NORTH FALLS

Offshore Wind Farm

HABITATS REGULATIONS ASSESSMENT

Appendix 2 Lesser Black-backed Gull Compensation Document (Clean)

Document Reference:	7.2.2
Volume:	7
Date:	February 2025
Revision:	1

Project Reference: EN010119

NORTH FALLS
Offshore Wind Farm

Project	North Falls Offshore Wind Farm
Document Title	Habitats Regulations Assessment Lesser Black-backed Gull Compensation Document
Document Reference	7.2.2
Supplier	Royal HaskoningDHV
Supplier Document ID	PB9244-RHD-ZZ-OF-RP-YE-0263

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
0	July 2024	Submission	MacArthur Green/ RHDHV	NFOW	NFOW
1	Feb 2025	Deadline 1	MacArthur Green/ RHDHV	NFOW	NFOW

Contents

1 Revision 1 Updates at Deadline 1 7

2 Introduction 7

2.1 Background 7

2.2 Purpose of document 7

2.3 The Lesser Black-backed Gull Feature of Alde Ore Estuary Special Protection Area (SPA) 8

2.3.1 Conservation objectives 8

2.4 Supplementary Advice on Conservation Objectives for Lesser Black-backed Gull 8

3 Development of compensatory measures – methodology 10

3.1 General Approach 10

3.2 Consultation 10

4 Quantification of effect for lesser black-backed gull 12

5 Scale of compensation 13

6 Selection of compensatory measure 18

6.1 Compensatory measures selection – options review 18

7 Ecological Evidence 19

7.1 Breeding enhancement 19

7.1.1 Predator exclusion 19

7.1.2 Predator control 21

7.1.3 Disturbance management 21

7.1.4 Habitat management 21

8 Site Selection 22

8.1 Search areas 22

8.2 Short listing 26

8.2.1 Lantern Marshes 28
8.2.2 Gedgrave Marshes 29
8.2.3 Proposed Five Estuaries compensation site 31
8.2.4 Orfordness – Shingle Street 32
8.2.5 Outer Trial Bank 32
8.3 Selection of the final location 33
9 Implementation and Delivery Roadmap 34
9.1 Overview 34
9.2 Delivery mechanism 35
9.3 Outline timing of compensation 36
10 Impact of Proposed Compensatory Measure 37
10.1 Screening of Likely Significant Effects 37
11 Collaborative and Strategic Compensation 39
12 Summary 40
13 References 41

Tables

Table 2.1 Targets given as Supplementary Advice on the Conservation Objectives for LBBG in the AOE SPA 8

Table 5.1 Demographic rates from Horswill and Robinson (2015) used in LBBG compensation quantum equations for North Falls 14

Table 5.2 Quantification of breeding pairs and the potential area required for compensation of LBBG collision mortalities by North Falls, with varying combinations of advised demographic rates and nesting densities. The Applicant's proposed appropriate scale of compensation is shown in bold 17

Table 6.1 Screening of compensation measures for LBBG (selected options in bold) 18

Table 10.1 Screening of LSE of Lesser black-backed gull compensation (N=screened out; Y=screened in for further consideration)..... 37

Table 10.2 Potential mitigation to avoid or reduce impacts of the compensation measure(s) 38

Figures

Figure 1 North Falls AOE SPA LBBG search area (including land within or in proximity to the SPA)..... 24

Figure 2 Outer Trial Bank 25

Figure 3 LBBG Compensation short-listed sites at the AOE SPA LBBG search area 27

Figure 4 Gedgrave Marshes..... 30

Glossary of Acronyms

AEoI	Adverse Effect on Integrity
AOE	Alde-Ore Estuary
AONB	Area of Outstanding Natural Beauty
CIMP	Compensation Implementation and Monitoring Plan
CL	Confidence Limit
DCO	Development Consent Order
Defra	Department for Environment, Food & Rural Affairs
DEP	Dudgeon Extension project
DESNZ	Department of Energy Security and Net Zero
EA1N	East Anglia ONE North
EA2	East Anglia TWO
EPP	Evidence Plan Process
ETG	Expert Topic Group
GGOW	Greater Gabbard Offshore Wind Farm
HP3	Hornsea Project 3

HRA	Habitats regulations Assessment
km	Kilometre
LBBG	Lesser Black-backed Gull
LBCSG	Lesser Black-backed gull Compensation Steering Group
LSE	Likely significant effect
MRF	Marine Recovery Fund
NB	Norfolk Boreas
NFOW	North Falls Offshore Wind Farm
NNR	National Nature Reserve
NV	Norfolk Vanguard
OWF	Offshore wind farm
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PRoW	Public Rights of Way
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
RWE	Renewables UK Swindon Limited
SAC	Special Area of Conservation
SACO	Supplementary advice on the conservation objectives
SEP	Shoal Extension Project
SoS	Secretary of State
SPA	Special Protection Area
SSER	SSE Renewables Offshore Windfarm Holdings Limited
UK	United Kingdom
VEOWL	Five Estuaries Offshore Wind Farm Limited

Glossary of Terminology

Habitats Regulations	Refers to both the Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017
The Applicant	North Falls Offshore Wind Farm Limited (NFOW).
The Project Or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.

1 Revision 1 Updates at Deadline 1

1. This document has been updated at Deadline 1 to reflect development since submission of the Development Consent Order (DCO) application, including taking into account feedback in Relevant Representations. In addition, detail regarding the delivery of the compensatory measures has been included in the Outline Lesser Back-backed Gull Compensation Implementation and Monitoring Plan (CIMP) [**Document Reference 7.2.2.1, Rev 1**], as requested by the Planning Inspectorate and Natural England, and text removed from this document or restructured where appropriate.

2 Introduction

2.1 Background

2. The North Falls Offshore Wind Farm (hereafter 'North Falls' or 'the Project') is an extension to the existing Greater Gabbard Offshore Wind Farm (GGOW), located approximately 40 kilometre (km) off the East Anglian coast in England. When operational, North Falls would have the potential to generate renewable power for approximately 400,000 United Kingdom (UK) homes from up to 57 wind turbines.
3. The Applicant, NFOW, is a joint venture between SSE Renewables Offshore Windfarm Holdings Limited (SSER) and RWE, both of which are highly experienced developers.
4. As part of the DCO application, the Applicant must provide information to support the Habitats Regulations Assessment (HRA) to be completed by the Competent Authority, the Secretary of State for the Department of Energy Security and Net Zero (DESNZ).

2.2 Purpose of document

5. This Lesser Black-back Gull (LBBG) Compensation Document is produced in response to the conclusions of the Report to Inform Appropriate Assessment (RIAA) (Document Reference: 7.1) Part 4 **[APP-178]** which shows that an Adverse Effect on Integrity (AEoI) of LBBG *Larus fuscus* from Alde-Ore Estuary (AOE) cannot be ruled out as a result of collision risk of North Falls in-combination with other offshore wind farms.
6. This document demonstrates how the proposed compensatory measure can be delivered to ensure that the overall coherence of the National Site Network is protected, in accordance with Regulation 68 of the Conservation of Habitats and Species Regulations 2017 and Regulation 36 of the Conservation of Offshore Marine Habitats and Species Regulations 2017 (both sets of regulations together referred to as the "Habitats Regulations"), and provides evidence that an appropriate measure has been selected which will be ecologically effective.
7. A LBBG Compensation Implementation and Monitoring Plan will be produced by the Applicant and approved by the Secretary of State (SoS) post-consent, in accordance with the outline version (Annex 2A Outline Lesser Black-backed

Gull CIMP, Document Reference: [**7.2.2.1, Rev 1**]). The final LBBG CIMP will set out the detailed delivery proposals for the agreed compensatory measure based on those described in this LBBG Compensation Document.

8. The LBBG CIMP is conditioned by the draft DCO (Document Reference: 6.1, Rev 2).

2.3 The Lesser Black-backed Gull Feature of Alde Ore Estuary Special Protection Area (SPA)

2.3.1 Conservation objectives

9. The conservation objectives of the AOE SPA are to ensure that, subject to natural change, the integrity of the site is maintained or restored as appropriate, and 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 populations of each of the qualifying features; and
- The distribution of qualifying features within the site.

2.4 Supplementary Advice on Conservation Objectives for Lesser Black-backed Gull

10. Supplementary advice on the conservation objectives (SACO) were added for qualifying features in 2023 (Natural England, 2023a). Those for LBBG are shown in Table 2.1:

Table 2.1 Targets given as Supplementary Advice on the Conservation Objectives for LBBG in the AOE SPA

Attribute	Target	Season / Time of Year
Breeding population: Abundance	Restore the size of the breeding population to a level which is above 14,074 whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	Breeding (summer) season
Connectivity with supporting habitats	Maintain safe passage of birds moving between nesting and feeding areas.	Year round
Disturbance caused by human activity	Reduce the frequency, duration and / or intensity of disturbance affecting roosting, nesting, foraging, feeding, moulting and / or loafing birds so that they are not significantly disturbed.	Breeding (summer) season
Predation: all habitats	Reduce predation and disturbance caused by native and non-native predators.	Breeding (summer) season
Productivity	Maintain or recover productivity so that breeding success is maximised within the constraints of the site.	Breeding (summer) season

Attribute	Target	Season / Time of Year
Supporting habitat: air quality	Maintain concentrations and deposition of air pollutants at below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System.	Year round – to ensure the habitat remains suitable for when the feature is present
Supporting habitat: conservation measures	Maintain the structure, function and supporting processes associated with the feature and its supporting habitat through the management or other measures (whether within and / or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised.	Year round – to ensure the habitat remains suitable for when the feature is present
Supporting habitat: extent, distribution and availability of supporting habitat for the breeding season	Maintain the extent, distribution and availability of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding). Please see site specific supporting notes for extent details.	Year round – to ensure the habitat remains suitable for when the feature is present
Supporting habitat: food availability (bird)	Maintain the distribution, abundance and availability of key food and prey items (e.g. voles, small seabirds, waders, sandeel, sprat, cod, herring, roach, rudd, beetles, flies, earthworm, shellfish) at preferred sizes.	Year round
Supporting habitat: vegetation characteristics for nesting	Maintain the extent and distribution of predominantly medium to tall (i.e. 20-60 cm) grassland swards.	Year round – to ensure the habitat remains suitable for when the feature is present
Supporting habitat: water quality - contaminants	Reduce aqueous contaminants to levels equating to High Status according to Annex VIII and Good Status according to Annex X of the Water Framework Directive, avoiding deterioration from existing levels. This target was set using the Environmental Agency 2019 water body classifications data.	Year round
Supporting habitat: water quality - dissolved oxygen	Maintain the dissolved oxygen (DO) concentration at levels equating to High Ecological Status (specifically ≥ 5.7 mg L-1 (at 35 salinity) for 95 % of year) avoiding deterioration from existing levels. This target was set using the Environmental Agency 2019 water body classifications data.	Year round
Supporting habitat: water quality - nutrients	Maintain water quality at mean winter dissolved inorganic nitrogen levels where biological indicators of eutrophication (opportunistic macroalgal and phytoplankton blooms) do not affect the integrity of the site and features, avoiding deterioration from existing levels. This target was set using the Environmental Agency 2019 water body classifications data.	Year round
Supporting habitat: water quality - turbidity	Maintain natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.	Year round

3 Development of compensatory measures – methodology

3.1 General Approach

11. The Applicant has commissioned experts with previous experience in delivering LBBG compensation at Orford Ness, from MacArthur Green and Royal HaskoningDHV.

