyler Grange

No.	Topic
1	**Introductions** JA and RR: Note that it is beneficial to engage with NE throughout the process and look forward to advice and further consultation. JA/RR: Would like to set up a meeting with TG, NE and the relevant LPAs to discuss the scheme further. AM: Potential for hosting a meeting nearby and site meeting. AM: Costs have been agreed at £150 per person per hour.
2	**Pier Chapter** AM: NE have not yet received the latest version of the PEIR chapter and will review and provide feedback. Also confirmed that they have not yet time to review the updated non-breeding bird mitigation strategy (dated 04.03.25) that has been provided, but will do so and provide any comments as necessary. RR: Highlighted some of the updates within the PEIR chapter, this includes further detail on the non-breeding bird mitigation following NE's previous response, such as the provision and management of arable land for the benefit of non-breeding birds. Sugar beet was discussed to be of importance and would need to be implemented on rotation with other crops for the benefit to non-breeding birds. RR explained that the use of bird days calculations has been used to help inform the extent of mitigation land and asked NE for their opinion on the use of these calculations. RR described how the update non-breeding bird mitigation included extra detail on providing combined mitigation land for more than one species, specifically pink-footed geese, lapwing and golden plover, and asked if there was a specific ratio of land required for each different

	species when considering that there is some overlap on the type of habitat each species requires. AM: NE welcomed the provision of arable land as part of the mitigation and explained that, while arable already exists, the proposed control of cropping and avoiding deep ploughing (which encourages more invertebrates) improves this habitat when compared to existing management. Continued by stating that the provision of arable and grassland will have different benefits at different times of year, for instance if the ground is frozen, geese would use grassland more than arable. AM agreed that although arable is already present, that securing arable land and the specific management for the benefit of non-breeding birds is acceptable as part of the mitigation strategy. AM stated that she was not aware of a ratio for land required for different species when there is an overlap in habitat types utilised, but would ask colleagues. AM will review the non-breeding bird mitigation and the bird days calculations and will provide any comments. Advised that the calculations have been used before on other solar scheme, but common sense should be used for the implementation of the mitigation land. For example if the mitigation land is too narrow or adjacent to tall vertical features, this would affect sight lines and it is less likely to be used by non breeding birds. Also agreed that some species will utilise the same habitat and therefore the full extent of mitigation land for each species will not be required, but that it will be important to demonstrate that the carrying capacity of the mitigation land is sufficient for all relevant species. RR raised that following NE's previous comments, 150m buffers to solar panels have been considered in the design of the mitigation, but detailed that birds are still likely to use some land within 150m of the solar arrays and vertical features such as hedgerows, as has been confirmed during surveys at the site. AM: Noted that impacts from panels are likely to be less than buildings as they will likely be hedgerow height and acknowledged that some birds will use land within 150m of the solar arrays and other vertical features, although stated that numbers will decrease within this buffer and that sufficient habitat that is beyond 150m from the arrays will be needed. AM will check if there is an accepted ratio of land to determine non-breeding bird use within 150m of vertical features. NE will review the bird days calculations, the extent of mitigation land to be provided and the non-breeding bird mitigation strategy as a whole and then will comment further.

