FIVE ESTUARIES OFFSHORE WIND FARM

VOLUME 5, REPORT 5.3 LESSER BLACK-BACKED GULL COMPENSATION – EVIDENCE, SITE SELECTION & ROADMAP – REVISION D (CLEAN)

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In preparation of this document Five Estuaries Wind Farm Ltd has made reasonable efforts to ensure that the content is accurate, up to date and complete for purpose.

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	Mar-24	DCO Application	GoBe	GoBe	VE OWFL
B	Oct-24	Deadline 2	GoBe	GoBe	VE OWFL
C	Jan – 25	Deadline 5	GoBe	GoBe	VE OWFL
D	Mar-25	Deadline 8	GoBe	GoBe	VE OWFL

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DEFINITION OF ACRONYMS

Term	Definition
AOE	Alde-Ore Estuary
AEoI	Adverse Effects on Integrity
DEFRA	Department for Environment Food and Rural Affairs
DCO	Development Consent Order
ES	Environmental Statement
ETGs	Expert Topic Groups
HRA	Habitats Regulation Assessment
IROPI	Imperative reasons of overriding public interest
LBBG	Lesser Black Backed Gull
OTB	Outer Trial Bank
RIAA	Report to Inform Appropriate Assessment
RSPB	Royal Society for the Protection of Birds
SPA	Special Protection Area
TCE	The Crown Estate
VE	Five Estuaries Offshore Wind Farm
VE OWFL	Five Estuaries Offshore Windfarm Ltd

GLOSSARY OF TERMS

Term	Definition
Development Consent Order	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP) from the Secretary of State (SoS) for the Department for Energy Security and Net Zero (DESNZ).
Environmental Statement	Environmental Statement (the documents that collate the processes and results of the EIA).
Export Cable Corridor (ECC)	The area(s) where the export cables will be located.
Habitats Regulation Assessment (HRA)	The assessment of the impacts of implementing a plan or policy on a European Site (as required by the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)), the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it will adversely affect the integrity of the site
Mitigation	Mitigation measures, or commitments, are commitments made by the project to reduce and/or eliminate the potential for significant effects to arise as a result of the project.
NSIP	Nationally Significant Infrastructure Projects are major infrastructure developments in England and Wales which are consented by DCO under the Planning Act 2008. These include proposals for offshore wind farms with an installed capacity over 100MW.
Order Limits	The extent of development including all works, access routes, TCCs, visibility splays and discharge points. (Not Red Line Boundary (RLB))
The Applicant	Five Estuaries Offshore Wind Farm Limited (The Applicant).
Special Area of Conservation (SAC)	A protected site under the Conservation of Habitats and Species Regulations (2017).
Special Protection Area (SPA)	Sites designated under EU Regulations (79/409/EEC) to protect habitats of migratory birds and certain threatened birds under the Birds Directive Regulations.

1 INTRODUCTION

1.1 BACKGROUND

FIVE ESTUARIES OFFSHORE WIND FARM

1.1.1 Five Estuaries Offshore Wind Farm (VE) is a proposed extension to the operational Galloper Offshore Wind Farm. VE will be situated approximately 37 km off the coast of Suffolk, England (at its closest point).

1.1.2 As part of the Development Consent Order (DCO) application, Five Estuaries Offshore Windfarm Ltd (VE OWFL) is required to produce a Report to Inform Appropriate Assessment (RIAA) to provide the information required by the Competent Authority in order to undertake its Habitats Regulation Assessment (HRA). If the HRA process deems that Adverse Effects on Integrity (AEoI) cannot be excluded, a derogations process is followed. In the event that no alternative solutions can be found, and if there are imperative reasons of overriding public interest (IROPI), the final stage of the derogations process is to develop measures to compensate for adverse effects on a site.

1.1.3 This document has been produced to set out the sites that have been identified for lesser black-backed gull compensation via the site-selection process (Section 4) and to provide the key evidence supporting predator control (Section 2) as a compensation measure.

DEROGATION PREPARATION AND CONSULTATION

1.1.4 Stakeholder engagement with Natural England, RSPB and Defra has continued throughout the derogation process, primarily through the Section 42 comments and the subsequent Expert Topic Groups (ETGs) in September 2023, along with a number of direct meetings with DEFRA, NE and RSPB. The full list of meetings can be found below:

- Section 42 comments: June 2023;
- NE compensation meetings: 22 August 2023, 5 October 2023, 27 November 2023, 15 December 2023 and 16 January 2024, 19 February 2024;
- Offshore Ornithology ETG: 4 September 2023 (Natural England and RSPB in attendance);
- DEFRA meetings: 26 September 2023, 15 November 2023, 17 January 2024;
- Meetings with RSPB in attendance: 15 December 2023, 17 January 2024, 2 February 2024;
- East Suffolk Council meeting: 8 November 2023;
- Councillor briefing (Aldeburgh and Orford): 11 January 2024.
- The Crown Estate meeting: 19 January 2024.

1.1.5 The ecological evidence and roadmaps previously submitted to Natural England and the Planning Inspectorate can be found in Appendix A. The LBBG ecological evidence and roadmap and site selection note submitted at PEIR can be found in Appendix B and C respectively. The site suitability report conducted by APEM can be found in Appendix D.

1.1.6 Table 1.1 presents the most recent consultation responses of relevance to this measure, some of the historic advice has been superseded by the latest developments and advice.

Table 1.1 Consultation responses in relation to LBBG compensation.

Consultee	Comment	The Project Response
RSPB, Outer Trial Bank Survey 2023 report (Dalrymple, 2024)	The RSPB provided their report on the surveys carried out at the OTB in the 2023 breeding season.	The Applicant has used the report to help inform survey methods for the 2024 season and beyond. Also, the Applicant noted that rat burrows were noted during the survey and evidence of predation, possibly from rats.
RSPB, Meeting, February 2024	The RSPB outlined several knowledge gaps for the Outer Trial Bank (OTB) site that would need to be answered prior to agreeing whether the site was suitable for compensation.	The Applicant has taken this advice on board and has outlined how these knowledge gaps will be filled within 5.5.6 Lesser Black-backed Gull Implementation and Monitoring Plan – Revision C.
The Crown Estate (TCE), Meeting January 2024	TCE own the OTB but stated that DEFRA hold a long term lease for it. Further discussions between the Applicant, DEFRA and TCE would be required.	The Applicant is awaiting further TCE feedback to further understand the options around the OTB ownership and how compensation measures could be taken forward.
NE, DAS Advice Letter, January 2024 (DAS/27347/464150)	Natural England (NE) has examined the source material provided by Five Estuaries (VE) and agrees that the counts provided represent the best evidence available for the regional LBBG population within the mean max +/- 1SD (standard deviation) of the project. Unless more accurate counts become available, notably for some of the urban gull populations, Natural England advises that the number of LBBG apportioned to the Alde Ore Estuary Special Protection Area (AOE SPA) has been estimated appropriately, with the NatureScot (2018) tool using suitable regional population	The Applicant has agreed with Natural England with regards to the apportioning of 40% of LBBG to the AOE SPA.

Consultee	Comment	The Project Response
	counts, followed by refinement of the tool outputs through considering evidence of connectivity from tracking studies. Natural England highlight that several large urban colonies are considered in the apportionment calculation. There is emerging evidence to suggest that broad patterns of habitat use may differ between natural and urban nesting birds, i.e., it is possible that in general urban nesters are less reliant on the marine environment (e.g. Langley et al, 2022; Spelt et al, 2019). Natural England do not currently consider the evidence base sufficient to consider a proportional reduction of urban nesters considered when apportioning, or indeed the exclusion of urban colonies from at-sea populations. However, we do consider that this evidence gap may warrant further investigation and could be of relevance in scaling of compensatory measures, if required.	
NE, DAS Advice Letter, January 2024 (DAS/27347/464150)	**Alde-Ore Estuary (AOE) SPA** Following internal discussions with Natural England's Responsible Officer (RO) for the AOE Site of Special Scientific Interest (SSSI), we have further comments concerning the four potential compensation sites and their proposed access routes: > Access to the proposed sites from Aldeburgh (to the north) could be problematic due to the amount of shingle that will need to be moved to create access via the spit. If a trackway needs to be built, some disturbance to the Orford Ness – Shingle Street Special Area of Conservation (SAC) qualifying feature of vegetated shingle is likely. Impacts on the SAC feature would therefore need careful	The Applicant has taken due regard of Natural England's comments in relation to the AOE compensation sites. Following this advice and consultation with landowners and local councils, as well as carrying out site suitability surveys, the access route from Aldeburgh was deemed unsuitable and Site VE2 was chosen as the most suitable location for the compensation measure.

Consultee	Comment	The Project Response
	assessment,and assent from Natural England would need to be sought before works can proceed. > Site VE1 – may chiefly comprise drained grassland on National Trust (NT)-owned land. This site has potential as it lies on ground with historical records of nesting LBBG. Although a small area of temporary fencing only attracted 2 prospecting LBBG in 2023, with a pair in 2022, additional effort planned this season to attract nesting birds may lead to the re-establishment of a wider colony. This effort may make it challenging to quantify the benefits of a compensation scheme however. Also, the site is presently in unfavourable condition due to low water levels, which may stymie restoration efforts. > Site VE2 – may chiefly comprise highly disturbed shingle with acidic grassland. This site supports potentially suitable habitat for nesting gulls and is located close to the Norfolk projects' compensation site. Further, a few LBBG nest on the roof of the Cobra Mist building west of VE2 (and VE3). The proximity of these may help attract other gulls to the area. > Site VE3 – may chiefly comprise SAC designated 'vegetated shingle' on NT-owned land. This has significant potential to hinder the installation of fencing. Natural England would need to carefully examine the proposal in detail and, depending on the impacts, may not be able to grant a SSSI assent. Due to this sensitivity, NT may not be agreeable to the use of this site. Furthermore, of the three northern sites, this location may also be the least suitable as it lies closest to the marshland on Orford Ness, where	

Consultee	Comment	The Project Response
	protected breeding waders could become more vulnerable to gull predation. > Site VE4 – may chiefly comprise semi-improved grassland. This site has advantages over the other three sites because it lies outside the designations, avoiding potential issues with additionality, and is closest to the existing gull colony on Havergate Island. As a consequence, it may be colonised more easily than the other proposed sites further to the north, whilst access to the site and fencing will not infringe or harm any protected ground too. There are also some signs that young LBBG hatched on Havergate Island recruit to nearby local sites, including the areas wardened for the Galloper OWF compensation scheme – so movement to this site is plausible. The chief disadvantage of the site is its proximity to the important breeding wader populations at Orford Ness and on the adjacent mainland where land is managed by RSPB (Royal Society for the Protection of Birds), and the potential threat posed to these populations by increased proximity of nesting gulls. Other points to consider: > All the sites on the Orford peninsula are difficult to access and manage. Grazing is not a viable option. Cobra Mist mow their site and grass at the existing compensation sites is managed using machinery. > Much land on the Ness, particularly ex-Ministry of Defence (MOD) land, is also contaminated/littered with old and discarded equipment, including Unexploded Ordnance (UXO), also restricting management.	