12. The approach taken by the Applicant to identify potential compensatory measures and for considering their suitability considers the policy and guidance described in the Compensatory Measures Overview (Document Reference: 7.2.1) and was as follows:

    - Literature review of compensatory measures;
    - Consultation with relevant stakeholders including:
        - Natural England, National Trust and the Royal Society for the Protection of Birds (RSPB) to develop proposals through the Offshore Ornithology Expert Topic Group (ETG) as part of the Project's Evidence Plan Process (EPP);
        - Department for Environment, Food & Rural Affairs (Defra); and
        - The Crown Estate.
    - Ongoing review of other Offshore Wind Farm (OWF) applications for which compensatory measures have been accepted for LBBG (including East Anglia ONE North, East Anglia TWO, Norfolk Vanguard and Norfolk Boreas); and
    - The options identified through this process were then considered in relation to various criteria (e.g. feasible delivery mechanism, location, spatial scale, timing and monitoring) as described in Section 8).

13. A range of project-led, collaborative and strategic compensatory measures have been considered and are described in Section 5.

3.2 Consultation

14. The Applicant has regularly consulted with relevant stakeholders throughout the pre-application and post submission stages, as discussed in the Compensatory Measures Overview (Document Reference: **7.2.1, Rev 1**). Pre-application feedback from the stakeholders has informed the development of the compensatory measure and is detailed in Annex 1A Habitats Regulations Assessment Compensation Consultation [**APP-185**].

15. Consultation with relevant stakeholders will continue throughout the development and delivery of the compensatory measure. Following project consent, a Lesser Black-backed Gull Compensation Steering Group (LBCSG) will be convened with relevant stakeholders and experts invited to be members. Invitees would include Natural England, RSPB, the relevant Planning Authority and National Trust.

16. Details of proposed future consultation on the compensatory measure will be set out in the LBBG CIMP.

4 Quantification of effect for lesser black-backed gull

17. This section provides a summary of the Project's contribution to the in-combination AEoI on LBBG at AOE SPA and outlines the context for the proposed compensatory measure. The SoS will determine the level of effect based on the Appropriate Assessment conclusions for North Falls on the breeding adult birds associated with the AOE SPA.

18. The RIAA Part 4 (Document Reference: 7.1.4, [**APP-178**]) presents an assessment of predicted collision mortality affecting LBBG from AOE SPA, which results in an annual in-combination total of 64 LBBG mortalities (RIAA Part 4, Section 1.4.2.5.4). This number can be reduced when taking into account four OWFs (East Anglia ONE North (EA1N), East Anglia TWO (EA2), Norfolk Vanguard (NV) and Norfolk Boreas (NB)) which have recently been consented subject to compensation for LBBG mortalities, leaving an in-combination total of 58 birds. The RIAA concludes that the North Falls contribution to the in-combination collision risk is 3.1 (mean) individuals (95% Confidence Limits (CL) 0.0-10.6) based on an avoidance rate of 99.39%. This represents 5.3% of the in-combination total (excluding OWFs consented with compensation measures for LBBG).

19. Updated apportioning of LBBG at AOE SPA for North Falls (Document Reference [**9.15, Rev 1**]) is provided at Deadline 1, in response to feedback from Natural England (PINS ref: EN010119, **RR-243**, F25). This shows a reduced collision risk for North Falls from 3.1 (95%CL 0.0-10.6) to 2.3 (95%CL 0.0-8.0). This will be reflected in future updates to the Lesser Black-Backed Gull Compensation Document and Outline LBBG CIMP.

20. The Applicant offers compensation options based on the mean value of predicted mortality from collision risk, whilst acknowledging Natural England's comments on the use of upper CL values, they also note that, with reference to the documentation on the Planning Inspectorate website for each of the aforementioned projects (EA1N, EA2, NV and NB) were consented on the use of the mean value.

21. The RIAA concluded that there will be no AEoI for the Project alone due to the predicted collisions on the AOE SPA breeding population of LBBG, however the potential for adverse effects on the SPA population of LBBG from the Project in-combination with collisions at other OWFs within the UK North Sea and Channel cannot be excluded.

5 Scale of compensation

22. To calculate the required number of LBBG breeding pairs required to produce new recruits into the AOE SPA population to replace predicted collision mortality at North Falls, Natural England advised that North Falls should follow the method adopted by Hornsea Project Three (HP3) (Niras and GoBe, 2020). This model was devised for kittiwake and relied on, in part, the detailed demographic data available for kittiwake that is not readily available for LBBG (specifically age class recruitment proportions in Coulson, 2011), and so the example given in HP3 was not readily replicable for LBBGs due to a lack of available data to fit the model.

23. Five Estuaries Offshore Wind Farm Limited (VEOWL) have employed a similar set of equations initially used in the Hornsea Project Four RIAA for guillemot and gannet (GoBe, 2024b), that is applicable for LBBGs, as follows. First, the required number of fledglings per year to produce sufficient birds that survive to breeding age to replace the predicted annual mortality to breeding adults at AOE SPA is calculated (taking into account available information on age-specific survival).:

Equation One:

$$N_{Fledglings\ required} = \left(\frac{N_{New\ breeding\ recruits\ required}}{\prod_{Age\ =\ 0}^{Age\ =\ 5} Survival_{Age}} \right)$$

24. Where the age of first breeding for LBBG is assumed to be 5 years (Horswill and Robinson, 2015), and $N_{(New\ breeding\ recruits\ required)}$ is equivalent to the number of mortalities from North Falls (mean 3.1).

25. Second, the number of breeding pairs required is derived from the number of fledglings, based on the productivity rate.

Equation Two:

$$N_{Breeding\ pairs\ required} = \frac{N_{Fledglings\ required}}{Productivity}$$

26. Age-specific survival and productivity values (from Horswill and Robinson, 2015) are given in Table 5.1 below.

27. In calculating the ornithology compensation scale for OWFs, the practice of scaling up or applying a ratio has been adopted for a number of consented sites, as a precaution to account for uncertainty in the calculations. For example, based on equation one, the number of fledglings required to replace the predicted 3.1 adults from the AOE SPA lost each year to collisions, is 6.3, and the number of breeding pairs required is 13.2 at a 1:1 ratio. Scaling this up to a 2:1 ratio would require 12.7 fledglings and 26.4 breeding pairs.

28. In accordance with advice from Natural England, the Applicant has also considered natal philopatry / dispersal. Of the fledglings from a given colony that survive to breeding age, a proportion will nest or recruit into their natal colony when they reach the breeding age (natal philopatry) and a proportion will disperse to recruit into another breeding colony. The rate of natal dispersal is given in Table 5.1, and so natal philopatry can be calculated as "*one minus natal dispersal*".

29. As calculated above, at a 1:1 ratio, 6.3 fledglings per year would be required to offset the loss of 3.1 breeding adults per year to collision. Based on the philopatry rate for lesser black-backed gull (Table 5.1), 0.530 of the fledglings that survive to breeding age each year would be expected on average to recruit into the natal colony, and the remaining 0.470 would be expected recruit into another colony.

30. For compensation site options at Lantern Marshes and Gedgrave Marshes (see Section 8.2 below), the aim is to install a predator exclusion fence and employ habitat management to facilitate restoration of a breeding colony at a former breeding site for Lantern Marshes, or to create a new breeding colony at Gedgrave Marshes. In each case, to maximise the number of fledglings that recruit back into the same colony when they reach breeding age, and the potential for colony growth, the aim could be to produce sufficient fledglings per year to ensure that the number surviving to breed and recruit into the natal colony, is equal to the predicted 3.1 losses each year to collisions at North Falls.

31. Under this scenario, *Equation One* for North Falls becomes:

$$N_{Fledglings\ required} = \frac{\left(\frac{N_{New\ breeding\ recruits\ required}}{\prod_{Age\ =\ 0}^{Age\ =\ 5} Survival_{Age}}\right)}{1 - Natal\ Dispersal}$$

Table 5.1 Demographic rates from Horswill and Robinson (2015) used in LBBG compensation quantum equations for North Falls

Demographic Factor	Demographic Rate	Comment
Juvenile survival (Age Class '0 to 1')	0.798 (Herring gull)	Horswill and Robinson (2015) acknowledge that the rates give for juvenile/immature LBBG are derived from insufficient data and suggest using the rates for herring gull.
Adult survival (Age classes ≥ '1 to 2')	0.885 (Lesser black-backed gull)	For the age classes 1 to 2 through 4 to 5, the adult survival rate has been used. Horswill and Robinson (2015) do not give specific rates for older immature classes, so the adult rate is applied throughout. Survival rates are included up to the age of five, as this is the recruitment age of lesser black backed gulls, as given in Horswill and Robinson.
Productivity	0.480 (Havergate Island 2014-2023 average*)	The RSPB submitted productivity data from Havergate Island (AOE SPA) following an ETG meeting, which may be deemed more accurate and precautionary to use for number estimation in the AOE SPA.

Demographic Factor	Demographic Rate	Comment
Natal Philopatry	0.530 (1.000 *minus* 0.470; Lesser black-backed gull)	Horswill and Robinson (2015) give natal dispersal rates for gulls, i.e. the proportion of fledglings that will migrate away from their natal colony and will not recruit into that population. Natural England (DAS/27843/458975) suggest the natal dispersal rate of herring gull from Horswill and Robinson is used, as the data quality supporting the LBBG rate is deemed 'poor', and gives a rate described as 'elevated'. Both options are shown in these calculations.
	0.371 (1.000 *minus* 0.629; Herring Gull)	
*The year 2015 is omitted from the mean productivity for Havergate Island, as the colony was severely affected by fox predation in that year which reduced the productivity to 0.04.		

