

# Tween Bridge Solar Farm

## Environmental Statement

### Appendix 7.10: Outline Non-Breeding Bird Mitigation Strategy

Planning Act 2008

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

APFP Regulation 5(2)(a)

Document Reference: 6.3.7.10

August 2025

Revision 1

# Non-Breeding Bird Mitigation



**Tween Bridge**  
**August 2025**



**Tyler  
Grange**

TG Report No. 16413\_R03e\_JD

Project No:	Report No.	Date	Revision
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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
<b>Within the Draft Order Limits</b>							
Curlew Humber Estuary 5 year mean 2022/23 <b>2,473</b>	0	0	0	0	0	0	2 (0.08%)
Golden plover Humber Estuary 5 year mean 2022/23 <b>21,160</b>	53 (0.25%)	0	0	37 (0.17%)	21 (0.10%)	0	0
Green sandpiper	<b>1 (7.14%)</b>	<b>1 (7.14%)</b>	<b>1 (7.14%)</b>	0	<b>1 (7.14%)</b>	0	0

Humber Estuary 5 year mean 2022/23 <b>14</b>							
Greylag goose Humber Estuary 5 year mean 2022/23 <b>2,569</b>	375 (14.60%)	0	19 (0.74%)	0	0	0	8 (0.31%)
Lapwing Humber Estuary 5 year mean 2022/23 <b>15,951</b>	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 <b>215</b>	0	1 (0.47%)	1 (0.47%)	0	0	0	1 (0.47%)
Mallard Humber Estuary 5 year mean 2022/23 <b>1,459</b>	<b>92 (6.31%)</b>	<b>24 (1.64%)</b>	0	12 (0.82%)	<b>27 (1.85%)</b>	<b>64 (4.39%)</b>	6 (0.41%)
Pink-footed goose Humber Estuary 5 year mean 2022/23 <b>23,330</b>	<b>330 (1.41%)</b>	<b>360 (1.54%)</b>	0	0	0	0	0
Shoveler Humber Estuary 5 year mean 2022/23 <b>317</b>	0	0	0	0	2 (0.63%)	0	0
Teal Humber Estuary 5 year mean 2022/23 <b>9,994</b>	0	2 (0.02%)	0	3 (0.03%)	6 (0.06%)	0	4 (0.04%)
<b>Outside of the Draft Order Limits</b>							
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.<sup>1</sup>*

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 <b>2,473</b>	0	0	0	0	0	0	2 (0.16%)	2 (0.16%)
Dunlin WeBS 5-year mean for the Humber Estuary <b>22,346</b>	0	6 (0.027%)	27 (0.121%)	0	0	0	0	0
Little egret WeBS 5-year mean for the Humber Estuary <b>226</b>	0	1 (0.442%)	0	0	0	0	1 (0.442%)	0
Green sandpiper WeBS 5-year mean for the Humber Estuary <b>19</b>	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%)

<sup>1</sup> 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.

<b>2285 <sup>2 3</sup></b>								
Golden plover (WeBS 5-year mean for the Humber Estu- ary <b>21,623</b> )	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 <b>11,859</b>	5 (0.042%)	<b>220</b> <b>(1.855%)</b>	<b>371</b> <b>(3.129%)</b>	53 (0.447%)	79 (0.666%)	<b>147</b> <b>(1.24%)</b>	11 (0.093%)	4 (0.034%)
Mallard  WeBS 5-year mean for the Humber Estuary 1,459	2 (0.14%)	<b>33</b> <b>(2.26%)</b>	<b>78</b> <b>(5.35%)</b>	<b>125</b> <b>(8.567%)</b>	<b>49</b> <b>(3.357%)</b>	<b>92</b> <b>(6.305%)</b>	<b>16</b> <b>(1.096%)</b>	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 <b>27,329</b>	0	<b>1600*</b> <b>(5.85%)</b>	<b>620</b> <b>(2.27%)</b>	194 (0.71%)	0	<b>1530</b> <b>(5.63%)</b>	0	0
Teal  WeBS 5-year mean for the Humber Estuary <b>9,994</b>	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 Estu- ary <b>6,452</b>	0	6 (0.093%)	0	0	0	42 (0.651%)	0	0
<b>Outside of the Draft Order Limits</b>								
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

<sup>2</sup> 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.

<sup>3</sup> 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<sup>4</sup> 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<sup>5</sup> 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

<sup>4</sup> 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.

<sup>5</sup> JNCC. 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<sup>6</sup>.
  - Pink-footed geese - Grain, winter cereals, potatoes and grass<sup>7</sup>.
  - Greylag geese- Grass, roots, cereal leaves and spilled grain.<sup>8</sup>
  - Mallard - Seeds, acorns and berries, plants, insects and shellfish<sup>9</sup>.
- 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.