Consultee	Comment	The Project Response
	> As previously noted, Natural England recommends the North Falls OWF project and Five Estuaries work together to establish a joint scheme. It would also be useful to approach the landowners contacted previously for the earlier projects (e.g. the Galloper compensation scheme) to see if they would be interested in participating. > We highlight that the most important factor limiting LBBG population growth on Havergate Island is thought to be availability of food, so increased availability on nesting habitat may not drive immediate positive changes in population size.	
NE, DAS Advice Letter, January 2024 (DAS/27347/464150)	**Outer Trial Bank** This site appears very promising, given the identified declines in nesting gulls and the potential role of rat predation (possibly associated with vegetation growth) in driving those declines. There are potential opportunities for partnership working with RSPB and the NE National Nature Reserve (NNR) team to improve understanding of predation pressure on the site and to trial/deliver rat control and vegetation management. More generally, if this site were to be adopted, the results could yield positive outcomes for our understanding of the practicality of rat management on tidal islets, with wider benefits for seabird conservation.	The Applicant has taken this advice onboard and is in consultation with TCE, DEFRA, RSPB and Natural England to take this site forward as a compensation measure. The Applicant agrees that the site would provide a better understanding for rat eradication schemes at tidal islets and provide wider seabird conservation benefits.
NE, DAS Advice Letter, December 2023 (DAS/27347/456745)	**Lesser Black-Backed Gull Compensation – Evidence, Site Selection & Roadmap** In principle, we agree the approach taken by the developer could deliver adequate compensation, subject to agreement on impact levels and compensation targets, and appropriate	The Applicant has taken on board the advice from Natural England and have progressed compensation documents for both the AOE and OTB sites.

Consultee	Comment	The Project Response
	permissions being secured. The proposed conservation actions currently being sought within the AOE SPA have the clear benefit of delivering compensation 'in situ'. However, we also agree that measures to improve the habitat on the Outer Trial Bank site could also deliver compensation in this case. There is a complementary element of the two strands, in that the AOE SPA measure has the potential to directly repair the impacts on the designated site, but to some extent will be 'in competition' with other compensatory measures, whereas the Outer Trial Bank, whilst not directly benefitting the SPA, offers the prospect of restoring a regionally important colony that could provide resilience for the wider network of coastal nesting LBBG in East Anglia. We therefore recommend that the two options are progressed as a package of measures, not least given the potential requirements of North Falls OWF. We agree that the Steep Holm LBBG colony is the least favourable alternative site, due to its lack of connectivity to the AOE SPA and its limited scope for colony expansion. Furthermore, as North falls OWF are seeking similar compensation measures we recommend liaison between both developers so that an effective outcome can be delivered that could be mutually beneficial to both parties. The tri-partite workshop arranged between the developers and Natural England to discuss apportioning (see suggestion above) would be a good place to develop this collaboration further.	The Applicant has also been liaising with North Falls OWF with regards to collaborative approaches to compensation for LBBG.
PINS Section 51 advice regarding draft application documents submitted by Five	**LBBG Evidence, Site selection and Roadmap** The Inspectorate understands from pre-application engagement that the Applicant has been progressing	The Applicant has taken on board the advice and has refined the potential options down to the minimum possible prior to submission.

Consultee	Comment	The Project Response
Estuaries Offshore Wind Farm Ltd, November 2023	landowner engagement and site suitability surveys to inform the site selection for the LBBG compensation measures. The Applicant is advised to refine the potential options for sites/measures as much as possible ahead of submission.	
PINS Section 51 advice regarding draft application documents submitted by Five Estuaries Offshore Wind Farm Ltd, November 2023	**LBBG Evidence, Site selection and Roadmap** Any potentially significant environmental impacts arising from the implementation of the compensatory measures must be assessed in the ES.	The Applicant has due regard to this advice and assessed whether there would be any significant impacts with in the ES.

1.1.7 Table 1.2 below sets out how the Applicant is addressing each of the elements of the Natural England (NE) checklist. It should be noted that this document and its contents do not prejudice the outcome of the ongoing HRA process.

Table 1.2 Natural England compensation checklist and the Applicant project status for lesser black-backed gull compensation measures.

	NE Compensation Checklist	Project Status
a	What, where, when: clear and detailed statements regarding the location and design of the proposal.	Five sites were originally identified and mapped based on habitat suitability and connectivity to the existing SPA colony. This has been narrowed down to one site within the Alde Ore SPA and one site outside, known as Outer Trial Bank.
b	Why and how: ecological evidence to demonstrate compensation for the impacted site feature is deliverable in the proposed locations	For the Alde Ore site connectivity with the affected colony is strong, with breeding LBBG nearby and a decline in local population in part due to predation. Predator control methods and optimum breeding habitat for LBBG are well evidenced (Section 2). For Outer Trial Bank there is a LBBG colony already breeding and nesting there, but there is evidence to suggest that their numbers could be increased with measures such as predator control and habitat management.
c	For measures on land, demonstrate that on ground construction deliverability is secured and not just the requirement to deliver in the DCO e.g., landowner agreement is in place. For measures at sea, demonstrate that measures have been secured e.g. agreements with other sea or seabed users.	The Applicant has undertaken initial landowner engagement as part of the submission of a planning application to secure the site. Agreements were also secured for initial site suitability and habitat surveys to take place. The Applicant has included the site in the DCO order limits and assessments to allow compulsory acquisition powers to deliver the measures if needed, subject to National trust inalienable rights.
d	Policy/legislative mechanism for delivering the compensation (where needed).	The mechanism is laid out in the derogation case (5.5 Habitats Regulations Derogation Case [APP-046])).
e	Agreed DCO/DML conditions.	A schedule in the Draft DCO is included for LBBG compensation measures, requiring approval of the final implementation and monitoring plan by the Secretary of State.

	NE Compensation Checklist	Project Status
f	Clear aims and objectives of the compensation.	At the Alde Ore site, the Applicant aims to create a suitable breeding site for LBBG through the installation of predator fencing and restoration of habitat within the fenced off area. At Outer Trial Bank the Applicant aims to help boost productivity at a colony which already breeds and nests here by carrying out predator control and habitat management. The quantum of compensation required can be found in paragraph 1.1.18.
g	Mechanism for further commitments if the original compensation objectives are not met – i.e., adaptive management.	5.5.6 LBBG Implementation and Monitoring Plan – Revision C outlines any proposed adaptive management measures.
h	Clear governance proposals for the post-consent phase – we do not consider simply proposing a steering group is sufficient.	The Applicant has sought to progress and secure the measure as much as possible prior to the submission of the application. This includes detailed evidence of the feasibility of the measure and evidence that it is securable. This has been progressed via the offshore ornithology ETG and meetings with Natural England and other relevant stakeholders. Should consent for the project be granted, a steering group, to be termed the "Offshore Ornithology Engagement Group" (OOEG) will be convened by the Applicant. This group will help steer the delivery of any compensation measure implementation and maintenance, monitoring, reporting, and any other relevant matters as determined by the Applicant in discussion with the OOEG participants.
i	Ensure development of compensatory measures is open and transparent as a matter of public interest, including how information on the compensation would be publicly available.	Initial evidence and roadmap documents, including the implementation plans were submitted to PINS as part of the consultation on the application and are publicly available. Initial road maps have also been consulted on as part of the RIAA consultation.
j	Timescales for implementation especially where compensation is part of a strategic project, including how timescales relate to the ecological	The Applicant has conducted site suitability and habitat surveys for the selected site at AOE SPA in Q4 of 2023/ Q1 of 2024. Further in-depth surveys will be carried out once a final site has been selected after further consultation with NE and landowners. Once agreements are in place the

	NE Compensation Checklist	Project Status
	impacts from the development.	aim will be to have the predator fencing and habitat restoration in place prior to commencement of offshore construction. Further details are provided in 5.5.6 Lesser Black-Backed Gull Implementation and Monitoring Plan – Revision C.
k	Commitments to ongoing monitoring of measure performance against specified success criteria.	The Applicant will conduct annual monitoring of the breeding colony within the compensation site to assess the success of the compensation measure.
l	Proposals for ongoing 'sign off' procedure for implementing compensation measures throughout the lifetime of the project, including implementing feedback loops from monitoring.	An adaptive management plan will be developed in due course and form part of the implementation and monitoring plan. This will be progressed via the offshore ornithology ETG and meetings with Natural England and other stakeholders forming the OOEG. The land rights will be secured to ensure that compensation will be provided as required by the appropriate plan secured by the DCO.
m	Continued annual management of the compensation area including to ensure other factors are not hindering the success of the compensation e.g., changes in habitat, increased disturbance as a result of subsequent plans/projects".	Management of the compensation area will be ongoing throughout the lifetime of the OWF where needed, especially maintenance of the fencing and habitat management (e.g. cutting back vegetation etc.). Where there is room for improvements the management strategy will be updated to help maximize the potential of the site.

1.1.8 The key ornithological derogation risk for the Applicant is for lesser black-backed gull (*Larus fuscus*) relates to Alde-Ore Estuary (AOE) Special Protection Area (SPA).

1.1.9 VE OWFL identified potential compensation measures for lesser black-backed gull, and following shortlisting of compensation options and subsequent stakeholder feedback, it was considered that the compensation options of predator exclusion fencing and habitat creation are deemed most feasible for lesser black-backed gull. Subsequently, preliminary site selection to identify potential locations for compensation delivery was commenced.

1.1.10 For further detail on the ecological evidence for these compensation measures and the preliminary site selection process, please refer to the document titled "Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap," which have been appended below (Section 10 (Appendix B) and 11 (Appendix C)) (VE OWFL, 2023[1]).

1.1.11 Further site selection details were identified in the document titled "Lesser black-backed gull compensation – site selection note" (VE OWFL, 2023[2]). Three areas were identified as areas of high potential for habitat creation or restoration with connectivity to the AOE SPA:

- Areas of rough grassland in and/or adjacent to the AOE SPA
- Hamford Water SPA, Essex
- Port of Felixstowe.

1.1.12 Following the ETG in August 2023 and alongside the updated Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap (VE OWFL, 2023) produced for the ETG, it was agreed that Hamford Water and Felixstowe were not suitable sites for compensation measures, for the reasons outlined in the aforementioned document.

1.1.13 During consultation with Natural England at the ETG in August 2023, two further sites were recommended to be considered where there was no or limited connectivity with the AOE SPA:

- Outer Trial Bank (OTB)
- Steep Holm island.

1.1.14 Consultation with stakeholders on the previous lesser black-backed gull compensation documents (VE OWFL, 2023[1]) has taken place, with Natural England and the RSPB providing feedback on the documents (VE OWFL, 2023[1]), and the key comments are:

- Habitat creation should be expanded to include restoration.
- Consider all limiting factors, not just predation and disturbance.
- Avoid conflicts of other nature conservation interest in site selection.

[1] VE OWFL (2023), 'Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap. https://fiveestuaries.co.uk/wp-content/uploads/2023/05/0144_VE_LBBG_compensation_ecological_evidence_and_roadmap_Final.pdf

[2] VE OWFL (2023), Lesser black-backed gull compensation – site selection note https://fiveestuaries.co.uk/wp-content/uploads/2023/05/0144_VE_LBBG_site-_selection_note_public_Final.pdf

- Look into sites with no connectivity to the AOE SPA.
- Look into predator eradication/management (e.g. brown rat).