32. Hence, the number of breeding pairs needed to offset the mean number of LBBG mortalities from North Falls (3.1) at the natal colony, at a 1:1 ratio, would look like:

Equation One:

$$N_{Fledglings\ required} = \frac{\left(\frac{3.1}{0.798 \times 0.885 \times 0.885 \times 0.885 \times 0.885}\right)}{1 - 0.470} = 11.9$$

Equation Two:

$$N_{Breeding\ pairs\ required} = \frac{11.9}{0.480} = 25\ (24.9)$$

33. Thus for a mean of 3.1 mortalities per year, a minimum of 25 breeding pairs would be needed to produce and recruit the equivalent number of breeding age birds into the colony as there are predicted mortalities whilst accounting for survival and loss of birds from natal dispersal. This is using the average productivity (across the years of 2014 and 2016-2023 inclusive) at RSPB Havergate Island, and the LBBG dispersal rate (Horswill and Robinson, 2015).

Table 5.2 shows the number of breeding pairs required and the compensation area required, based on likely nesting densities of LBBG (see below), at a number of ratios. The minimum is scaled to a 1:1 compensation ratio, although in response to Natural England's relevant representations ((Planning Inspectorate (PINS) ref: EN010119, RR-243, see comment G30), compensation ratios up to 3:1 are displayed to allow for context on compensation scale. The Applicant's position is that a 2:1 ratio is appropriate, taking into account philopatry. With the rate of natal dispersal accounted for in the Applicant's compensation quantum equation in accordance with advice from Natural England (Table 1.1, page 18 – Annex 1A HRA Compensation Consultation, Document Reference: 7.2.2.1) a considerable amount of the uncertainty has been removed from the quantification of bird numbers that could be conceivably produced in the North Falls compensatory measure.

34. Furthermore, the Applicant has received advice concerning nesting density rates of LBBG, when considering the scale of area needed for the compensation site. Both the RSPB and Natural England have advised on nest density rates

(Annex 1A Compensation consultation, Document Reference: 7.2.2.1 [**APP-185**], Table 1.1, pages 10 and 17, respectively):

- The RSPB have advised a range of 0.002 – 0.005 nests per m^2 based on experience from Havergate Island, however this range is largely derived from 1500 – 2000 pairs spread across a c.100 ha area. With the Applicant's aim of providing an enhanced breeding environment (e.g. predator free, desirable vegetation) within the compensation site, it is considered that nesting densities will likely be greater than this, especially since compensation may take place at a location on Orford Ness. Historically, Orford Ness had much greater numbers of LBBGs than Havergate Island (e.g. RSPB, 2021).
- Natural England advised a range of nesting densities between 0.002 and 0.047 nests per m^2. With the Applicant's aim of supplying an enhanced breeding environment within the compensation site, the higher end of this range is used as an option for compensation scaling. Further, this aligns more closely with the nesting density (0.04 nests per m^2) used for the LBBG compensation at the AOE SPA for the consented EA1N, EA2, NV and NB. Both 0.04 and 0.047 are presented in Table 5.2, with calculated 'area required' when using lowest nesting density of 0.002 nests per m^2 displayed for context, following the request in Natural England's relevant representations (PINS ref: EN010119, **RR-243**, see comment G30).

35. Table 5.2 shows that at a 2:1 ratio, a nesting density of 0.04 nests per m^2, and using the higher natal dispersal (lower natal philopatry) rate for herring gull (as recommended by Natural England) see Table 5.1) the area required for North Falls compensation would be up to 0.18ha, however the Applicant recognises that a minimum area of 4ha is likely to be required, if fencing to exclude predators is adopted. A 4ha site is considered likely to be ecologically effective in enhancing LBBG breeding, noting the birds may not use a smaller enclosed space. This area could be delivered by North Falls alone or, given that the capacity for compensation would be greater than required for North Falls, in collaboration with another project(s).

36. As noted above (para 19) revised apportioning for LBBG at North Falls reduces the project alone predicted collision risk to the AOE SPA population, from a mean of 3.1 to 2.3 per annum. This will also reduce the required compensation scale, which will be reflected in future versions of this document. Nevertheless, the Applicant still proposes a minimum 4ha compensation site.

Table 5.2 Quantification of breeding pairs and the potential area required for compensation of LBBG collision mortalities by North Falls, with varying combinations of advised demographic rates and nesting densities. The Applicant's proposed appropriate scale of compensation is shown in bold

Mortalities	Productivity	Natal Dispersal	Compensation Ratio	With philopatry considered			Without philopatry considered		
				Number of breeding pairs required	Equivalent area (ha)*		Number of breeding pairs required	Equivalent area (ha)	
					0.047 – 0.04 nests / m^2	0.002 nests / m^2		0.047 – 0.04 nests / m^2	0.002 nests / m^2
3.1	0.480 (Havergate Island average 2014-2023**)	0.470 (LBBG)	1:1	25	0.05 – 0.06	1.24	14	0.03 – 0.03	0.66
			2:1	**50**	**0.11 – 0.12**	**2.49**	28	0.06 – 0.07	1.32
			3:1	75	0.16 – 0.19	3.73	40	0.08 – 0.10	1.98
		0.629 (Herring Gull)	1:1	36	0.08 – 0.09	1.78	As above		
			2:1	**72**	**0.15 – 0.18**	**3.56**			
			3:1	107	0.23 – 0.27	5.33			

*The calculated area required is based on a range of nesting density (0.047 – 0.04 nest per m^2); this range incorporates the density used by accepted compensation proposals, and the similar nesting density given by Natural England.

**The year 2015 is omitted from the mean productivity for Havergate Island, as the colony was severely affected by fox predation in that year which reduced the productivity to 0.04.

6 Selection of compensatory measure

6.1 Compensatory measures selection – options review

37. The process for identifying potential LBBG compensatory measures considered the ecology and existing pressures on LBBG to identify measures which would aim to reduce mortality from other causes, increase survival through other means and/or increase productivity to offset the collision effects described in Section 4.

38. An In Principle Compensation Options Review (NFOW, 2023) which reviewed potential compensatory measures, was provided for Section 42 consultation. Following consultation on the In Principle Compensation Options Review and further technical consultation through the Evidence Plan Process, breeding enhancement (e.g. predator exclusion; habitat management; and/or disturbance management) at breeding colonies (discussed further in Section 7) was selected as the preferred measure for a project led or collaborative option with other developers.

39. Contribution to a strategic measure or fund (Section 11) is also included as an option to deliver compensation, if required.

40. Table 6.1 provides a summary of the considered measures and conclusions reached in consultation with Natural England and RSPB.

Table 6.1 Screening of compensation measures for LBBG (selected options in bold)

Measure	Conclusions
Closure of sandeel and sprat fisheries close to breeding areas	It is recognised that a permanent closure of sandeel fisheries in English North Sea waters is being introduced from April 2024 (Defra, 2024) and that the Energy Act provides the powers to allow this measure to be allocated as compensation for offshore wind projects. The process whereby sandeel closures can be used as compensation is still in development and at this stage, it is not considered further as a potential compensatory measure for North Falls. However, the Applicant recognises that sandeel closures could be a compensatory measure that the Secretary of State could rely on in the future to provide compensation either for North Falls alone or as part of a strategic approach to compensation. This option is not considered further by the Applicant. However, should this become available as a strategic option, the Applicant may give this further consideration.
Reduce culling	Until 2019 LBBGs could be legally culled under the General Licence with no requirement to report on numbers killed. Licence conditions have changed, and reporting is required which should provide data to assess the population effects (MacArthur Green and Royal HaskoningDHV 2021a). At present, however, the potential impacts of this option on a particular SPA population cannot be assessed and it is not considered further.
Reduce fisheries bycatch	Natural England and RSPB advised against bycatch reduction as a compensatory measure, noting a lack of evidence that bycatch is a key pressure on lesser black-backed gull, with the RSPB stating there is '*no proven measure to reduce bycatch for this species. It would require detailed research of the level and location of bycatch, along with reduction trials to identify a reliable bycatch reduction measure that could be implemented. The RSPB is not aware of any such research being in place at this time*' (Annex 1A). The Applicant is therefore not pursuing this measure further at this time, however, should evidence in support of this measure become available, the Applicant may give this further consideration.

Measure	Conclusions
Breeding enhancement (e.g. predator eradication/ control, or disturbance management)	Predation (e.g. by foxes) may reduce breeding success and adult survival at breeding colonies. Predator-exclusion fencing or predator control is an effective method of enhancing breeding success. Predator exclusion has been legally secured as compensation for the Norfolk Vanguard, Norfolk Boreas, East Anglia TWO and East Anglia ONE North offshore wind farms. Predator control is a widely recognised procedure that has brought substantial benefits to seabird conservation at numerous sites globally. Disturbance management to reduce risk of disruption to birds during highly sensitive breeding period, e.g. through awareness campaigns, wardening, and signage. The above breeding enhancement options may be supplemented with habitat management where appropriate (such as planting, grassland cutting and scrub clearance) to create optimal ground cover and sward height for LBBG breeding success. This measure is discussed further in Section 7
Contribution to a strategic fund	In accordance, with the Sheringham Shoal Extension Project (SEP) & Dudgeon Extension Project (DEP) DCO which enables compensation to be delivered through contribution to a Strategic Compensation Fund, this option is included for North Falls (Section 11).
Chick rearing and release	Chick rearing is not considered further at this stage due to uncertainty over delivery. However, it is considered that this approach could be considered as potential adaptive management, if required, should further information become available.

7 Ecological Evidence

7.1 Breeding enhancement

7.1.1 Predator exclusion

41. The large-scale decline of LBBG at the AOE SPA, from a peak of 23,400 pairs in 2000 to a 5 year mean of 1,940 pairs 2011-2015, has been attributed mainly to large scale abandonment of the colony in response to predation by foxes (Ross-Smith et al., 2014; Mavor et al., 2001, 2003).

42. As an example of the speed of decline, at Orford Ness, 75% of 23,000 nests failed due to fox predation in 2000, and, in the absence of fox control, the breeding population at that site declined to 6,500 pairs by 2002 (Mavor et al., 2001, 2003, MacArthur Green and Royal HaskoningDHV, 2022). Therefore, exclusion of predators from nesting habitat is likely to be ecologically effective.

43. Cooper (2013) listed examples of successful deployment of predator-proof fencing around seabird colonies in New Zealand, Hawaii (USA) and Azores (Portugal), and these were also reviewed in detail by White and Hirons (2019).

44. In New Zealand, a predator-proof fence was completed in 2007 that stretches 10.6 km across the neck of the peninsula from coast to coast at Cape Kidnappers Peninsula on the North Island. Although pests can still gain access at the fence's coastal ends "[Brushtail] Possums have almost been eradicated from the peninsula but feral cats still pose a problem with over 750 caught to date [2013]". This fence protects a privately owned and financed seabird restoration project where grey-faced petrels and Cook's petrels are successfully being re-introduced (Furness et al., 2013).