3	**Skylark** RR/JA detailed that skylark mitigation will be included within in the non-breeding bird mitigation land. AM stated that commenting on the provision of skylark mitigation land is outside their current remit (this is a matter for the LPAs), although agreed that it can be possible to combine the mitigation land for non-breeding birds and skylark. Stated that further advice from NE on this matter can be secured through the DAS process.
4	Nightjar JA/RR detailed that potential impacts to nightjar have been raised and discussed how the habitats within the DOL are not optimal for nightjar, with their most optimal habitat comprising woodland and heathland. Explained how the provision of grassland, tree planting and other habitat creation that supports large moth prey as part of the non-breeding bird mitigation provision, will provide some enhanced foraging opportunities for nightjar. AM/JS: Advised that nightjar have been recorded in the area, including data from a tracking study. NE to confirm if tracking data can be provided. AM provided confirmation via email on 10/03/25 that licensing for the outputs of the nightjar tagging study on Thorne and Hatfield Moors, and the IP rights sit with the researcher. The email includes the researcher's contact details. Noted that there is a lack of previous solar schemes which have encountered this as a potential issue, so this will be a good opportunity to identify potential impacts and enhancements. Local policy requires enhancements within 3km of known populations/breeding sites. JS: agreed that the habitats within the DOL are not optimal for nightjar and that grassland and new tree planting provision could enhance foraging opportunities for nightjar and would expect to see detail on nightjar enhancements provided within the ES. Confirmed no breeding opportunities for nightjar within the DOL. Explained how nightjar numbers have been increasing in the Thorne and Hatfield Moors SPA.
5	Cumulative Impacts

	RR/JA explained that potential for cumulative impacts was limited assuming that mitigation for effects from this site are adequately addressed. Asked if based on their local knowledge AM and JS consider any other sites in the area that would need consideration as part of cumulative impacts. JS explained that it is just a 3-4km buffer for cumulative impacts with regards to nightjar. Detailed that the Humber Carbon Capture pipeline is a large scheme so effects should be assessed in-combination but that impacts from this will only be temporary ~~so not likely to have a cumulative impacts.~~ . AM detailed that the Fenwick solar scheme should be included in the in-combination assessment. It is located at a relatively large distance away from this site and significant effects have been ruled out, but residual effects should be assessed ~~so there would be no cumulative impacts.~~ Explained that there are no other large solar schemes we're aware of in close proximity ~~that would have a cumulative impacts~~ but other large scale schemes and the wider area should be looked at. AM explained that residual effects from this proposed development are key in the in-combination assessment ~~and that there must be no in-combination effects or likely significant effects from the proposed development.~~
6	Deer Management JS: Population of deer has the potential to have impacts on adjacent designated sites and that this will need to be considered.
7	Drainage, Peat Cuttings and Carbon Capture JS explained how changes to drainage and reprofiling of land adjacent to statutory designated sites could cause an impact. Advised that there is evidence of buried/old peat cuttings within and around mitigation area 1. Explained that there is potential for enhancement with appropriate management through increasing flow of water into ditches and ensuring ditches can hold onto water that would prevent peat from drying out and help reduce carbon impacts. Continued by stating that this would be a potential benefit of the scheme and a good news story, especially when considering the reduction in carbon impacts as a consequence of a solar development. .
8	Other All agreed that a site meeting would be useful and that it would be beneficial to include the relevant LPAs as part of this. Continued by stating that it would be beneficial to not include other non-statutory consultees at this stage.

	AM and JS detailed that the habitat changes could be a positive for bat species and that surveys should enable future monitoring and comparison of data. AM stated that the ecology strategy was progressing in a positive direction. Water voles were briefly discussed and AM stated that any questions can be sent through and that further engagement may be required through the DAS process. AM stated that it will take around 3 weeks for NE to review any issued documents

Appendix 5: Natural England DAS 04.04.2025

Date: 04/04/2025
Our ref: 495970

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

BY EMAIL ONLY

Dear Rob Revolta
Cc Henri Scanlon, Paul Hunt, Gareth Roberts, Julian Arthur

Discretionary Advice Service (Charged Advice) UDS-A017176
Development proposal and location: EN010148 Tween Bridge Solar Farm, land to the east of Thorne & west of Ealand, South Yorkshire.

Thank you for your consultation on the above dated 13th March 2025.

This advice is being provided as part of Natural England's Discretionary Advice Service (DAS), in accordance with the DAS Quotation and Agreement dated 19th December 2024.

The following advice is based upon the information within:

- Non-Breeding Bird Mitigation Tween Bridge (R03, Tyler Grange, 4th March 2025)

Please note that the advice provided by Natural England in this letter should be read alongside the advice given in our previous responses both via Natural England's DAS and the Section 42 response.