1.1.15 Further consultation from the September 2023 ETG with Natural England and RSPB resulted in both suggesting different methods regarding the apportionment of lesser black-backed gulls to SPAs and apportionment of adults. Natural England want site specific DAS data to be used to determine the proportion of adults instead of using the rates in Furness (2015). Natural England also advised against using Dutch colonies in the apportioning of lesser black-backed gulls to SPAs due to a lack of connectivity found from tagging studies from these colonies.

1.1.16 The RSPB recommended using local colony data from Havergate Island for productivity rates rather than the productivity rates in Horswill *et al,* 2015. The UK wide productivity rate calculated in Horswill *et al* (2015) is 0.53 juveniles per pair and this compares with 0.42 per pair from the data published by the RSPB for eight years of data for Havergate Island. The Havergate Island productivity rate was reduced due to fox predation in 2015 which reduced productivity to 0.04 for the year. Discounting this anomalous year and looking at the average productivity for the other seven years and this equated to a rate of 0.52 per pair, very similar to the Horswill rates.

1.1.17 Both the approaches favoured by VE OWFL and Natural England/ RSPB are presented within 5.4 Report to Inform Appropriate Assessment – Revision B [REP1-016]. Preliminary results suggest an adult mortality rate ranging from six (5.7) using the VE OWFL approach and 12 (11.3) using the Natural England approach. The compensation quantum will be calculated using both the productivity rates found in Horswill *et al* (2015) (0.53) and the site specific productivity rates for Havergate Island supplied by the RSPB (0.42).

ESTIMATED COMPENSATION QUANTUM

APPLICANTS APPROACH

1.1.18 The predicted magnitude of collision mortality for which compensation is required by the Applicant is 5.7 individuals. Compensation calculations to estimate the number of additional breeding pairs required to achieve compensation of the Applicant's impacts for lesser black-backed gull based on a mortality of six (5.7) birds will use the following equations, as used in the Hornsea Four RIAA for guillemot and gannet:

Equation 1:

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

Equation 2:

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

1.1.19 The equation below sets out the steps for calculating the quantum for 5.7 individuals:

Equation 1:

$$N_{Fledglings\ required} = \frac{5.7}{0.82 * 0.885 * 0.885 * 0.885 * 0.885} = 11.33$$

Equation 2:

$$N_{Breeding\ pairs\ required} = \frac{11.331}{0.53} = 21.38$$

1.1.20 Therefore, to compensate for five birds an additional 21.4 pairs are required. Based on 2:1 ratio of compensation this will be increased to 42.8 pairs and 64.2 pairs for a 3:1 ratio.

NATURAL ENGLANDS PREFERRED APPROACH

1.1.21 The predicted magnitude of collision mortality for which compensation is required by the Applicant using the Natural England preferred approach is 11.31 individuals. Using the DAS data for adult proportions (0.79) as recommended by Natural England, and the Havergate Island productivity rates as recommended by the RSPB, these numbers would be 42.4 pairs based on a 1:1 ratio and up to 127.3 pairs based on a 3:1 ratio to compensate for 11.3 individuals. . However, when calculating the compensation quantum, Natural England have advised using the UCI mortality numbers which equals 53.07 individuals.

1.1.22 Therefore, using the above equations, to compensate for 53 birds an additional 199.1 pairs are required using the Natural England approach at a 1:1 ratio.

1.1.23 Table 1.3 presents the range of quantum's using both the Applicants approach and Natural England's approach for the mean and upper confidence interval (UCI).

Table 1.3 LBBG compensation quantums for the Applicants approach and Natural England's approach using the Hornsea 4 methods

LBBG compensation quantum				
Methods	**HOW4 Applicant**		**HOW4 NE**	
Ratio	**Mean**	**UCI**	**Mean**	**UCI**
1:1	21.4	100.3	42.4	199.1
2:1	42.8	200.6	84.8	398.1
3:1	64.2	300.9	127.3	597.2

1.1.24 The Applicant believes that the HOW4 methods for calculating compensation quantum and the Applicant's approach (based on 5.7 mortalities) are appropriate for determining compensation levels for the lesser black-backed gull. Specifically, a ratio of 2:1 applies to the AOE SPA and a ratio of 3:1 for the OTB. As a result, if compensation measures are implemented at the AOE SPA, an annual quantum of 43 pairs would be needed and for OTB at 3:1 ratio the quantum is 65 pairs.

ESTIMATED COMPENSATION BENEFITS

1.1.25 The selected site at AOE SPA is a minimum of 6 ha in size. This size of area with predator fencing installed and appropriate habitat management has the potential to produce a breeding population many times more than the minimum required using a nesting density of 0.04 msq (or 400 nests/ha which equates to a maximum of 2,400 nests for the 6 ha area) (Ross-Smith et al, 2015). This approach follows a similar method to the lesser black-backed gull compensation strategy used by the Norfolk Projects OWFs (Royal HaskoningDHV, 2022). The OTB has capacity for an additional 1,500 pairs to reach historical maximum populations.

2 ALDE-ORE ESTUARY SPA

2.1 OVERVIEW

2.1.1 The Alde-Ore Estuary (AOE) SPA is located on the Suffolk coast between Aldeburgh to the North and Bawdsey to the south. The site includes Havergate Island and Orford Ness, as well as the estuaries of the rivers Alde, Butley and Ore. The AOE was listed as a Ramsar site in October 1996 and the site was classified as an SPA in August 1998. Both the SPA and Ramsar site share the same boundary as the AOE SSSI which was notified in 1952.

2.1.2 The AOE SPA has several important habitats within the site which attracts notable assemblages of wetland birds including seabirds, wildfowl and waders. The AOE qualifies as a SPA under Article 4.1 of the Birds Directive (79/409/EEC) by regularly supporting populations of Annex 1 species of European importance: breeding populations of little tern, marsh harrier, Sandwich tern and avocet. It also qualifies under Article 4.2 of the Birds Directive by supporting two Annex II species, a wintering population of redshank and a breeding population of lesser black-backed gull. Further Article 4.2 qualifying features were added in 2001 following a review: breeding seabird assemblage of international importance (at least 20,000 seabirds) and a wintering waterbird assemblage of international importance (at least 20,000 waterbirds.

2.1.3 The designation of lesser black-backed gull was based on a breeding population of 14,074 pairs.

2.2 CONSERVATION OBJECTIVES

2.2.1 The sites conservation objectives apply to the site and the individual species and/or assemblage of species for which the site has been classified (the "Qualifying features" mentioned above).

2.2.2 The conservation objectives of the site include:

- Avoid the deterioration of the habitats of the qualifying features,
- Subject to natural change, to maintain or restore, for each qualifying feature:
- 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 the qualifying features;
- The distribution of the qualifying features within the site.

2.2.3 The protected Annex I and Annex II species have no current feature condition assessment and historic assessments are not available to view.

FAVOURABLE CONDITION

2.2.4 ‘Favourable condition’ is the term used in the UK to represent ‘Favourable Conservation Status’ for the interest features of SPAs. Table 2.1 presents the relevant advice targets aimed to achieve ‘favourable condition’ for LBBG at AOE SPA.

Table 2.1Supplementary advice targets for LBBG of relevance to VE.

Attribute	Target
Breeding population: abundance	Restore the size of the population to 14,074 pairs whilst avoiding deterioration from its current level as indicated by the latest mean peak count, or equivalent
Breeding population: productivity and survival	Restore the abundance and structure of the assemblage at or above its current or target level (whichever is the higher) through restoring breeding productivity and adult survival.
Supporting habitat: connectivity with supporting habitats	Maintain safe passage of birds moving between roosting and feeding areas. The maximum offshore distance reached was 159 km of breeding colonies.
Supporting habitat: conservation measures	Maintain the structure, function and supporting processes associated with the feature and its supporting habitat through management or other measures (whether within and/or outside the site boundary as appropriate) and ensure these measures are not being undermined or compromised.
Supporting habitat: disturbance caused by human activity	The frequency, duration and/or intensity of disturbance in close proximity to nesting and/or feeding birds should not reach levels that substantially affect the feature.
Supporting habitat: extent and distribution of supporting habitat for the breeding season	Restore the extent, distribution and availability of suitable breeding habitat which supports the feature for all necessary stages of its breeding cycle (courtship, nesting, feeding)
Supporting habitat: vegetation characteristics	Maintain the extent and distribution of predominantly medium to tall [i.e. 20-60 cm] grassland swards.

3 STATUS AND RELEVANT EVIDENCE

3.1.1 Numbers of lesser black-backed gulls breeding at the AOE SPA have declined significantly since 2000. The main cause of decline has been attributed to impacts of predation by foxes in the colony, with 75% of nests (in a colony of 23,000 pairs), failing due to fox predation at Orford Ness in 2000 (Mavor et al. 2001). Breeding numbers at Orford Ness fell from 24,000 pairs in 2001 to 6,500 pairs in 2002 due to fox activity at the colony, primarily because fox control was not carried out there in 2002 (Mavor et al. 2003). Part of that decline could also be related to reductions in the availability of fisheries discards (Sherley et al. 2020). Numbers fell to a few tens of pairs at Orford Ness with, until recently, all of these nesting on the rooftops of buildings, which further supports the hypothesis that this species has become unwilling to nest on the ground at Orford Ness because of the impact of mammalian predators (notably foxes) on breeding success.

3.1.2 The lesser black-backed gull populations from Orford Ness have moved to neighbouring Havergate Island and Felixstowe port, where colour-ringed individuals have been observed breeding in the port having previously bred at Orford Ness (Rock, 2021). The birds have started to nest at the southern end of Orford Ness in recent years, with approximately 200 pairs now present, although this colony is understood to be subject to human disturbance. This colonisation began during the Covid-19 lockdown and the associated lack of human disturbance, and these birds are thought to have expanded from the colony at RSPB Havergate Island which has approximately 1,700 pairs. The lack of disturbance and reduced fox numbers at the southern end of Orford Ness is thought to have been behind the colonisation.

3.1.3 There is evidence of predator-proof fencing working to improve productivity at sites in the UK. For example, predator proof fencing at Walney Nature Reserve, increased lesser-black-backed and herring gull productivity from zero to over 100 fledged juveniles during the first breeding season after it had been installed (Cumbria Wildlife Trust, 2021). The main reasons for the initial decline at the reserve was predation of chicks and loss of supplementary feeding from the closure of a nearby landfill site. There are further examples of the effectiveness of predator proof fencing for tern colonies in eastern Scotland (Forster, 1975) and in Massachusetts, USA (Minsky, 1980 and Rimmer & Deblinger, 1992).

3.1.4 Reduction in predation and disturbance from non-predatory mammals will be achieved through the creation of a fenced enclosure adjacent to/ at Orford Ness. A predator exclusion fence will be installed to achieve effective exclusion of predators such as foxes, and non-predatory species that cause disturbance (e.g. Chinese-water deer and hare). With the reduced disturbance and predation in a location near to existing lesser black-backed gull colonies it is believed that, like other such projects, the gulls will colonise the fenced off area and help the Applicant achieve the compensation quantum requirements.