45. Predator-proof fences constructed in the United States were deployed very effectively in Hawaii at Ka'ena Point Natural Area Reserve to protect vulnerable populations of wildlife (Young et al., 2012). Fences 2m tall were set up in November 2010 to February 2011 around 20 hectares (ha) of coastal habitat within Ka'ena Point to prevent predators (including dogs, cats, mongooses, rats and mice) from entering the protected area. Predators were eradicated within the enclosed 20ha; it took three months to complete for all predators except mice, which were eradicated within an additional six months (Young et al., 2012). Such predator-proof fencing would be appropriate for colonies subject to predation by foxes. Similar predator-proof fences have been established at many sites around the world with very high success in protecting birds from mammal predators (VanderWerf et al., 2014, Ruykys and Carter, 2019).

46. Another good example of successful deployment of a predator-proof fence to protect a seabird colony is one erected in 2001 to protect 36 ha on Pitt Island (Chatham Islands, New Zealand) from feral cats and pigs. Between 2002 and 2005, 200 endangered Chatham petrel chicks from the only known breeding site on South East Island (Chatham Islands) were transferred to a new site within a predator exclusion fence (where there were no Chatham petrels). In 2012, 17 pairs from these translocated birds returned to breed (Furness et al., 2013).

47. In Europe, predator-proof fencing has been used to protect breeding seabirds from alien invasive mammal predators in Azores (Portugal), funded by EU LIFE+.

48. Initial results from predator fencing at the South Walney LBBG colony (which forms part of the Morecambe Bay and Duddon Estuary SPA) have shown increases in breeding population and productivity in the two breeding seasons since fence installation in 2021 (Dalrymple, 2023). This colony was known to be subject to fox and badger predation prior to fencing.

49. It has been demonstrated that not only can seabird breeding success be much higher in areas within predator-proof fences, but also that seabird breeding numbers tend to recover rapidly when given such protection. This method would be much more effective than attempting to reduce fox numbers, as there will often be movement of foxes into the area from the surrounding wider countryside where fox numbers are high. In addition, depending on the nature of the predator-proof fence, it may also exclude rats and American mink as well as other mammal predators such as feral cats.

50. Predator exclusion from an area within the AOE SPA used by breeding LBBG, as a mitigation measure, has been accepted for four consented OWFs[1] in the southern North Sea. The predator exclusion – aimed primarily at foxes – is predicted to reduce predation of eggs and nestlings, which would offset the predicted losses of LBBGs from the SPA population due to collisions at offshore wind farms. The North Falls compensatory measure would be additional to this existing compensation. Given the stated aim to restore the SPA population to

[1] EA1N, EA2, NB and NV

14,074 pairs from the current estimate of less than 3,000 pairs, and that the current provision of fenced areas provides less than 6 ha of available habitat (which even the highest density advised by Natural England (0.047 nests/m^2; refer to Section 5) could accommodate 2,820 pairs) there is a clear scope to provide additional benefit to the existing measures in the AOE SPA.

7.1.2 Predator control

51. Should predator exclusion fencing be selected, it is possible that some predator control may be required in addition to fencing, for example to ensure that the enclosure is predator-free once constructed, or as part of adaptive management, should a breach of the fence occur.

52. Alternatively, should the Outer Trial Bank be selected, predator control/eradication on the island may be the preferred delivery mechanism, with or without the requirement for fencing.

53. The eradication and control of mammal predators is a widely recognised procedure that has brought substantial benefits to seabird conservation at numerous sites globally. Predator eradication has facilitated the recovery of many depleted populations of vulnerable seabirds and recolonisation of islands by seabirds that had been eradicated by predators.

54. Should predator control be selected as a measure, the methods would be informed by site- specific surveys.

7.1.3 Disturbance management

55. Another mechanism to enhance breeding, in particular in an area already occupied by breeding LBBGs, is to manage and reduce disturbance from anthropogenic sources e.g. walkers and those with dogs in nearby area, and recreational boat users landing on beaches. It has been suggested by National Trust staff working on Orford Ness that disturbance by humans may be a regular occurrence on the site, particularly in the summer when boat users land on the seaward shore to access the beaches (National Trust, pers. comms.).

56. There is evidence for disturbance to gulls[2] due to the presence of humans (Robert & Ralph, 1975; Martínez-Abraín et al., 2008) and for the effectiveness of disturbance reduction measures from research at bird breeding sites (Allbrook & Quinn, 2020; Dowling & Weston, 1999).

57. Therefore, measures such as awareness campaigns, or creation/support of a warden position to facilitate the management of anthropogenic impacts on and/or around the breeding areas would be considered.

7.1.4 Habitat management

58. LBBGs nest on solid surfaces either on the ground, or on flat/semi-flat roofs of buildings (RSPB, 2021). The nesting sites most preferred by LBBG are open

[2] *L. occidentalis* and *L. michahellis*

and surrounded by taller vegetation, that will provide protection from weather and predators to chicks once they are mobile (RSPB, 2021). Vegetation that is overly dense is generally avoided by LBBGs and very tall vegetation is deemed sub-optimal, yet it may be used by 'lower-quality' breeding birds (RSPB, 2021). The SACO for AOE SPA states that the target for 'supporting habitat: vegetation characteristics' for LBBG is to 'maintain the extent and distribution of predominantly medium to tall (i.e. 20-60cm) grassland swards'.

59. Sites within the Applicant's search area that are deemed to have 'currently suitable' (e.g. habitat with of the correct density and height of vegetation as per the AOE SPA SACOs) or 'potentially suitable' (habitat that with minimal-to-moderate interventions e.g. strimming outside of the breeding season) habitat types will be assessed, and depending on the location of the site chosen, management plans will be implemented to improve the habitat to bring it as close to 'optimal' as possible. This would most likely be done in tandem with predator exclusion, see Section 7.1.1 above, or with the predator control (Section 7.1.2) or disturbance management (Section 7.1.3) if appropriate. The Applicant does not envisage this measure happening independently of the other measures.

8 Site Selection

8.1 Search areas

60. In accordance with Defra (2021; 2024), where practicable, compensatory measures that benefit the same feature within the affected site are preferred. Therefore, the initial search area for the North Falls LBBG compensation was the AOE SPA and land in proximity to the SPA. The North Falls Draft In Principle Compensation Review (NFOW, 2023) identified the potential to establish compensation within the AOE SPA or in proximity to the SPA boundary which would benefit the LBBG feature of the AOE SPA.

61. During consultation, Natural England has previously indicated that a compensation site located outside of the AOE SPA boundary may be preferable, as it was considered that suitable locations within the SPA were limited. However, the review undertaken by the Applicant has confirmed that potentially suitable areas within the SPA could be progressed and therefore the search area retains both options inside and outside in proximity to the SPA.

62. Research was undertaken into the recent and current distribution of LBBGs in the area and distribution of suitable habitats, which is considered a strong indicator of the suitability of a location for LBBG breeding. The selection of the search area also took into consideration the location of other features of the SPA, which could be affected by increasing LBBG numbers. The Applicant therefore identified a search area within and around the AOE SPA within which compensation for LBBG could be delivered (shown in Figure 1). This comprises the central area of the SPA around Orford Ness, together with areas to the west of the River Ore, located outside of the SPA.

63. Consultation with Natural England and RSPB also identified the Outer Trial Bank, in The Wash, Norfolk as a potential area for compensation, although noting additional studies would be required to confirm its suitability.

64. The location for delivery of the compensatory measure will therefore be either within the AOE SPA search area (shown in Figure 1, including land within or in proximity to the SPA) or at Outer Trial Back (Figure 2).

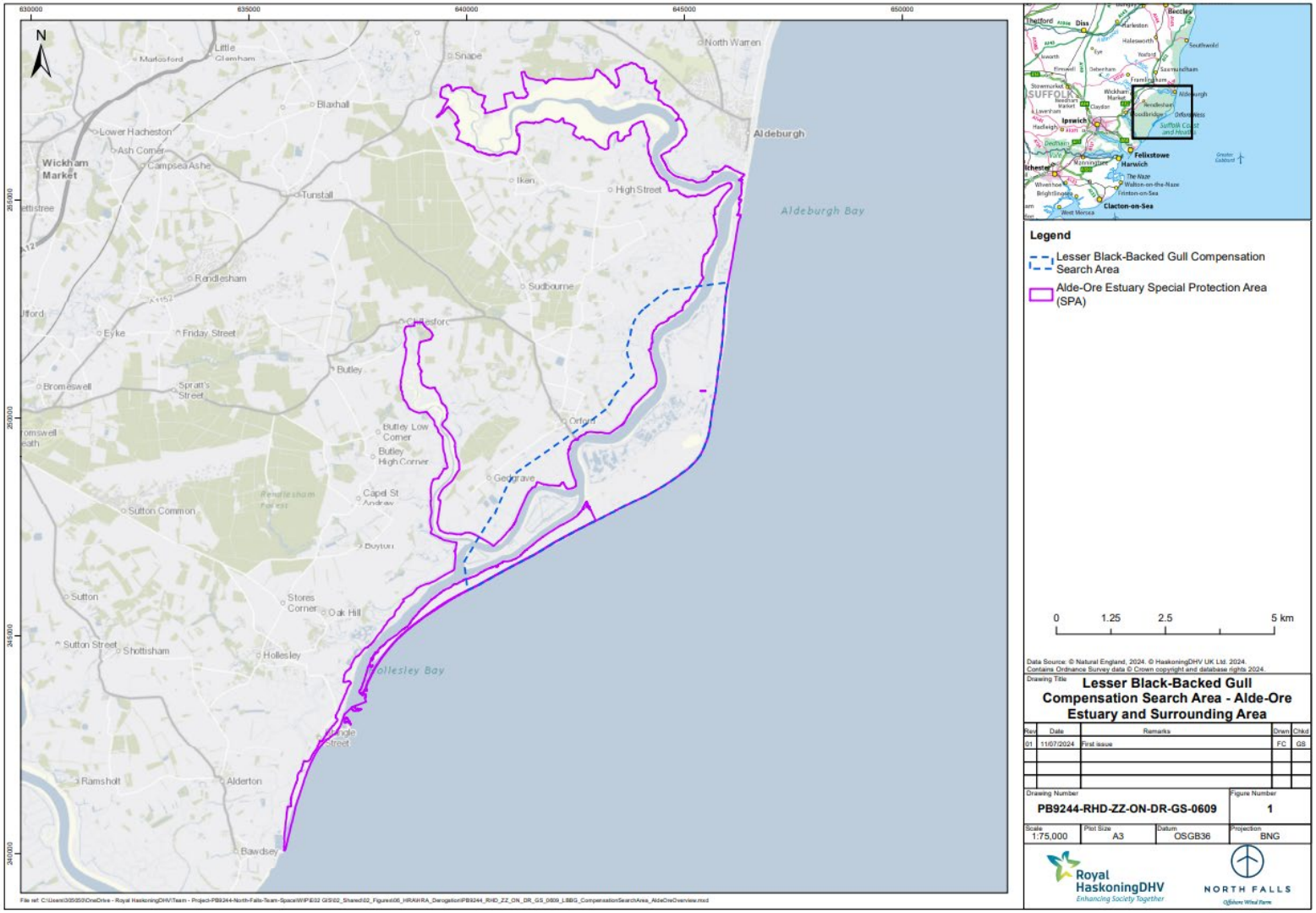

Figure 1 North Falls AOE SPA LBBG search area (including land within or in proximity to the SPA)