Our comments are limited to the information provided and may be subject to changes when the required additional information and assessment is provided. We have not reviewed the updated Preliminary Environmental Impact Assessment (PEIR) documents at this stage. Our comments on those documents will be included in our statutory S42 response.

Non-Breeding Bird Mitigation Tween Bridge (4th March 2025)

Natural England welcomes the updates made to the report and progress made in ongoing discussions regarding the non-breeding bird mitigation. We have highlighted some key comments below and welcome further discussions as the scheme design progresses.

Habitat types and carrying capacity of the proposed mitigation areas

Natural England welcomes the further information provided on the capacity of the proposed mitigation areas to support the required number of birds. It would be helpful for us to review the 'Bird Days' calculations as these are currently not included in Appendix 2. Please also provide the full bird survey data referred to in Appendix 3.

We welcome the detail provided on habitat availability both within the 'core habitat' areas and 'additional areas' beyond the 150m buffer. We acknowledge that some usage of the 'additional areas' by birds, in particular geese, is likely. Natural England does not have a position on the predicted proportion of habitat usage within these areas, as it is an understudied topic. These areas may be considered to contribute to the overall mitigation provision for non-breeding birds, although reduced usage in close proximity to the panels should be factored into assessments. We advise that this should be incorporated into further assessment of the habitat suitability and capacity of each parcel to deliver for the intended species, including application of ecological knowledge/evidence, in addition to the 'bird days' calculation results. For example, golden plover and lapwing rely on open vistas to forage, and the relevant mitigation areas should seek to deliver this site characteristic to ensure suitability for these species. Golden plover tend not to use fields less than 10ha, and fields 15-30ha or larger are used more often especially when in flocks of over 100 birds[1].

In line with the current calculations presented, we advise the figures calculated for lapwing and golden plover should be considered separately, with each figure added together to produce a combined total. Natural England acknowledges that golden plover and lapwing may occur in mixed flocks; however, the mitigation area should be sufficiently large enough to deliver for the combined number of both species recorded to ensure adequate food and habitat availability.

As previously stated, Natural England advises that the mitigation area for geese and waders should be larger than would be required for either one group (but not adding the two area requirements together as the two groups are not in competition and are being accommodated on the same land) so that suitable habitat types for each species can be provided. To clarify, there is not a set proportion of land that Natural England advise could support both groups as this will depend on the proposed design and management of the mitigation areas. Instead, we would encourage consideration of habitat suitability, food availability and capacity of different parcels to support waders and/or geese in the assessment. For example, a large parcel may include a habitat mosaic of dense grassland for geese, bare ground and scrapes with high invertebrate numbers for waders, and areas of suitably managed grassland for both groups, and therefore the parcel could deliver for both waders and geese. Whereas another parcel may be a smaller area of sugar beet crop closer to a feature that reduces perceived openness and therefore be less suitable for waders but deliver for geese.

Natural England welcomes the proposed inclusion of grassland provision and rotational arable management within the mitigation design. We advise that water level management of the proposed grassland areas should be considered in the scheme design, and we recommend assessing the existing drainage regime to determine the ability of the fields to hold sufficient water. Consideration should be given to ensuring suitable invertebrate numbers for waders. We would welcome further discussions on the proposed design and management of the mitigation areas when more information is available.

Greylag geese

Greylag geese are included in the 'main component species' list for the Humber Estuary SPA, as they occur at site levels of more than 1% of the national population according to the most recent Humber Estuary Wetland Bird Survey (WeBS) 5-year average count. We acknowledge the comment that the populations located in England are *'widely recognised as non-native feral species.'* However, due to range expansion by both the northwest Scotland (or native remnant) population and the re-established population of birds released in the 1930s-1960s, range overlap

[1] Mason, C. F. and Macdonald, S. M. (1999), Habitat Use by Lapwings and Golden Plovers in a largely arable landscape. *Bird Study*, 46, 88-99

has made separate reporting untenable[2]. Therefore, since winter 2009/10, the two populations have been considered as merged, and this is reflected in WeBS reporting guidelines[3]. These British/Irish birds are also joined by migratory greylags from Iceland, which winter across Scotland and Ireland, and small numbers of individuals from mainland Europe[4].