4 SITE SELECTION

ALDE-ORE SPA LOCATIONS

4.1.1 During the site selection process four potential sites were identified in and around the AOE SPA during a desk-based study of the area. These sites were identified based on two main criteria:

- connectivity to the existing colonies at Orford Ness and Havergate Island and;
- suitable habitats that will require minimal/ moderate management.

4.1.2 A similar compensation project for Norfolk Vanguard and Boreas Projects has been established on the AOE SPA. The site was agreed to be suitable because:

- The habitat at the site was reported to be very similar to that used by breeding LBBG when the SPA population was at its peak.
- The proximity of breeding LBBG on the roof of nearby buildings was noted as an important feature for rapid colonisation after the construction of the predator fence.

4.1.3 The three sites towards the north of the SPA could provide good connectivity with nearby colonies at the southern tip of Orford Ness and Havergate Island. They are also adjacent to the compensation site for the Norfolk Vanguard and Boreas Projects. The habitat of all three of these sites looks suitable with minimal habitat renovation, for example, strimming/ mowing of the vegetation and the addition of sleepers may be required. A full site survey will highlight the exact requirements.

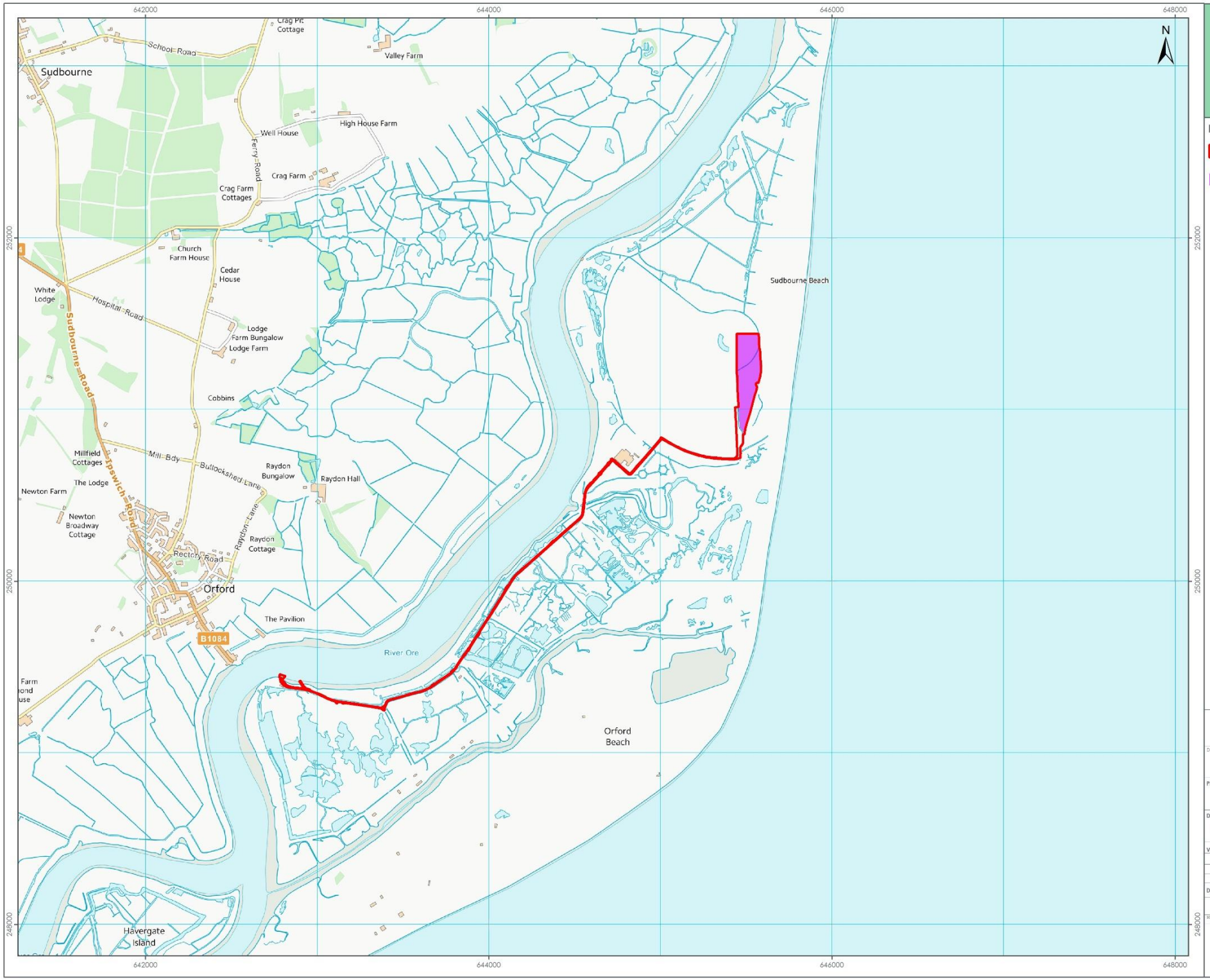
4.1.4 The site to the south, north of Havergate Island, is a rough grassland/grazing area. A moderate amount of habitat creation would be required to reduce the amount of vegetation and create some shingle/bare ground areas. The addition of sleepers for the gulls to nest against will also be required.

4.1.5 In their responses to the VE OWFL RIAA at PEIR, the RSPB highlighted another issue affecting the breeding success at AOE SPA, flooding. As part of the management plan of the agreed compensation package in the selected site, steps to help reduce any flooding and selection of the site least vulnerable to flooding has been a priority.

4.1.6 Following the site surveys carried out in December 2023 (see 5.5.9 LBBG Site Suitability Report [APP-055]) and following consultation with landowners and stakeholders the site selection was reduced to one prime site. The site was chosen due to its accessibility, habitat, no requirement for flood management, connectivity to roof nesting LBBGs and the Norfolk Projects compensation site. Figure 4.1 presents the area submitted within the refined red line boundary.

4.1.7 Once the site at VE02 was selected and after consultation with landowners and stakeholders the red line boundary was refined to include the Norfolk Projects LBBG compensation site and the land between the two sites and the access road prior to submission. Further consultation, site visits and surveys have been conducted post submission and the red line boundary was further refined within a Change Request submitted to the Examining Authority just after Deadline 1. This included the final compensation site at Orford Ness of approximately 6 ha plus a access track, see Figure 4.1.

4.1.8 Furthermore, other LBBG measures from OWFs are already in place at AOE SPA. Galloper Wind Farm Limited (GWFL) have been funding on site SPA measures to support the recovery of lesser black-backed gull at the AOE SPA, as set out in their Section 106.



LEGEND

- Proposed Red Line Boundary
- Proposed LBBG Compensation Area

0 200 400 800

Meters

Data Source:

PROJECT TITLE:

FIVE ESTUARIES OFFSHORE WINDFARM

DRAWING TITLE:

Proposed LBBG Compensation Option Area

VER	DATE	REMARKS	Drawn	Checked
1	01/10/2024	For Issue	BPHB	MB

DRAWING NUMBER: 1

SCALE:	PLOT SIZE:	DATUM:	PROJECTION:
1:20,000	A3	OSGB1936	BNG

FIVE ESTUARIES
OFFSHORE WIND FARM

HAMFORD WATER SPA AND FELIXSTOWE PORT

4.1.9 The development of a container terminal facility at Bathside Bay is likely to have an adverse effect on the integrity of the Stour and Orwell Estuaries SPA and Ramsar site. As a result of this, the Little Oakley Managed Realignment site has been proposed as a compensation measure (Marjoram *et al*, 2021). The proposed habitat creation would also be suitable breeding habitat for lesser black-backed gull and therefore there is the potential to work with the Bathside Bay development. However, if lesser black-backed gulls do colonise the new habitat created, it may have a detrimental effect on the other species such as ringed plover and little tern due to predation from lesser black-backed gulls.

4.1.10 The Port of Felixstowe holds a large gull colony in excess of 1,000 pairs including 506 pairs of lesser black-backed gull (Rock, 2021) and is less than 15 km from the Alde-Ore Estuary SPA. The population increased dramatically between 2001 (417 pairs combined) and 2014 (1,105 pairs combined) and this increase in breeding pairs is believed to come from the decline in the Orford Ness population, with the birds moving colonies, with colour-ringed individuals providing evidence of a shift in breeding sites (Rock, 2014).The overall population in the local area is considerably larger than the colony at the Port of Felixtowe, with 1,007 pairs nesting in the adjacent trading estate and additional pairs nesting on roofs within the town (Rock, 2014).

4.1.11 Following the ETG in August 2023 it was agreed that the Felixstowe Port site was not a suitable site for compensation measures, with the possibility of the port wanting to remove the nesting birds away from the roofs it would potentially be very difficult to prove additionality if this was to happen.

ADDITIONAL SITES

4.1.12 During the ETG in August 2023 Natural England suggested two alternative sites, the island of Steep Holm in the Bristol Channel and the OTB in The Wash SPA. The island of Steep Holm has no direct connectivity with AOE SPA, whereas the OTB is within mean-maximum foraging range of LBBG from AOE SPA (126 km).

STEEP HOLM

4.1.13 Steep Holm is an island found in the Bristol Channel with a large gull colony consisting mainly of herring and lesser black-backed gulls. The most recent census estimated a total of 340 pairs of lesser black-backed gulls breeding on the island.

4.1.14 The colony size has been relatively stable for the past 20 years although there appears to be a recent decline (BTO, 2023).

4.1.15 A site suitability survey was completed in mid-October 2023 (5.5.9 LBBG Compensation Site Suitability Report [APP-055]) and preliminary feedback suggests that there is little or no ecological management on the island and a relatively high population of muntjac deer, plus the regular influx of visitors to the island.

4.1.16 Whilst habitat management/ restoration for nesting sites and management of the muntjac deer to reduce disturbance of nests the site has the potential to provide successful compensation, it was deemed that due to the potential for relatively high levels of human disturbance and the limited to connectivity to the Alde Ore Estuary SPA, that the Steep Holm site was the least suitable and has subsequently been dropped for further consideration as a site for compensation measures for LBBG.

OUTER TRIAL BANK

4.1.17 The Outer Trial Bank is a manmade island in the Wash, created as part of a proposed UK government water resources scheme. It lies 126 km from AOE SPA and is therefore just within the mean-maximum foraging range for LBBG. Both herring and lesser black-backed gulls nest on the Outer Trial Bank and both species have seen their populations decline significantly since 2000 (BTO, 2023).

4.1.18 OTB was identified as an appropriate potential site by Natural England and the RSPB at the ETG in August 2023. The site has a breeding colony of LBBG and herring gull (*Larus argentatus*) both of which are declining in the last 20 years. Historical populations of LBBG at the site were a maximum of 2,179 pairs in 2003 and the latest colony count in 2023 found 582 pairs (SMP database, 2023). The site surveys in 2023 found a large number of brown rat tunnels suggesting a substantial breeding population on the island. The presence of rats will reduce productivity in the colony and is one of the potential reasons for the population decline (per comms RSPB).