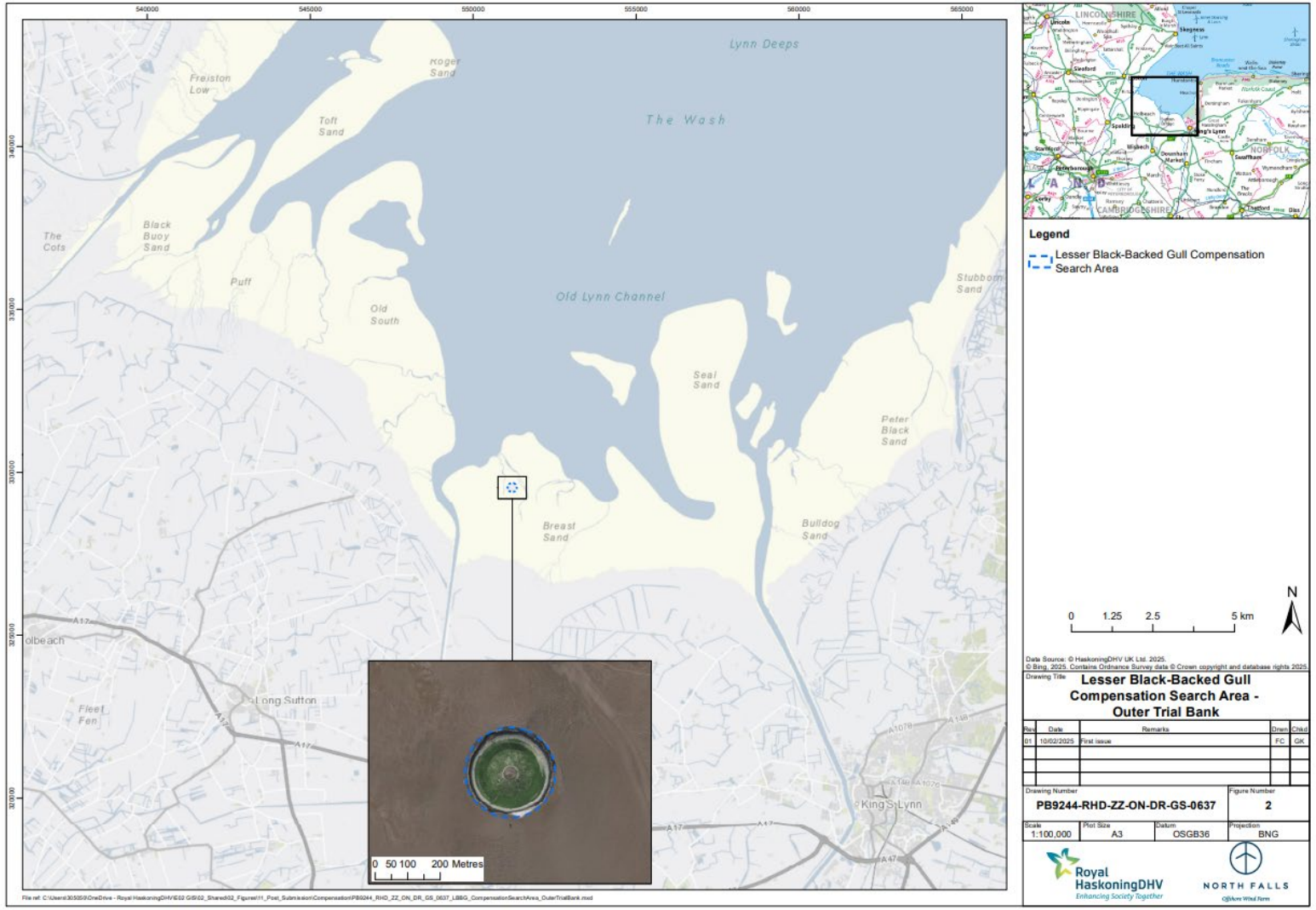

Figure 2 Outer Trial Bank

8.2 Short listing

65. A detailed site selection process within the areas outlined above has been undertaken, taking into account ecological suitability for LBBG; potential effects on other receptors; land use and landowners; access requirements and practical feasibility. This was informed by site visits to the AOE SPA LBBG search area (Figure 1).

66. Short listed sites at the AOE SPA LBBG search area are shown in Figure 3 and discussed further below.

67. In addition, Outer Trial Bank (Figure 2) is also short listed. Within each short listed site, there is sufficient space to facilitate potential collaborative compensation with other projects, such as Five Estuaries (discussed further in Section 11).

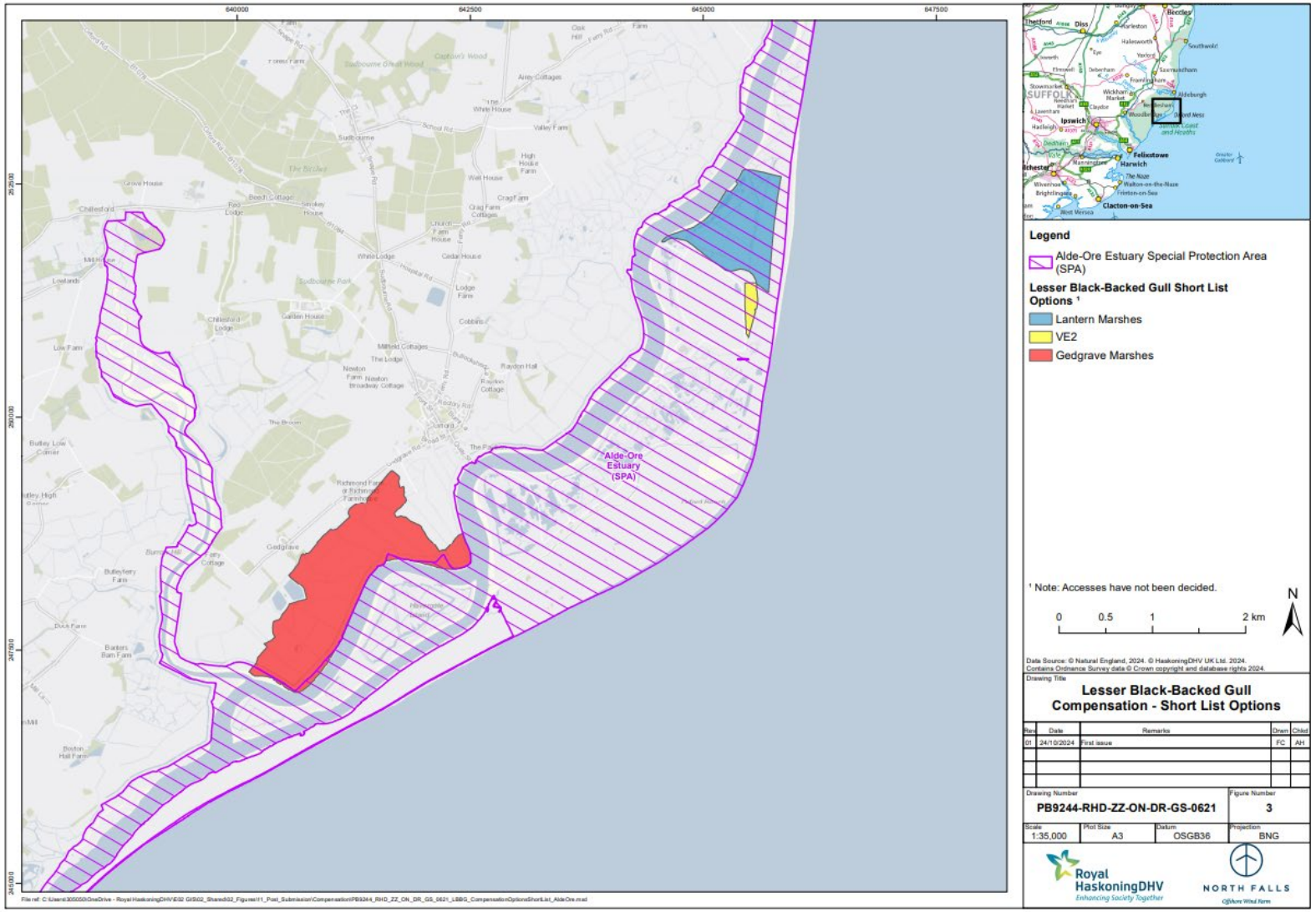

Figure 3 LBBG Compensation short-listed sites at the AOE SPA LBBG search area

8.2.1 Lantern Marshes

68. Lantern Marshes (shown in Figure 3) is located within the AOE SPA to the northeast of Orford and is owned and managed by the National Trust.

69. There have been positive discussions between the Applicant and the National Trust in respect of this site.

8.2.1.1 Potential for LBBG breeding enhancement

70. This area is known to have previously supported breeding LBBGs, and is understood to have at one time supported the majority of the breeding pairs of this species within the AOE SPA. In recent years few or no pairs have bred here. A small part of the area is understood to have been protected by electric fence in 2022, with 1-2 pairs of LBBG attempting to breed since it was installed.

71. The reason(s) for LBBG declines at this site are thought to be related to predators, as well as extensive flooding (with flood defences now repaired); change of habitat following floods; and/or reduction in food source.

72. The National Trust previously considered the installation of anti-predator fencing to deliver benefits to both LBBGs and other species. However, there is currently insufficient funding for National Trust to deliver this proposal, and therefore collaboration at this site to deliver anti-predator fencing would be additional to any reasonably foreseeable planned management.

8.2.1.2 Existing habitat

73. A site visit was undertaken in October 2024. The habitat is primarily unmanaged grassland with a long sward. There is a bank along the western edge between the River Alde and Lantern Marshes, with some small lagoons between the bank and grassland, and drainage ditches across the site.

a) From the north of Lantern Marshes looking approximately south

b) From the north of Lantern Marshes looking approximately south-south-west.

Plate 1 Site photographs of Lantern Marshes

8.2.1.3 Other receptors

74. There are no Public Rights of Way (PRoW) on Lantern Marshes and the site is relatively isolated and therefore unused by members of the public.