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<sup>6</sup> [Lapwing Bird Facts | Vanellus Vanellus](#)

<sup>7</sup> [Pink Footed Goose Facts | Anser Brachyrhynchus](#)

<sup>8</sup> RSPB. [Greylag Goose Facts | Anser Anser](#)

<sup>9</sup> [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
<p>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.</p> <p>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.</p> <p>These interventions would introduce more botanically diverse grassland and provide the wetland mosaics in strategic locations, particularly along the central canal corridor.</p>	<p>The management of the grassland can be achieved in a number of ways, set out below.</p> <p><u>Traditional Hay Management</u></p> <p>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.</p> <p>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.</p>

<p>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.</p>	<p>The main principles to be implemented as part of the rotational arable management for the benefit of pink footed geese will include:</p> <ul style="list-style-type: none"> <li>○ Use sugar beet where possible.</li> <li>○ 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<sup>10</sup>.</li> <li>○ 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.</li> <li>○ Avoidance of deep ploughing.</li> <li>○ Incorporation of a ley crop within the management rotation.</li> <li>○ Inclusion of permanent grass margins to the fields measuring a minimum 2 metres.</li> </ul>
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**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

<sup>10</sup> <https://www.rspb.org.uk/birds-and-wildlife/pink-footed-geese>

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

			<p>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.</p> <p>Pink-footed geese recorded using fields in close proximity that comprise similar habitats.</p>
M12	34.83	12.83	<p>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.</p> <p>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.</p> <p>Pink-footed geese recorded using fields in close proximity that comprise similar habitats.</p>
M13	29.55	14.03	<p>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.</p> <p>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.</p>

			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.
<b>Total</b>	<b>c. 187.32ha</b>	<b>c. 44.88ha</b>	

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

- 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<sup>11</sup>.
- 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

<sup>11</sup> 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.



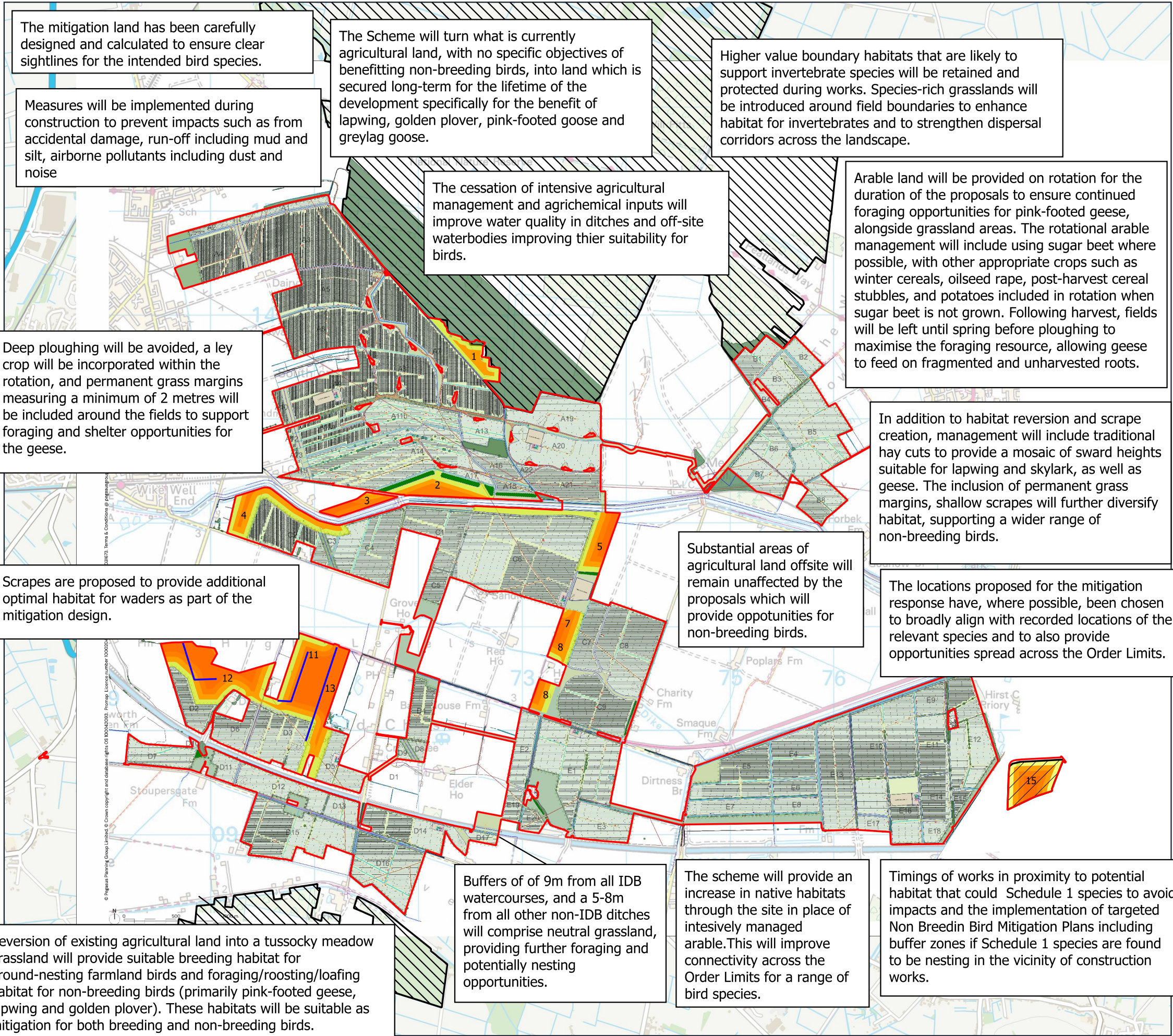
- Lapwing – 24.99
- Greylag geese – 12.28
- **Total: 60.25**

- 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]

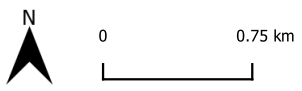
## Figures

**Figure 1: Non Breeding Bird Mitigation Plan**





- Draft Order Limit
- Mitigation Land
- Mitigation Land with a 50m Buffer from Vertical Features
- Mitigation Land with a 100m Buffer from Vertical Features
- Mitigation Land with a 150m Buffer from Vertical Features
- Mitigation Land (Managed As Arable)
- Special Protection Area (SPA)
- Scrapes



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



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## 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

**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

**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 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

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

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

**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



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