4.1.19 Currently, there is limited evidence of connectivity of LBBGs from OTB 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), away from the breeding season, has shown birds to travel at least 136km, suggesting that there is potential for fledglings from OTB to colonise and breed at AOE SPA. Regardless, the site has the potential for large increases in the LBBG breeding population and therefore the efficacy of the measure will not be affected as a compensation ratio greater than 1:1 is possible, if required.

4.1.20 Recent correspondence from the RSPB casework team has highlighted the need to collect further data to evidence the potential decline of LBBG numbers and to pin point the cause of any decline in LBBG numbers. Whilst it has been suggested that predation by rats is an issue as above, the Applicant does recognise that further evidence would need to be collected to ascertain the best measures to help increase the numbers of LBBG upon OTB.

4.1.21 In terms of ownership, the OTB is owned by the Crown Estate, and Defra have a long-term lease on the site. Natural England help manage the site and the RSPB has helped conduct surveys at the OTB. The Applicant has been in consultation with all parties and there is consensus that OTB has the potential to provide sufficient LBBG compensation measures for VE but VE does acknowledge the most recent points from RSPB regarding further evidence collection.

4.1.22 The Applicant is currently in discussions with Crown Estate to determine what options are available to utilise the site as a compensation site and is also in discussions with the RSPB and Natural England with regards their involvement in any compensation measures and monitoring programmes.

4.1.23 The Applicant is aware that evidence of rats on the Outer Trial Bank has been recently documented from surveys carried out by the RSPB in 2023 and most recently from Natural England from surveys in the summer of 2024, with evidence of predation also noted.

4.1.24 Table 4.1 presents all the sites that were considered and the reasoning for their selection for compensation measures.

Table 4.1 Potential compensation sites and reasoning for selection decisions

Potential compensation sites	Selection decision
AOE VE01	Advice from landowners suggest that the site was susceptible to flooding. Not taken forward.
AOE VE02	Site surveys found the habitat to be suitable with a bit of management and the site was least prone to flooding. Site taken forward.
AOE VE03	Advice from NT was that the area had a history of UXOs and would not be suitable for any building works. Not taken forward.
AOE VE04	Close to public footpaths and risk of high level of human disturbance. Not taken forward.
AOE Boyton	Close to RSPB reserve where management for other species would not be compatible with a LBBG colony. Not taken forward.
Outer Trial Bank	Recommended by Natural England, presence of rats at the bank is known and there is evidence of predation on the island. Gulls already breeding on the bank should make the success of the compensation measure quicker to establish. Site taken forward.
Steep Holm	Potential human disturbance and limited connectivity to AOE SPA. Not taken forward.
Hamford Water SPA	Habitat creation at the Little Oakley Managed Realignment site targeted for little tern and ringed plover so not compatible with encouraging LBBG colony to the site. Not taken forward.
Felixstowe Docks	Lack of clarity around the ports plans for roof nesting LBBGs and therefore additionality would be hard to prove. Not taken forward.

5 COMPENSATION MEASURES AT THE AOE SPA

FENCING

5.1.1 The fencing design proposed will follow similar predator control projects from nature conservation efforts (White and Hirons, 2019) and those used in the Norfolk Vanguard lesser black-backed gull compensation measure at the AOE SPA. The main aspects of the fence will include:

- A height of between 1.8m and 2.0m;
- Wire mesh fencing with a gauge (to prevent fox from chewing through);
- At least 60cm will be buried horizontally at a depth of 15cm;
- Any areas of the fence crossing water will include mesh to the channel bed to prevent access e.g. otter;
- Overhanging top of at least 30 cm at a 45º angle; and
- Non-electrified (electric fence may be used as an adaptive measure).

HABITAT RESTORATION

5.1.2 The proposed area for compensation will be mapped out based on vegetation type and required management during additional site suitability surveys. The main categories for habitat restoration are likely to be:

- Suitable for nesting, no management required.
- Minimal management required (strimming approximately two times a year).
- Moderate management required (strimming for up to 10 days a year).

5.1.3 Management and cutting schedule will be reviewed after every breeding season.

PREDATOR MONITORING AND CONTROL

5.1.4 Prior to the completion of the fencing an in depth mammal survey will be undertaken to ensure no large mammals are present inside. Mammal monitoring will be conducted throughout the year to ensure there are no breaches of the fencing. Various methods of surveying will be deployed including camera traps, sand traps as well as vantage point surveys at day and night (utilising night vision binoculars). The monitoring will be less intensive during the non-breeding season.

5.1.5 If presence of mammals is detected in the enclosure, then steps will be taken to ensure a fast and safe removal of the predator. The protocol will be agreed with the relevant OOEG following consultation.

6 COMPENSATION MEASURES AT THE OTB

PREDATOR MONITORING AND CONTROL

6.1.1 Pre-implementation monitoring will be undertaken at OTB, with the goal being to quantify the abundance and distribution of predators using materials such as trailcams, footprint tunnels and wax blocks. This would take place in midwinter (December or January) and checked after a fortnight. If predators, such as rats are confirmed, eradication can then be carried out. Eradication would be carried out by trained professionals. The protocol will be agreed with the relevant SNCBs following consultation.

6.1.1 Post-eradication monitoring will continue each winter with either a combination of trailcams, footprint tunnels or wax blocks. These will be monitored at least once a month over the winter period to ensure there is no recolonisation of the island.

HABITAT MANAGEMENT

6.1.2 During the predator monitoring visits to the OTB the vegetation will also be monitored to ensure that it is optimal for breeding LBBG. Should the vegetation need to be strimmed, then the work will be carried out on the last visit before breeding season (preferably February) to avoid disturbance.

7 CURRENT PROGRESS AND NEXT STEPS

7.1.1 It should be noted that the next steps listed below for the implementation of measures may change as further relevant information becomes available, particularly with the 2024 breeding season data from the Norfolk Projects compensation site at the AOE SPA and/or the North Falls OWF application. The Applicant will use the most up to date information available to inform the final iterations of the LIMP.

ALDE-ORE ESTUARY

7.1.2 The Applicant is currently working through the Natural England compensation checklist (Table 1.2) to progress the compensation measures as much as possible up to and beyond the point of the submission of the DCO application. The Applicant has made the following progress since Section 42 consultation:

- Completed walkover surveys (see 5.5.9 LBBG Compensation Site Suitability Report [APP-055]) on the potential four sites that were deemed suitable from an initial desk-based review.
- These initial walkover surveys have been supplemented by more detailed habitat surveys that are submitted alongside the DCO application (6.8.1.3 Lesser Black Backed Gull Compensatory Areas Environmental Impact Assessment – Revision C [REP4-015]).
- A statutory consultation has taken place on the measures and sites receiving feedback from local landowners and statutory consultees.

7.1.3 The Applicant has made the following progress since Submission:

- Further site visits have been carried out to refine the site selection on the AOE including ecological surveys (see 6.8.1.3 LBBG Compensatory Areas Environmental Impact Assessment).
- Changes to the order limits including:
  - Removal of the Norfolk Projects / Scottish Power Renewables LBBG compensation area as it is not considered viable to adjoin the VE LBBG compensation area, which would sever access to parts of Orford Ness and potentially impede ongoing delivery of the compensation measure;
  - Removal of the large shingle bank on the eastern edge of Orford Ness, which is not suitable LBBG habitat or practical for installing of the predator proof fence.
  - Further reduction to refine the remaining Order Limits to a single compensation area of 6 ha (plus land for access and implementation).
  - Addition of a small area of land immediately adjacent to the current Order Limits.
- Ongoing consultation with the landowners of the selected site.

7.1.4 These surveys, and the consultation, have allowed the Applicant to settle on the most suitable site within this area and narrow down from the original four sites which were selected (see Figure 4.1 above and Appendix A below highlighting initial sites).

7.1.5 For the AOE site, the next steps are:

- To continue engagement with landowners and discuss the feasibility of permissions or purchase by the Applicant;
- To create a steering group with the relevant stakeholders to help plan and advise on the next steps;
- To carry out further surveys to help create a detailed management plan once a final site is selected (i.e. Alde Ore Site or OTB site);
- Agree detailed wording of the DCO commitments; and
- To iterate and update the implementation and monitoring plan which has been submitted at application.

OUTER TRIAL BANK

7.1.6 As above, the Applicant is currently working through the Natural England compensation checklist (Table 1.2) to progress the compensation measures as much as possible up to the point of the submission of the DCO application.

7.1.7 For the OTB site, the next steps are:

- To continue engagement with the Crown Estate and Defra to secure the measure during application determination.
- Working closely with RSPB and Natural England, to determine the most appropriate measures at the site. This may include surveys at the site to create a detailed management plan and setting up an appropriate steering group to help plan and advise next steps;
- Agree detailed wording of the DCO commitments;
- To iterate and update the implementation and monitoring plan which has been submitted at application.
- As the work on both measures progresses, it is expected that one measure is likely to begin to appear more favourable and become the preferred option.

7.1.8 Information that is likely to become available during examination and may influence the final decision includes:

- Success of the SPR/Vattenfall scheme in the 2024 breeding season (expected Q4 2024)
- Further data on the colony scale and health at Outer Trial Bank (expected Q3 2024)
- Information from TCE and Defra on how the Outer Trial Bank site could be secured and delivered (expected Q2 2024)

7.1.9 The Applicant understands that NE have conducted surveys during the 2024 breeding season and there was further evidence of rat predation found.

7.1.10 The Applicant carried out a digital aerial survey (DAS) of the OTB in June 2024 and has submitted the findings in the following report [REP3-026] 10.27 Digital Aerial Surveys - Outer Trials Bank.

7.1.11 The survey was undertaken on 30th June 2024 and therefore the results presented the numbers of birds using the OTB rather than AONs due to the late date in the breeding season. In total 3,136 birds were recorded, the most abundant species recorded was herring gull (n=2,031), followed by lesser black-backed gull (n=656), large gull species (n=439) and great black-backed gull (n=10). Of this number, 982 were recorded as juveniles.

7.1.12 Using the DAS images habitat mapping of the OTB was carried out and from this the preferred habitats for each species can be determined, which will provide useful information when it comes to any potential habitat management for the compensation measure.