75. The site is within the following designations:

- Alde-Ore Estuary Ramsar site
- Alde-Ore Estuary SPA
- Alde-Ore Estuary Site of Special Scientific Interest (SSSI)
- Orfordness-Havergate (NNR)
- Orfordness-Shingle Street Special Area of Conservation (SAC)
- Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB)/ National Character Area
- Suffolk Heritage Coast

76. An existing anti-predator fence installed as compensation for Norfolk Vanguard, Norfolk Boreas, East Anglia ONE North and East Anglia TWO is approximately 1km south of Lantern Marshes. The Applicant continues to monitor progress of the existing compensation for these projects.

77. Potential effects of a compensatory measure at Lantern Marshes are outlined in Section 10.

8.2.2 Gedgrave Marshes

78. Gedgrave Marshes is located outside the SPA on the west bank of the river Ore and immediately to the west of Havergate Island (where the main breeding colony of LBBG in the AOE SPA is located).

79. The site is currently farmland and discussions between the Applicant and landowner are progressing.

8.2.2.1 Potential for LBBG breeding enhancement

80. While there is no evidence of previous use of Gedgrave Marshes by breeding LBBG, the site could function as an extension of the colony at Havergate Island.

81. There is evidence of the colony already expanding from Havergate Island to the east on to adjacent area of Orford Ness (known as Shingle Street spit), and with sufficient measures in place to facilitate LBBG breeding on Gedgrave Marshes, it is considered reasonable to assume they could expand into this area as well.

8.2.2.2 Existing habitat

82. A site visit was undertaken in November 2024 and the area is a mosaic of arable and grassland. The Applicant is currently focusing on the areas shown as grassland (previously grazed) (shown in pink, Figure 4).

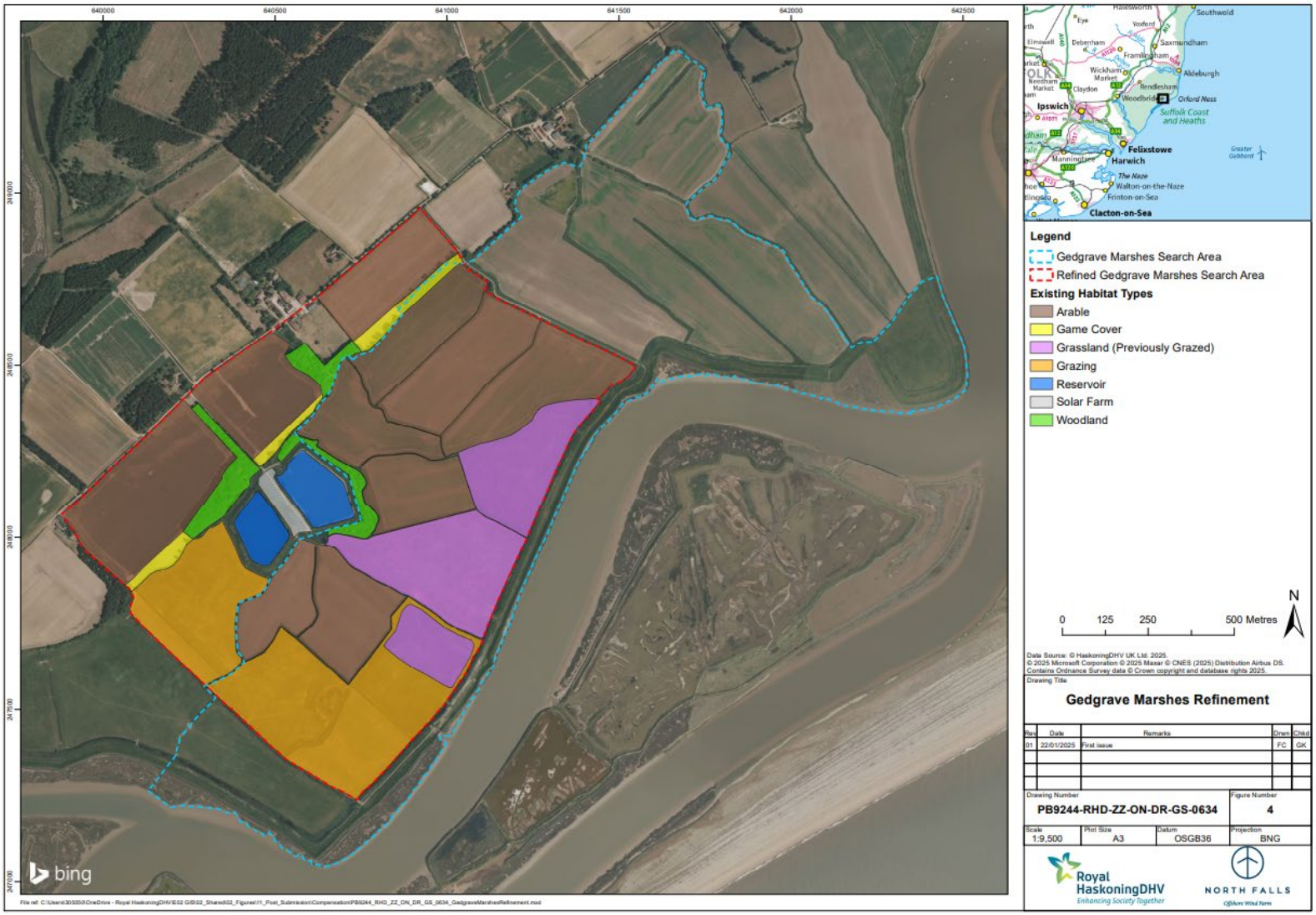

Figure 4 Gedgrave Marshes

Plate 2 Grazed (foreground) to ungrazed grassland at Gedgrave Marshes

83. The soil type at Gedgrave Marshes is 'loamy and clayey soils of coastal flats with naturally high groundwater' (LandIS, 2025). This is the same as the soil types at Havergate Island and therefore it can be expected that suitable habitat can be established for LBBG.

8.2.2.3 Other receptors

84. An unregistered path is present along the bank between Gedgrave Marshes and the River Ore. An extension is proposed to an existing PRoW which currently runs along the river from Orford, turning in-land along the eastern edge of Gedgrave Marshes. The extension would adopt the unregistered path as part of the PRoW (Natural England, 2021) and therefore the PRoW would pass in proximity to likely locations for a compensatory measure at Gedgrave Marshes. Consideration is being given to the effects of the path on the compensatory measure, as well as the effects of the compensatory measure on users of the path.

85. Gedgrave Marshes is within the following designations:

- Suffolk Coast & Heaths AONB/ National Character Areas
- Suffolk Heritage Coast

86. Potential effects of a compensatory measure at Gedgrave Marshes are outlined in Section 10.

8.2.3 Proposed Five Estuaries compensation site

87. The Applicant is aware of the LBBG compensation areas being considered by Five Estuaries Offshore Wind Ltd, including a location in the AOE SPA referred to by Five Estuaries Offshore Wind Ltd as 'VE2' (shown in Figure 3) and the

Outer Trial Bank (shown in Figure 2). The Applicant is in discussion with Five Estuaries regarding potential collaboration at these locations.

88. Five Estuaries site selection (GoBe, 2024b) included a review of available data downloaded from the Seabird Monitoring Programme (BTO, 2023) and filtered by a set of defined parameters. Sites were further refined by determining which of those had predation issues; quantification of the level of predation at the site, and the feasibility of predator exclusion; followed by the quantification of the expected benefit to LBBGs as a result of the measure and whether it can meet compensation requirements.

89. The VE2 site has been retained in the Applicant's short-listed sites to enable potential collaboration with Five Estuaries. However, the Applicant is not progressing the VE2 site as a project-alone measure.

8.2.4 Orfordness – Shingle Street

90. Orfordness – Shingle Street was considered during the site selection process, however funding from the Galloper offshore wind farm via a Section 106 agreement is providing benefits to this area and no further potential for North Falls to add material ecological benefit in this area has been identified. This site is therefore not being taken forward for North Falls.

91. Lessons learned from the success of the Galloper funding will be used to inform the North Falls compensatory measure, where applicable.

8.2.5 Outer Trial Bank

92. During consultation with Natural England, the Outer Trial Bank in the Wash was suggested as a potential location. Available data indicate that the LBBG colony on this site has declined in recent years, and habitat management and potentially predator control could help the LBBG population re-establish their peak numbers.

8.2.5.1 Potential for LBBG breeding enhancement

93. Herring gulls and LBBG both nest on the Outer Trial Bank and populations of both have declined significantly since 2000 (BTO, 2023). The Outer Trial Bank has seen its LBBG population decline from over 2,100 pairs in 2001 to 582 pairs in the most recent colony count in 2023 (Dalrymple, 2024). During the 2023 survey, chick carcasses with evidence of predation were reported, as well as rats and rat burrows. No evidence of any other mammals was recorded in the 2023 survey of the Outer Trial Bank (Dalrymple, 2024). Natural England (2024) also reported the presence of rats during 2024 surveys, as well as predated eggs.

94. There is a lack of evidence of connectivity of LBBGs from Outer Trial Bank to AOE SPA due to the lack of ringing studies on this species. However, the two sites are 126 km apart and tagging data from the AOE SPA (Green et al., 2023), in the non-breeding season, has shown birds to travel at least 136 km, suggesting that there is potential for fledglings from Outer Trial Bank to colonise and breed at AOE SPA.

8.2.5.2 Existing habitat

95. The Outer Trial Bank is a manmade island in the Wash, created as part of a proposed UK government water resources scheme which did not proceed.

96. The site appears to be predominantly vegetated shingle.

8.2.5.3 Other receptors

97. The Outer Trial Bank is only accessible on foot at low water and use by the public is believed to be limited. Dalrymple (2023) recorded paragliders landing on the island.

98. Outer Trial Bank is within the following designations:

- The Wash SPA; and
- The Wash and North Norfolk Coast SAC

99. In addition, Natural England (2024) recorded a nesting peregrine falcon.

8.3 Selection of the final location

100. To select a suitable site for compensation, further review will be completed to collate and assess information available at potential sites on the presence of LBBG habitats and colonies and identify the potential scale of mammal populations present within the site. All of the short-listed sites within the AOE SPA search area are considered to be ecologically feasible and therefore finalisation of the site selection will focus on further consideration of the effects of compensation on other receptors, the practical feasibility of delivering compensatory measures at each site and ongoing landowner discussions.

101. Consideration of the Outer Trial Bank would be informed by further site surveys during the 2025 breeding season to provide further evidence of LBBG numbers and predator impacts.