In line with the current approach for the BTO WeBS recording, greylag geese have therefore been included in Natural England's list of 'main component species' for the Humber Estuary SPA. Therefore, impacts to loss of functionally linked land for this species should be assessed. Habitat requirements are likely to be similar to pink-footed geese and, as above, there may be usage of mitigation areas closer to the solar panels by geese. Therefore, it may be possible to incorporate habitat provision for greylags into the existing scheme design, but further assessment should be provided.

Management and monitoring

As detailed in our previous DAS advice dated 20th December 2024, our advice on management and monitoring of the mitigation areas remains as below.

All mitigation areas should be adequately managed, monitored and secured in-perpetuity, at least for the lifetime of the development. This should be clearly demonstrated in the relevant assessments.

Natural England advises an ecological mitigation plan should be secured and include the following:

- Clear objectives.
- Target/s for each objective, including SPA bird use targets and habitat targets.
- Details of required management and monitoring (including who is responsible and when it will take place).
- Details of limits of acceptable change.
- Details of remedial actions, where appropriate.

Other advice

Parcel 1

Natural England welcomes the proposed approach to implement a wet grassland scheme in Parcel 1 with ditch raising and water level management, in line with our previous advice. Proposals to incorporate appropriate management of northern and southern margins of Parcel 1 are also welcomed. The clarification regarding habitats within the SPA and SAC is noted.

We would encourage continued engagement on the proposed design and management of Parcel 1 and surrounding areas to provide suitable mitigation for Humber Estuary SPA/Ramsar/SSSI wading birds, alongside water management improvements for Thorne & Hatfield Moors SPA/Thorne Moor SAC/SSSI. This is considered to be an important opportunity for Nature Recovery in the area.

[2] Mitchell, C., Hearn, R. & Stroud, D. 2012. The merging of populations of Greylag Geese breeding in Britain. British Birds 105: 498-505.
[3] British Trust for Ornithology (BTO), 2023a. Greylag Goose populations (website). Available at: https://www.bto.org/our-science/projects/wetland-bird-survey/publications/webs-annual-report/numbers-trends/methods/analysis-and-presentation/spatial-allocation/53
[4] BTO, 2023b. Greylag Goose (website). Available at: https://www.bto.org/understanding-birds/birdfacts/greylag-goose

Please refer to our note dated 19th March 2025 for an outline of potential considerations and enhancements relating to hydrological issues associated with Thorne Moors SAC and potential buried peat on adjacent farmland.

Nightjar

Natural England would welcome continued discussion on the assessment of potential impacts to nightjar associated with Thorne and Hatfield Moors SPA.

As stated via email, the Intellectual Property rights for the 'LIFE+ - 'That's Life' Monitoring of European Nightjar 2015 – 2017' GPS tagging project sit with the university researchers. Therefore, we would encourage you to contact the researcher (whose contact detail we have provided via email) to discuss obtaining the data for your assessment.

Natural England would welcome the inclusion of white grids on the solar panels to reduce potential collision risk for bird species, including nightjar. Lighting impacts on nightjar should also be assessed, including consideration of potential impacts to invertebrate prey in key foraging areas.

Protected species

As discussed in the most recent call, please let us know via email if you have any questions relating to protected species and licensing. We will then review these within team and request involvement from Natural England's Wildlife Licensing Service (NEWLS) Chargeable Advice and Strategic Casework (CASC) Team if required.

[X] The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours sincerely

[redacted]
Yorkshire and Northern Lincolnshire Area Team
Natural England

Email: [redacted]@naturalengland.org.uk

Cc commercialservices@naturalengland.org.uk