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7 APPENDICES – MAPS OF THE PROPOSED SITES

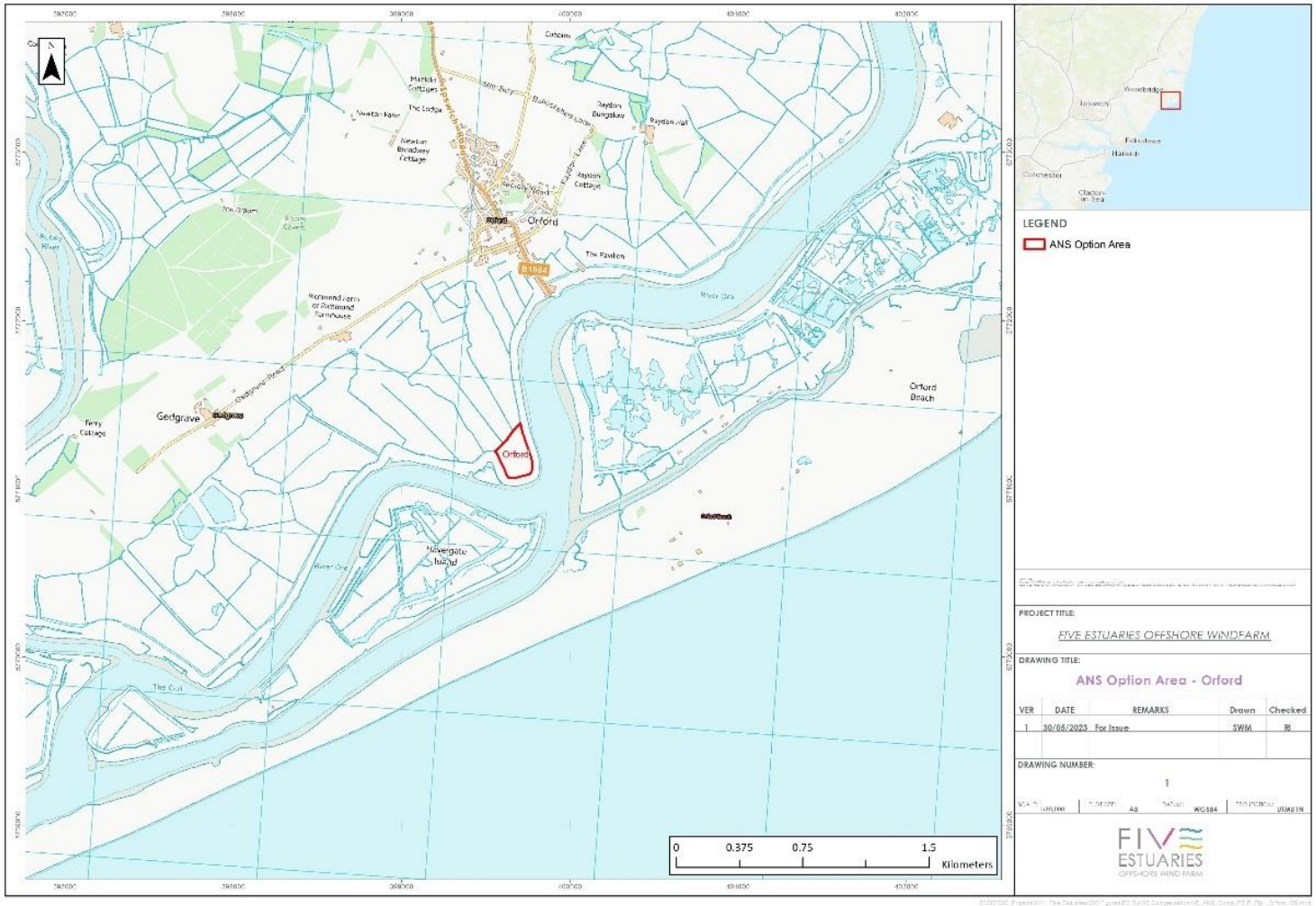

Figure 2 Location of Site 1, rough grazing land adjacent to Alde-Ore SPA (OS map)

Figure 3 Location of Site 1, rough grazing land adjacent to Alde-Ore SPA (satellite)

Figure 4 Location of Site 3, rough grassland (south) in Alde-Ore SPA (OS map)

Figure 5 Location of Site 3, rough grassland (south) in Alde-ORE SPA (satellite)

Figure 6 Location of Site 4, rough grassland (east) in Alde-ORE SPA (OS map)

Figure 7 Location of Site 4, rough grassland (east) in Alde-ORE SPA (satellite)

Figure 8 Location of Site 5, rough grassland (north) in Alde-ORE SPA (OS map)

Figure 9 Location of Site 5, rough grassland (north) in Alde-ORE SPA (satellite)

10 APPENDIX B - PREVIOUS LESSER BLACK-BACKED GULL ECOLOGICAL EVIDENCE AND ROADMAP SUBMITTED AT PEIR

FIVE ESTUARIES
OFFSHORE WIND FARM

FIVE ESTUARIES OFFSHORE WIND FARM

LESSER BLACK-BACKED GULL COMPENSATION - ECOLOGICAL EVIDENCE, APPROACH TO SITE SELECTION AND ROADMAP

Document Reference	004755322-01
Revision	A
Date	May 2023

Project	Five Estuaries Offshore Wind Farm
Sub-Project or Package	Work Package 1
Document Title	Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap
Document Reference	004755322-01
Revision	A

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	May-23	Final for issue	GoBe	GoBe	VE OWFL

CONTENTS

TABLES

DEFINITION OF ACRONYMS

Term	Definition
AEoI	Adverse Effects on Integrity
AOE	Alde-Ore Estuary
AON	Apparently Occupied Nests
AOT	Apparently Occupied Territories
DCO	Development Consent Order
ETG	Expert Topic Group
HRA	Habitats Regulations Assessment
IROPI	Imperative reasons of overriding public interest
MMF	Mean-max foraging range
OOEG	Offshore Ornithology Engagement Group
RAG	Red, Amber, Green
RSPB	Royal Society for the Protection of Birds
SD	Standard Deviation
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Bodies
SPA	Special Protection Area
VE	Five Estuaries Offshore Wind Farm
VE OWFL	Five Estuaries Offshore Wind Farm Limited

1 INTRODUCTION

1.1 BACKGROUND

FIVE ESTUARIES OFFSHORE WIND FARM

1.1.1 Five Estuaries Offshore Wind Farm (VE) is a proposed extension to the operational Galloper Offshore Wind Farm. VE will be situated approximately 37 km off the coast of Suffolk, England (at its closest point).

1.1.2 As part of the Development Consent Order (DCO) application, Five Estuaries Offshore Windfarm Ltd (VE OWFL) is required to produce a Report to Inform Appropriate Assessment (RIAA) in order to provide the information required by the Competent Authority in order to undertake its Habitats Regulation Assessment (HRA) and Appropriate Assessment. If the HRA process deems that Adverse Effects on Integrity (AEoI) cannot be excluded, a derogation process is then followed. In the event that no alternative solutions can be found, and if there are imperative reasons of overriding public interest (IROPI), the final stage of the derogation process is to develop measures to compensate for adverse effects on the integrity of a site.

DEROGATION PREPARATION

1.1.3 In order to allow for sufficient time to engage with stakeholders and develop compensation plans, VE OWFL is investigating compensation options for species where it has not been possible to rule out AEoI at this early stage in the pre-application period, however it should be noted that this does not prejudice the outcome of the ongoing HRA process.

1.1.4 The key ornithological derogation risk for VE for lesser black-backed gull (*Larus fuscus*) relates to Alde-Ore Estuary (AOE) Special Protection Area (SPA).

1.1.5 AOE SPA is 15 km from VE, and within mean-max foraging range (MMF) MMF + 1 standard deviation (SD) from VE for lesser black-backed gull, and there is therefore potential connectivity between the SPA and VE. Concern regarding collision risk has been raised for lesser black-backed gull on other projects by Natural England (NE), and recent decisions on other offshore wind projects (e.g., Norfolk Boreas, Norfolk Vanguard, East Anglia ONE North and East Anglia TWO) concluded that AEoI could not be ruled out for lesser black-backed gull at AOE SPA when considered in-combination with other projects. The conclusion of AEoI in respect of the other projects increases the likelihood that the same conclusion for this project will be reached. Given the proximity of VE to the AOE SPA and results of preliminary assessment, it is deemed likely that there will be an AEoI in-combination in relation to the LBBG feature of the AOE SPA from VE, and that compensation for this effect will thus be required.

1.1.6 VE OWFL has identified potential compensation measures for VE and created a 'longlist' of all possible compensation options at AOE SPA (and other protected sites for other species potentially requiring compensation). The longlisted options are based on the existing VE project proposal, experience with HRA derogation matters in the UK and stakeholder consultation with Natural England. These longlisted options are discussed in 'Five Estuaries Offshore Wind Farm: Potential compensation measures longlist report' (VE OWFL, 2022a).

1.1.7 The longlist options were narrowed down to a shortlist following a ranking criteria assessment (otherwise known as a Red-Amber-Green (RAG) assessment), and discussed in 'Five Estuaries Offshore Wind Farm: Compensation measures shortlist technical note' (VE OWFL, 2022b). The ranking approach is provided in 'Five Estuaries Offshore Wind Farm: Compensation measures ranking approach note' (VE OWFL, 2022c). Longlisted measures were scored against a number of categories, with scores for each category summed to provide a total score. The measures were then allocated to “red”, “amber” and “green” groups based on their total score, and “green” measures taken forward to the shortlist of compensation options.

1.1.8 Following shortlisting and subsequent stakeholder feedback (document reference: DAS/14393/400223), it was deemed that the compensation options of predator exclusion fencing and habitat creation are deemed most feasible for lesser black-backed gull. Predator exclusion fencing around a breeding colony of lesser black-backed gulls is known to be an effective method to reduce nest predation and increase breeding success and technically feasible with existing technology in place. Habitat creation/restoration is another compensation measure that is technically feasible with suitable land adjacent to the SPA and known to be a successful method in increasing breeding populations. The other shortlisted measures for compensation were ruled out for various reasons, supplementary feeding has potential side effects on non-target species and the wider food chain, predator management is a less viable option to the predator exclusion fencing.

1.1.9 The potential lesser black-backed gull mortality from Five Estuaries (individuals per annum) is fewer than eight individuals as per the draft RIAA. The resulting compensation requirement (number of additional breeding pairs required to provide the necessary compensation quantum per annum), will be calculated at a later date, but prior to the submission of the DCO application, and once the wind farm parameters have been finalised because the impact may be subject to change. It is proposed that demographic data for lesser black-backed gull from Horswill & Robinson (2015) will be used to calculate the number of additional breeding pairs required to produce sufficient breeding adults back into the bio-geographic population to compensate for the predicted impacts.

1.2 AIMS AND OBJECTIVES

1.2.1 This document collates and presents the ecological evidence for predator exclusion fencing and habitat creation, outlines site selection work progressed to date, and provides a roadmap for compensation development and implementation for both compensation measures. Predator exclusion fencing is covered in Section 2, and habitat creation in Section 3.

2 PREDATOR EXCLUSION FENCING

2.1 AIMS

2.1.1 In this section, ecological evidence on the feasibility and effectiveness of predator exclusion fencing is reviewed (Section 2.2), focusing on predation issues in lesser black-backed gull and the effectiveness of exclusion fencing for improving breeding performance and population size. Secondly, potential delivery sites are identified as part of preliminary site selection (Section 2.3), and finally a roadmap for compensation development and implementation is provided (Section 2.4).

2.2 ECOLOGICAL EVIDENCE

LESSER BLACK-BACKED GULL

2.2.1 Lesser black-backed gull breed in northern and western Europe and north-west Russia, with many UK birds moving to Southern Europe and Africa to winter, although increasingly large numbers remain in the UK, particularly England, in winter (Burton *et al.,* 2012; Robinson, 2005; Ross-Smith *et al.,* 2014).

2.2.2 The Seabird 2000 survey estimated that the UK breeding population in 2000 was 87,413 Apparently Occupied Nests (AON) in size, growing from 48,217 in 1970 (JNCC, 2021).