102. The site selection will include consideration of the following factors at each site:

- The requirements for a successful LBBG breeding colony (e.g. RSPB, 2021);
- Population trends and productivity of LBBG colonies in and around the site;
- LBBG nesting habitat availability, supported by information from seabird colony assessments;
- Availability of unoccupied habitat that could support an increased number of LBBGs;
- Current habitat management at the site;
- Conservation status of the site and assessment of whether erecting predator-proof fencing or delivering habitat management would be additional to existing site management and/or affect the ability to achieve conservation objectives for other features;
- The risk of flooding (both freshwater and tidal) to the proposed compensation site;
- Landowner feedback;

- Evidence of mammal predation and whether it is affecting LBBG productivity;
- Evidence of avian predators (i.e. raptors, corvids and other gull species);
- Evidence of mammals causing disturbance, such as Chinese water deer;
- Disturbance levels at the site, including human activity, farming and livestock;
- Logistical constraints of each site; and
- Other known habitat quality variables around the site.

9 Implementation and Delivery Roadmap

9.1 Overview

103. The approach to delivering the compensatory measure (either alone or jointly with other projects as appropriate) in order to improve breeding success is as follows:

- A Lesser Black-backed Gull Compensation Steering Group (LBCSG) would be convened, expected to comprise representatives from the Applicant (and other project companies where relevant), Natural England, the RSPB and, if appropriate, other interested parties, such as Historic England, the National Trust, the relevant Local Planning Authority and an independent chairperson. The LBCSG would oversee the compensation to be delivered by the Applicant.
- The site for compensation will be selected taking into account further consideration of the effects of compensation on other receptors, the practical feasibility of delivering compensatory measures at each site, ongoing landowner discussions and further data collection where required.
- The appropriate compensatory measure(s) for the selected site would be discussed within the LBCSG with the aim of agreeing the most measure(s) to be taken forward, given the site constraints and sensitivities and taking into account the features of any other designated sites;
- The Project would secure necessary land rights in the selected site through legal agreement, to ensure that compensation can be delivered for the operational lifetime of the wind farm. Alternatively, the Applicant may seek a compulsory purchase order under the Electricity Act 1989 for any land rights required to deliver the compensatory measure.
- The Project would secure any further permissions required to deliver the compensatory measure. These may include:
    - Planning permission for the installation of predator-proof fencing would be determined under the Town and Country Planning Act 1990 (as amended);
    - SSSI Assents from Natural England for the works which may include:

    - Each site survey required for pre-construction, construction and maintenance;
    - Construction and maintenance of fencing; and
    - Site management.
- Following identification of a suitable location, a contractor would be appointed to inform detailed design.
- The LBBG CIMP would then be developed, in accordance with the Outline CIMP [**7.2.2.1, Rev 1**], in consultation with the LBCSG and submitted to the SoS for approval.
- Following sign-off of the final LBBG CIMP by the SoS, the contractor would install the fence and/or undertake habitat improvement works. While this may be timed for the nonbreeding season, unless the work was considered likely to cause disturbance to existing breeding birds there may be no particular need to do this outside the breeding season;
- Monitoring will be undertaken until such time that the compensatory measure is found to be delivering the scale of required compensation (see Section 3.8.1 of the Outline LBBG CIMP [**7.2.2.1, Rev 1**].; and
- If required, adaptive management would be undertaken (see Section 3.8.2 of the Outline LBBG CIMP [**7.2.2.1, Rev 1**].

104. This compensation is secured by the relevant provisions of the DCO (Document Reference: 6.1).

105. Compensation for North Falls could be progressed by North Falls alone, or in collaboration with the National Trust and/or other OWFs including Five Estuaries.

9.2 Delivery mechanism

106. The first stage in delivery of the compensation will be selection of an appropriate location (discussed further in Section 8). Site selection will take account of the requirements for a successful LBBG breeding colony (RSPB, 2021) as well as consultation with relevant landowners and effects on other receptors.

107. Depending on the location selected and relevant pressures on the breeding colony at that location, the compensatory measure may include Project-led or collaborative delivery of:

- Predator exclusion – Predator-proof fencing around a pre-selected area to aid colonisation efforts by LBBG into a ‘safe’ area;
- Predator control - Removal of predators e.g. lethal control/eradication of rats;
- Disturbance management - awareness campaigns, wardening during the breeding season and/or signage; and
- Habitat management - planting, grassland cutting and/or scrub clearance to create optimal ground cover and sward height.

108. Measures to encourage birds to investigate and settle in the fenced area may be undertaken prior to and during initial breeding seasons until such time that

the colony is considered established. These may include habitat management (e.g. mowing grass to a short sward length), provision of features for birds to nest against (e.g. railway sleepers or similar), construction of raised platforms and posts to provide perches, placement of decoy birds in visible locations and playback of colony calls. These measures have all been proposed as adaptive management options for other LBBG compensation sites and the need for their deployment and the intensity of such measures will be considered based on the proximity of the compensation site to existing breeding sites, i.e. if the compensation is to extend the protection at an existing colony, fewer of these may be necessary. Should a new location, further from an existing colony, be selected, it may be appropriate to use all of these for several years to maximise colonisation.

109. The North Falls compensation would be in addition to a predator exclusion area established within the AOE SPA by Norfolk Vanguard, Norfolk Boreas, East Anglia ONE North and East Anglia TWO OWFs.

110. North Falls is seeking to collaborate with Five Estuaries and/or the National Trust in delivery of the compensatory measure. Discussions with the Five Estuaries wind farm and the National Trust are ongoing.

111. Alternatively, the Applicant may consider strategic compensation, as described in Section 11.

112. Further information on delivery and implementation is provided in the Outline LBBG CIMP Document Reference: [**7.2.2.1, Rev 1**].

9.3 Outline timing of compensation

113. LBBGs typically start breeding at four (BTO, 2024) to five years of age (Horswill and Robinson, 2015). Allowing four years to elapse between implementation of the compensation measure and the start of the Project's operational phase would allow for the 'additional' juveniles at the compensation colony to become adults by the start of operation of North Falls, and therefore enter the breeding population.

114. However, the Defra (2021) compensation consultation document recognises that it is not always feasible to implement measures before operation of a project: "*Where this is not possible, it is important that necessary licences are in place, finances are secured, and realistic implementation plans have been agreed with the appropriate bodies to demonstrate that the compensatory measure is secured.*" As the compensation required by the Project is for a small number of birds and the minimum scale of compensation necessary for the Project will over-compensate for the potential impact, it is proposed that the compensatory measure is installed at least three breeding seasons (1st April to 31st August (Furness, 2015)) prior to operation of the Project.

115. Where practicable and appropriate, the compensation measure will be implemented outside of the LBBG breeding season to minimise disturbance to breeding birds, although potentially some vegetation management (if required and depending on the type of vegetation to be controlled) may need to be conducted early or late in the breeding season. The aim would be to install the compensatory measure between September and March.

116. Legal agreement (e.g. lease of the compensation site by the Project) with the landowner(s) of the selected compensation site will be obtained by North Falls to ensure that delivery of the compensation is secured for the duration of the compensation period. Alternatively, the Applicant may seek a compulsory purchase order under the Electricity Act 1989 for any land rights required to deliver the compensatory measure.

10 Impact of Proposed Compensatory Measure

10.1 Screening of Likely Significant Effects

117. Table 10.1 provides screening of likely significant effects (LSEs) associated with the LBBG compensation for each site being considered by North Falls, based on a maximum design scenario including anti-predator fencing, predator control and habitat management.

118. Should the Five Estuaries "VE2" site be selected for collaborative delivery of compensation with Five Estuaries, it is expected that the compensatory measure would be of the same size and type as proposed for Five Estuaries alone and therefore the impacts would be as presented in Five Estuaries Offshore Wind Farm Ltd (GoBe, 2024a and 2024b).

Table 10.1 Screening of LSE of Lesser black-backed gull compensation (N=screened out; Y=screened in for further consideration)

Potential impacts	Lantern Marshes	Gedgrave Marshes	Outer Trial Bank
Ground conditions and Contamination	N The compensation will not alter ground condition or contamination. Surveys will be undertaken for UXO and debris and any health and safety risks will be fully mitigated.		
Air quality	N The compensation will have no LSE on air quality		
Water resources and flood risk	N The compensation will not alter water resources or flood risk. Risks of flooding influencing the compensatory measure will be considered during the detailed design of the measure.		
Land Use and Agriculture	N Land is owned by National Trust and is currently not used.	N Effects on the existing farmland will be addressed through agreement with the landowner. The land is currently or formerly grazed.	N Land is owned by The Crown Estate and is currently not used.
Onshore ecology	Y	Y	Y
Ornithology	Y	Y	Y
Archaeology and cultural heritage	Y	Y	N Site was artificially created in 1970s and no significant archaeology is expected
Noise and vibration	N The compensation will have no LSE on noise and vibration		

Potential impacts	Lantern Marshes	Gedgrave Marshes	Outer Trial Bank
Traffic and transport	N The compensation will have no LSE on traffic and transport.		
Human health	N The compensation will have no LSE on human health		
Landscape and visual effects	Y	Y	N
Socioeconomics	N The compensation will have no LSE on socioeconomics		
Tourism and recreation	N The site is not an important area for tourism and recreation	Y	N The site is not an important area for tourism and recreation
Climate change	N The compensation will have no LSE on climate change		
Major accidents and disasters	N Surveys will be undertaken for UXO and debris and any health and safety risks will be fully mitigated.		
Direct effects on environmental designated site[3]	Y	N	Y
Indirect effects on environmental designated site[3]	Y	Y	Y
Cumulative effects	Y Cumulative effect with the NV,NB, EA1N, EA2 compensatory measure	Y Cumulative effect with the proposal to expand the PRoW.	N No other foreseeable works on Outer Trial Bank

119. Further assessment will be undertaken to inform any requirement for any necessary permits or consents for delivering the measure(s) at the selected site.

120. Consideration has been given to potential mitigation to ensure there will be no significant effects. This will be considered further during the development of the final CIMP.

Table 10.2 Potential mitigation to avoid or reduce impacts of the compensation measure(s)

Potential impacts	Measures required to avoid, reduce or mitigate	Effect significance
Impacts on other protected areas and features	Construction of the fence to take place outside of bird nesting season where it might cause significant disturbance; Speed limits for vehicles associated with construction and management/maintenance;	With the implementation of mitigation measures, there would be no likely significant effect on protected areas or features. Furthermore, no AEoI is expected to occur.