2.2.3 Individuals have a typical lifespan of around 15 years, with birds reaching maturity at 4 years of age (Robinson, 2005).

2.2.4 Lesser black-backed gull nest in colonies, often with other gull species, in particular the closely related herring gull (*Larus argentatus*). They breed in a wide range of habitats, including coastal cliffs, sand dunes, marshes, moorlands and man-made sites (e.g. rooftops) (Mitchell *et al.,* 2004). Lesser black-backed gull breeding in natural habitats nest on the ground, generally preferring nest sites with some vegetation cover (Calladine, 1997).

2.2.5 Lesser black-backed gull are omnivorous and feed on a wide range of food sources, including fish, fisheries discards, waste from refuse sites and moles (*Talpa europea*) (Gyimesi *et al.*, 2016; Robinson, 2005; Sherley *et al.*, 2019).

PREDATION IN LESSER BLACK-BACKED GULL

2.2.6 Lesser black-backed gull eggs and chicks are predated by a range of predators. The main mammalian predators in the UK are foxes (*Vulpes vulpes*) and mink (*Neovison vison*) (Craik, 2007; Furness, 2013; Ross-Smith *et al.,* 2014). Lesser black-backed gull also suffer predation from avian predators, for example herring gull and raven (*Corvus corax*) (Bukacinski, 1998; Bustness *et al.*, 2022; Hario, 1994).

2.2.7 Predation is known to have population-level effect on lesser black-backed gull, with reduced population growth evident: Across six colonies in the UK, Davis *et al*. (2018) show that a higher presence of foxes was linked to lower productivity. Similarly, predation by American Mink has been linked with reduced productivity across colonies in south-west Scotland (JNCC, 2021).

PREDATOR EXCLUSION FENCING

2.2.8 Predator exclusion fencing can be an effective conservation measure for lesser black-backed gull; past studies have shown that nest survival rates can increase when reducing chick predation. For example, Davis *et al.* (2018) showed that lesser black-backed gull productivity increased in areas with exclusion fencing (for foxes). Nest survival was high in both fenced and unfenced areas, which suggests that the installation of exclusion-fencing at the colony increases survival at the chick (rather than nest) stage.

2.2.9 More widely, there is clear evidence of predator-proof fencing being an effective seabird conservation measure, including for the protection of multiple petrel, shearwater and albatross species across New Zealand, Hawaii and Portugal (Cooper 2013).

2.2.10 There is also precedent for the use of predator fencing as a compensation measure for predicted offshore wind impacts on lesser black-backed gull in the UK. Norfolk Boreas, Norfolk Vanguard, East Anglia One North and East Anglia Two are delivering improved (New Zealand-style) predator fencing in AOE SPA as compensation for their predicted impacts on lesser black-backed gull at that SPA (MacArthur Green and Royal HaskoningDHV, 2022).

2.3 APPROACH TO SITE SELECTION

LESSER BLACK-BACKED GULL BREEDING SITES

2.3.1 Preliminary site selection, as presented here, focused on identifying lesser black-backed gull colonies, both within and outside SPAs, which could be potentially suitable locations for compensation delivery. Sites were identified using the Seabird Monitoring Programme (SMP) survey data.[1] All lesser black-backed gull colony count data were downloaded and filtered according to the following criteria for suitability:

- Country = England – English colonies only were selected as compensation is generally expected to be delivered in the country as where the impacts are experienced. Other nations could be explored should no suitable sites within England be identified, in which case further work on the legislative and legal aspects of compensation delivery abroad may be needed;
- Year = 1998-2022. The most recent complete colony census was Seabird 2000, which was surveyed from 1998-2002. Therefore, including data from 1998 onwards ensures comprehensive coverage of all colonies;
- Site type = “coastal” or blank (to remove colonies labelled “inland”) – this is based on the assumption that as a coastal breeding colony is predicted to be impacted by VE, a coastal colony should thus be preferably selected for compensation delivery, although this search could be widened to include inland colonies should site selection prove unsuccessful for coastal sites;
- Site habitat = “natural” or blank (to remove colonies on “man-made structures”); and
- Count ≥ 50 (to only extract larger colonies, as colonies with few breeding pairs are unlikely to grow rapidly enough to provide sufficient compensation). This search

[1] Seabird Monitoring Programm [redacted] Accessed August 2022]

could be widened to include smaller colonies should site selection prove unsuccessful for sites with larger colonies.

2.3.2 For the remaining list of sites, only the most recent entry for each site was retained.

2.3.3 For sites for which "site type" and "site habitat" were left blank, the site coordinates were plotted on a map, using the grid reference provided in the SMP data, to identify whether the colony was coastal or inland, and located on natural or man-made structures. All remaining inland and/or man-made colonies were removed.

2.3.4 Table 2.1 provides a list of the sites identified using the criteria outlined in paragraphs 2.3.1 to 2.3.3, and also presents current population count data for the SPA.

2.3.5 Site selection is to be refined further to obtain a shortlist of potential sites for compensation delivery. Next steps for site selection are outlined in the roadmap presented in Section 2.4.

Table 2.1: Coastal, natural lesser black-backed gull colonies in England with a count of 50 or more Apparently Occupied Nests or Apparently Occupied Territories (data source: Seabird Monitoring Programme[1]). AON: Apparently Occupied Nests; AOT: Apparently Occupied Territories; IND: Individuals. * indicates SPAs for which lesser black-backed gulls are a qualifying feature.

Master site	Site	County	Count Year	Count type	Count
Alde Ore Estuary SPA*	Havergate Island	Suffolk	2019	AON	1,670
	Orfordness Beach	Suffolk	2018	AON	97
Blackwater Estuary SPA	Pewet Island	Essex	2009	IND	171
Bowland Fells SPA*	Langden Head	Lancashire	2018	AON	5,573
Coquet Island SPA	Coquet Island RSPB	Northumberland	2005	AON	50
Farne Islands SPA	Farne Islands	Northumberland	2019	AON	681
Hamford Water SPA	Hamford Water	Essex	2009	AON	600
Highbridge and Isleport	Highbridge	Somerset	2016	AON	131
Isles of Scilly SPA*	Annet	Isles of Scilly	2006	AOT	281
	Great Arthur	Isles of Scilly	2015	AON	76
	Great Ganilly	Isles of Scilly	2015	AON	70
	Gugh	Isles of Scilly	2019	AON	422
	Norwethal	Isles of Scilly	2015	AON	102
	Puffin Island	Isles of Scilly	2015	AON	97
	Samson	Isles of Scilly	2015	AON	978

Master site	Site	County	Count Year	Count type	Count
	Shipman Head	Isles of Scilly	1999	AON	50
	St Helen's	Isles of Scilly	2015	AON	448
	Tean	Isles of Scilly	2015	AON	136
	White Island (St Martin's)	Isles of Scilly	2015	AON	106
Lundy	Lundy	Devon	2021	AON	91
Maryport	Maryport	Cumbria	2013	AON	95
Medway Estuary and Marshes SPA	Greenborough	Kent	2018	IND	56
Morcambe Bay and Duddon Estuary SPA*	Hodbarrow RSPB	Cumbria	2009	AON	250
	South Walney	Cumbria	2020	AON	381
North Norfolk Coast SPA	Blakeney Point	Norfolk	2001	AON	171
	Holkham NNR	Norfolk	2014	AON	85
Ribble and Alt Estuaries SPA*	Ribble Estuary	Lancashire	2021	AON	4,489
South Solway	RAF Carlisle	Cumbria	2009	AON	520
	Rockcliffe Marsh	Cumbria	2019	AON	260
St Martin's Island	St Martin's	Isles of Scilly	1999	AON	52
Steep Holm	Steep Holm	Avon	2018	AON	596
The Wash SPA	Outer Trial Bank	Norfolk	2018	AON	1,294

2.4 ROADMAP

2.4.1 A proposed roadmap for the development of predator exclusion fencing as a compensation measure is provided in the following sections below.

SITE SELECTION

2.4.2 The preliminary site selection process outlined in Section 2.3 revealed several locations which support substantial coastal populations of lesser black-backed gull in England.

2.4.3 Proposed next steps for site selection comprise of:

1. From the list of sites presented in Section 2.3 above, establish which sites have predation issues. This will be completed through a review of management plans and other relevant documents for each site, as well as by contacting the relevant site managers and/or landowners to obtain local and up to date information [note, site manager engagement is underway at the time of writing].

2. Identify relevant landowners and stakeholders and discuss opportunity and willingness for installation of predator exclusion fencing.
3. For sites which are deemed potentially suitable following the completion of step 1 and 2 above:
   - Describe, and where possible quantify, the extent of the predation issue at the site (e.g. using historical population data and information on predator presence/numbers); and
   - Study the feasibility of excluding predators at the selected site. Factors to be taken into consideration include, but are not limited to, local geography, access and anticipated cost. Consultation with exclusion fence experts is anticipated to be needed at this point in the site selection process to establish fencing type/technique, feasibility and cost.
4. For sites meeting the feasibility requirements in step 3, quantify the expected benefit to lesser black-backed gull as a result of the predator exclusion fencing measure, to ensure the potential site(s) can meet compensation requirements.
5. Liaison with stakeholders and landowners, working towards formal agreements. As part of this work, details such as land ownership and feasibility of permission/purchase will be investigated.

2.4.4 As highlighted in Section 2.3, should site selection be unsuccessful based on the criteria presented here, the search can be widened to investigate sites with smaller colonies, or within non-coastal areas (e.g. uplands).

2.4.5 In order to ensure that the compensation measure meets the requirement of maintaining the national site network coherence, there should be optimal connectivity between the potential delivery site and one or more SPAs. Therefore, should multiple potential sites for predator exclusion fencing be identified once site selection has been completed following the steps outlined above, prioritisation of potential sites is proposed to be based on connectivity with SPAs, as follows:

- Sites within MMF of AOE SPA – to prioritise sites as close as possible to the impacted SPA;
- Sites within MMF+1SD of AOE SPA;
- Sites in/adjacent to an SPA (other than AOE) with LBBG as a qualifying feature;
- Sites within MMF of an SPA (other than AOE) with LBBG as a qualifying feature; and
- Sites within MMF+1SD of an SPA (other than AOE) with LBBG as a qualifying feature.

2.4.6 Where needed, further reporting can be produced to evidence connectivity between any identified non-SPA delivery sites and the National Site Network. This would likely be completed through a review of known breeding dispersal behaviour and recorded dispersal distances in lesser black-backed gull, to evidence that birds hatched at the proposed predator-fenced site can feasibly disperse to breed at sites within the National Site Network.

STAKEHOLDER ENGAGEMENT AND CONSULTATION

2.4.7 Stakeholder engagement will be required throughout the development of the predator exclusion measures.

2.4.8 In addition to consultation with local experts and stakeholders during the site selection process outlined above, compensation plans are being consulted upon with relevant stakeholders, most notably Natural England, before DCO application submission. Consultation on compensation plans to date has consisted of Natural England feedback on the shortlist and longlist of compensation measures (VE OWFL, 2022a; VE OWFL, 2022b), and further consultation is planned as the development of predator exclusion fencing compensation plans progresses.