[3] SPA, SAC, other compensation sites, nature reserves and/or SSSI

Potential impacts	Measures required to avoid, reduce or mitigate	Effect significance
	Habitat management and fence maintenance to take place outside of nesting season where it might cause significant disturbance; and Regular checks of any predator traps.	A Habitats Regulations Assessment will be undertaken to consider potential effects on the designated sites once the location and precise nature of the compensation works is known.
Visual impact of breeding enhancement (e.g. fencing)	Use of sensitive colours on the fence to allow it blend in with surroundings where possible, and limiting the height to two metres would mitigate the visual impact.	With the implementation of the mitigation measures, there would be no likely significant effect on landscape and visual receptors
Impact on cultural heritage assets	The site selection process for the location of the fenced area would include principles setting out the avoidance of statutory heritage designations.	There would be no likely significant effect on cultural heritage receptors.
Impacts on recreation	Where practicable, diversions or alternative routes would be established, if fencing/disturbance management block public rights of way. Mitigation for visual impacts would also relate to recreational users	There would be no likely significant effect on tourism and recreation.

11 Collaborative and Strategic Compensation

121. Potential collaboration opportunities have been identified with Five Estuaries and/or the National Trust, and the Applicant is in discussion with these parties. Any collaboration with Five Estuaries would ensure the quantum of combined compensation was appropriate to address the effects described in Section 4 as well as the effects on LBBG identified for Five Estuaries. Any collaboration with the National Trust would be additional to any reasonably foreseeable planned management by the National Trust.

122. It is recognised that Defra is considering predator reduction as a strategic measure for offshore wind farms, up to and including Round 4, therefore covering extension projects such as North Falls. This could be delivered by the Marine Recovery Fund (MRF), once established (DESNZ, 2025). The Applicant will continue to monitor the progress of strategic measures, should this become an available option for all projects up to an including Round 4, including extension projects such as North Falls.

123. In accordance with DESNZ (2025), contribution to the MRF could be implemented wholly in substitution of the project led/collaborative breeding enhancement compensatory measure, at a level proportionate to the effects described in Section 4; or partly in substitution, in the unlikely event the proposed compensatory measures were not able to deliver the full compensation requirement.

124. DESNZ's intention to establish the MRF (as confirmed in DESNZ, 2025) and the recent consent award for SEP and DEP should give decision-makers confidence that a strategic solution can be relied upon by the Secretary of State in their decision to grant the Project's development consent. Notwithstanding, the Applicant has proposed project specific compensation which can be relied upon.

12 Summary

125. Options for compensatory measures for LBBG have been considered by the Applicant and developed through a process of pre-application consultation with stakeholders.

126. The delivery of breeding enhancement has been identified by the Applicant as the preferred measure that could be taken forward as part of a project alone or collaborative delivery model, whereby the Applicant would seek to deliver compensation through a partnership arrangement with Five Estuaries and/or the National Trust.

127. Alternatively, the Applicant considers that strategic compensation (such as the MRF) for LBBG is a measure that could be wholly or partly substituted in place of the Applicant's proposed measure or as an adaptive management measure, if required.

128. The information provided demonstrates the ecological evidence for the measure, how the measure can be secured and that the mechanism for delivery can be implemented.

129. There are no likely significant effects associated with the compensatory measures.

130. The LBBG CIMP will set out the detailed delivery proposals for the agreed compensatory measures based on those set out in this LBBG Compensation Document and in accordance with the Outline LBBG CIMP [**7.2.2.1, Rev 1**]. The LBBG CIMP will be produced by the Applicant and approved by the SoS prior to the start of construction in accordance with the draft DCO (Document Reference: 6.1).

13 References

Allbrook, D.L. an Quinn, J.L. (2020), 'The effectiveness of regulatory signs in controlling human behaviour and Northern gannet (Morus bassanus) disturbance during breeding: an experimental test', Journal for Nature Conservation, 58: 125915.
BTO (2023) The Seabird Monitoring Programme database.
BTO (2024) BirdFacts – lesser black-backed gull, available at [redacted] [accessed 06 June 2024]
Cooper, J, 2013. [redacted]
Coulson, J.C., 2011. The Kittiwake. T. & A.D. Poyser, London.
Dalrymple, S. 2023. Predator exclusion fencing improves productivity at a mixed colony of Herring Gulls *Larus argentatus*, Lesser Black-backed Gulls *L. fuscus* and Great Black-backed Gulls *L.marinus*. Seabird 35: p18-29.
Dalrymple, S. (2024) Outer Trial Bank Survey, 2 June 2023, RSPB
Department for Environment, Food and Rural Affairs (Defra), 2021. Best practice guidance for developing compensatory measures in relation to Marine Protected Areas. Version: For consultation.
Department for Environment, Food and Rural Affairs (Defra), 2024 Consultation on spatial management measures on sandeel fishing – Government Response. https://www.gov.uk/government/consultations/consultation-on-spatial-management-measures-for-industrial-sandeel-fishing/outcome/government-response
DESNZ (2025). Guidance: Strategic compensation measures for offshore wind activities: Marine Recovery Fund interim guidance. Available at: https://www.gov.uk/government/publications/strategic-compensation-measures-for-offshore-wind-activities-marine-recovery-fund-interim-guidance/strategic-compensation-measures-for-offshore-wind-activities-marine-recovery-fund-interim-guidance#use-of-offshore-artificial-nesting-structures-ans-for-kittiwake-ahead-of-the-mrf
Dowling B. & Weston M.A. (1999), 'Managing a breeding population of the hooded plover Thinornis rubricollis in a high-use recreational environment.' Bird Conservation International, 9:255-270.
Five Estuaries Offshore Wind Farm Ltd (2024a). Lesser Black Backed Gull Compensatory Areas Environmental Impact Assessment. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010115/documents
Five Estuaries Offshore Wind Farm Ltd (2024b). Lesser Black Backed Gull Habitats Regulations Assessment. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010115/documents

Furness, R.W., MacArthur, D., Trinder, M. and MacArthur, K., 2013. Evidence review to support the identification of potential conservation measures for selected species of seabirds. Report to Defra.

Furness, R.W., 2015. Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Populations Scales (BDMPS). Natural England Commissions Reports, Number 164.

GoBe 2024b. Five Estuaries Offshore Wind Farm Volume 5, Report 5.3 Lesser Black-Backed Gull Compensation – Evidence, Site Selection & Roadmap. Application Reference: EN010115.

[redacted]

Green, R.M, Thaxter, C.B., Johnston, D.T., Boersch-Supan, P.H., Bouten, W. and Burton, N.H.K. (2023) Assessing movements of Lesser Black-backed Gulls using GPS tracking devices in relation to the Galloper Wind Farm. BTO research report 758.

Horswill, C. and Robinson, R.A., 2015. Review of Seabird Demographic Rates and Density Dependence. JNCC Report no. 552.

LandIS (2025). Soilscapes Viewer. Available at: [redacted]

MacArthur Green, Royal HaskoningDHV, 2021a. Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects: Appendix 3 – Kittiwake Compensation Document. EN010109-000441-5.5.3 Appendix 3 Kittiwake Compensation Document.pdf (planninginspectorate.gov.uk)

MacArthur Green and Royal HaskoningDHV, 2022. Norfolk Projects Offshore Wind Farms. Lesser Black-backed Gull Implementation and Monitoring Plan. Document reference: PB5640.009.0005

Martínez-Abraín, A., Oro, D., Conesa, D. & Jiménez, J. 2008. Compromise between seabird enjoyment and disturbance: the role of observed and observers. Environmental Conservation 35: 104–108.

Mavor, R.A., Parsons, M., Heubeck, M., Pickerell, G., Schmitt, S., 2003. Seabird numbers and breeding success in Britain and Ireland, 2002 (UK Nature Conservation No. 27). JNCC.

Mavor, R.A., Pickerell, G., Heubeck, M., Thompson, K.R., 2001. Seabird numbers and breeding success in Britain and Ireland, 2000 (UK Nature Conservation No. 25). JNCC.

Natural England (2021). England Coast Path: plan of the Bawdsey to Aldeburgh stretch. Available at:

https://assets.publishing.service.gov.uk/media/617fe0778fa8f52983494a19/bawdsey-aldeburgh-index-map.pdf

Natural England, 2023a. Alde-Ore Estuary SPA. Supplementary advice. Designated Sites View.

[redacted]

Natural England (2024). Natural England Outer Trial Bank Survey Report 2024. Unpublished.

Niras and GoBe, 2020. Response to the Secretary of State's Minded to Approve Letter Annex 2 to Appendix 2: Kittiwake Artificial Nest Provisioning: Ecological Evidence.https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-003241-HOW03_30Sep_Appendix_2_Annex_2%20Ecological%20Evidence%20(06543000_A)%20combined%20(06543760_A).pdf

North Falls Offshore Wind Farm Ltd (NFOW) (2023). Habitat Regulations Assessment Draft In Principle Compensation Options. Document Reference No: 004290164-04. Available at: [redacted]

Robert, H & Ralph, C.. (1975). Effects of Human Disturbance on the Breeding Success of Gulls. The Condor. 77. 10.2307/1366103.

Ross-Smith, V.H., Grantham, M.J., Robinson, R.A., Clark, J., 2014. Analysis of Lesser Black-backed Gull data to inform meta-population studies (No. BTO Research Report no. 654). British Trust for Ornithology, Thetford, Norfolk.

RSPB, 2021. Written Submission for the Royal Society for the Protection of Birds Annex 2 Alde-Ore Estuary SPA. Application by Norfolk Vanguard Limited for an Order Granting Development Consent for the Norfolk Vanguard Offshore Wind Farm. Document Reference: EN010087

Ruykys, L. and Carter, A. 2019. Removal and eradication of introduced species in a fenced reserve: quantifying effort, costs and results. Ecological Management & Restoration 20: 239-249.

VanderWerf, E.A., Young, L.C., Crow, S.E., Opie, E., Yamazaki, H., Miller, C.J., Anderson, D.G., Brown, L.S., Smith, D.G. and Eijzenga, J. 2014. Increase in wedge-tailed shearwaters and changes in soil nutrients following removal of alien mammalian predators and nitrogen-fixing plants at Kaena Point, Hawaii. Restoration Ecology 22: 676-684.

White, G. and Hirons, G. 2019. The predator exclusion fence manual: Guidance on the use of predator exclusion fences to reduce mammalian predation on ground-nesting birds on RSPB reserves. Version 3, October 2019. RSPB.

Young, L.C., Vanderwerf, E.A., Mitchell, C., Yeun, E., Miller, C.J., Smith, D.G. and Swenson, C. 2012. The use of predator proof fencing as a management tool in the Hawaiian Islands: a case study of Ka'ena Point Natural Area Reserve. University of Hawaii Pacific Cooperative Studies Unit Technical Report 180: 1-87.

NORTH FALLS

Offshore Wind Farm

sse Renewables | RWE

HARNESSING THE POWER OF NORTH SEA WIND

North Falls Offshore Wind Farm Limited

A joint venture company owned equally by SSE Renewables and RWE.

To contact please email contact@northfallsoffshore.com