2.4.9 Prior to submission appropriate sites will be identified and discussions with land owners and local planning authorities (LPAs) will be progressing with an aim to have agreements and permissions in place pre-application submission. An outline implementation and monitoring plan will be submitted with the DCO application. Pre-consent an expert topic group (ETG) will be used to engage with regulators and interested stakeholders. Should consent for the project be granted, a steering group, to be termed the "Offshore Ornithology Engagement Group" (OOEG) will be convened by VE OWFL. This group will help steer the delivery of any compensation measure implementation and maintenance, monitoring, reporting, and any other relevant matters as determined by VE OWFL in discussion with the OOEG participants. It is envisaged that core members of the OOEG will be the relevant Statutory Nature Conservation Bodies (SNCBs), as well as the local planning authority and owners and/or managers of the site(s) at which predator fencing is planned to be implemented. The Royal Society for the Protection of Birds (RSPB) and other relevant parties will also be invited to form part of the OOEG in an advisory capacity.

MONITORING PLAN

2.4.10 It is anticipated that monitoring will be required for all stages of the proposed predator exclusion program (i.e., pre-, during and post- predator exclusion). The detail of monitoring proposals will be developed pre-application and finalised in consultation with the OOEG. The following details will form the outline of the monitoring plan, that will be refined and adapted in consultation with the OOEG:

- Monthly baseline surveys during the breeding season.
- Monthly predator monitoring throughout the year.
- Use appropriate methods found in the Seabird monitoring handbook for Britain and Ireland (Walsh *et al* 1995).
- Annual reports recording changes in breeding success and productivity.

2.4.11 Pre-implementation monitoring will be undertaken at the selected site(s), with the goal being to quantify the abundance and distribution of predators. Where possible, this will be further supplemented with the collection of indirect and/or direct evidence of predation on seabirds. Pre-implementation monitoring will also incorporate collection of other relevant data, such as up-to-date seabird population counts and productivity data where possible. It is envisaged that population data can be obtained from the SMP database, but this could be supplemented with local or more recent datasets – consultation with site managers can be used to identify such additional data sources. Where needed, additional pre-implementation in-field monitoring of lesser black-backed gull could take place. The pre-implementation datasets will be used as a baseline, against which any population and/or productivity changes can be assessed to determine the success of the predator exclusion measure.

2.4.12 Following implementation of the predator exclusion fence, monitoring of both targeted predators and lesser black-backed gull populations will be undertaken by an experienced field surveyor/ornithologist and compared to data collected during pre-implementation monitoring. It is expected that monitoring will be undertaken at regular intervals during the operational phase of VE, with the frequency and duration of the monitoring program to be agreed with the OOEG. It is envisaged that frequent monitoring will initially be undertaken, and the monitoring program continued until the required compensation quantum is reached (or alternative adaptive management measures have been implemented if required, see paragraph 2.4.13).

ADAPTIVE MANAGEMENT

2.4.13 Should post-implementation monitoring reveal that the predator exclusion program is unsuccessful, or less successful than anticipated, an assessment will be undertaken to determine the reasons underlying the lack of success, and to inform the next steps. Notably, next steps will consist of identifying potential improvements (or extensions) to the implemented measure, based on potential issues discovered during the assessment. Should the assessment determine that the measure cannot be improved or extended sufficiently, then alternatives, such as contribution to the Marine Recovery Fund (or equivalent), may be considered in consultation with the OOEG. Depending on the reason for the program being unsuccessful the following steps will be considered:

- Extension of fencing (height or boundaries).
- Breeding habitat creation.
- More regular monitoring during breeding season.
- Bycatch reduction in foraging areas.

3 HABITAT CREATION

3.1 AIMS

3.1.1 In this section, ecological evidence on the feasibility and effectiveness of habitat creation for lesser black-backed gull is reviewed (Section 3.22.2), focusing on reviewing lesser black-backed gull habitat requirements and the effectiveness of habitat creation. Secondly, potential delivery sites are identified as part of a preliminary site selection process (Section 3.3), and finally a roadmap for compensation development and implementation is presented (Section 3.4).

3.2 ECOLOGICAL EVIDENCE

LESSER BLACK-BACKED GULL

3.2.1 See Section 2.2 for a general introduction to lesser black-backed gull.

HABITAT REQUIREMENTS

3.2.2 Lesser black-backed gull nest in colonies in a range of habitats, though generally showing a preference for flat, level-ground that is covered by close, short vegetation. A key factor in suitable nest locations is the availability of suitable shelter, reducing exposure to extreme weather and predators (Partridge 1978). Lesser black-backed gull often nest under bracken (*Pteridium sp*), burdock (*Articum* sp), heather (*Calluna sp*) and nettle (*Urtica sp)* (BirdLife International, 2023; Ross-Smith *et al*. 2015). Specifically, intermediate and tall vegetation (~100 to 400mm) has shown to be important in providing the optimal nest microclimate for breeding birds (Kim and Monaghan, 2015). Their natural habitats can range from flat open ground to sand dunes, rocky offshore islands, high moorland and ledges on cliff faces.

HABITAT CREATION

3.2.3 Creating or restoring suitable nesting habitat helps increase breeding site availability. It can help create new breeding habitat in areas where lesser black-backed gull have not nested previously, but could also restore breeding habitat that was lost when sites used previously have become overgrown (Ross-Smith, 2014).

3.2.4 Ross-Smith *et al.* (2015) outlined the benefit for lesser black-backed gull of providing a mixture of open ground and shelter, whilst avoiding the presence of taller, denser vegetation which prevents birds flying or walking in or out.

3.2.5 Such habitat creation/improvement could be delivered across a wide range of lesser black-backed gull habitat types. Existing techniques (see for example Ausden (2007)) that would align with lesser black-backed gull nesting requirements include:

- Grassland improvement – partial mowing (sward management) of areas of grassland to create height diversity throughout the area, to encourage the availability of both open ground for nesting, and higher vegetation for shelter;
- Sand dune restoration – the removal of scrub and trees (e.g. willow, gorse) to ensure an open vegetation profile for nesting is maintained; and
- Moorland restoration – e.g. the removal of scrubs and trees on moorland or areas of coastal heather to prevent succession and maintain suitable low, open breeding ground for breeding lesser black-backed gull.

3.2.6 In addition to improving the natural habitat, the provision of artificial shelter could also be beneficial (Ross-Smith *et al.,* 2015), although published evidence of artificial shelters for this species is limited, so further consultation with species experts would likely be needed to identify suitable designs should this option be progressed.

3.2.7 There is precedent for the use of habitat creation within compensation plans for offshore windfarm impacts. The Norfolk Projects Offshore Wind Farms (Norfolk Boreas, Norfolk Vanguard), as part of their predator fencing work, plan to carry out vegetation cutting to create suitable sward height (within areas around which predator fencing will be installed), and further habitat management options are included in the adaptive management plans (MacArthur Green and Royal Haskoning, 2022a). In addition to natural vegetation management, Norfolk Projects Offshore Wind Farms propose the use of railway sleepers as artificial shelter for nesting against (Royal Haskoning, 2022). More widely, habitat creation is also proposed as a standalone compensation measure for seabirds, with, for example, nesting habitat improvements and restoration of lost breeding range proposed as compensation for Sandwich tern for Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects (MacArthur Green and Royal HaskoningDHV, 2022b).

3.3 PRELIMINARY SITE SELECTION

3.3.1 See Section 2.3 for preliminary site selection completed to date.

3.4 ROADMAP

3.4.1 In the sections below, a proposed roadmap for the development of habitat creation as a compensation measure is provided.

SITE SELECTION

3.4.2 The preliminary site selection process outlined in Section 2.3 revealed several locations which support substantial coastal populations of lesser black-backed gull in England.

3.4.3 Proposed next steps for site selection comprise of:

1. From the list of sites presented in Section 2.3 above, identify locations where nesting habitat within or adjacent to the site could be created or improved. This will be completed through a review of management plans and other relevant documents, as well as a desk-based study in which land cover maps and aerial imagery will be explored to identify sites with potentially suitable habitat. This will take into consideration the habitat characteristics outlined in paragraph 3.2.2.
2. Identify relevant landowners and stakeholders to discuss:
   - Reasons behind a limited (or lack of) breeding presence by lesser black-backed gull in the identified areas, to determine whether habitat creation could aid the species at the identified site;
   - Opportunity and willingness for the implementation of habitat creation measures; and
   - Suitable habitat creation techniques at the identified site.
3. For sites which are deemed potentially suitable following the completion of step 1 and 2 above:

- Describe, and where possible quantify, the opportunity for habitat creation at the site. This is to include information, where available, on current habitats (e.g. habitat type, condition, extent), information on (historic) lesser black-backed gull presence, and options for habitat improvements; and
- Assess the feasibility of habitat creation or improvement measures at the selected site. Factors to be taken into consideration include, but are not limited to, local geography, access and anticipated cost. Further consultation with land managers and ecological management experts may be required at this point in the site selection process to establish appropriate techniques and feasibility.

4. For sites meeting the feasibility requirements in step 3, where possible quantify the expected benefit to lesser black-backed gull as a result of the habitat creation measure(s), to evidence that the potential site(s) can meet compensation requirements.
5. Liaison with stakeholders and landowners, working towards formal agreements. As part of this work, details such as land ownership and feasibility of permission/purchase will be investigated.

3.4.4 As highlighted in Section 2.3, should site selection be unsuccessful based on the criteria presented here, the search can be widened to investigate sites with smaller colonies, or within non-coastal areas (e.g. uplands).

3.4.5 In order to ensure that the compensation measure meets the requirement of maintaining the national site network coherence, there should be optimal connectivity between the potential delivery site and one or more SPAs. Therefore, should multiple potential sites for habitat creation be identified once site selection has been completed following the steps outlined above, prioritisation of potential sites is proposed to be based on connectivity with SPAs, as follows:

- Sites within MMF of AOE SPA – to prioritise sites as close as possible to the impacted SPA;
- Sites within MMF+1SD of AOE SPA;
- Sites in/adjacent to an SPA (other than AOE) with LBBG as a qualifying feature;
- Sites within MMF of an SPA (other than AOE) with LBBG as a qualifying feature; and
- Sites within MMF+1SD of an SPA (other than AOE) with LBBG as a qualifying feature.

3.4.6 Where needed, further reporting can be produced to evidence connectivity between any identified non-SPA delivery sites and the National Site Network. This would likely be completed through a review of known breeding dispersal behaviour and recorded dispersal distances in lesser black-backed gull, to evidence that birds hatched at the proposed habitat creation site can feasibly disperse to breed at sites within the National Site Network.

STAKEHOLDER ENGAGEMENT AND CONSULTATION

3.4.7 Stakeholder engagement will be required throughout the development of the habitat creation planning process.

3.4.8 In addition to consultation with local experts and stakeholders during the site selection process outlined above, compensation plans are being consulted upon with relevant stakeholders, most notably Natural England, before DCO application submission. Consultation on compensation plans to date has consisted of Natural England feedback on the shortlist and longlist of compensation measures (VE OWFL, 2022a; VE OWFL, 2022b), and further consultation is planned as the development of habitat creation compensation plans progresses.

3.4.9 Should consent of the project be granted, a steering group, to be termed the OOEG, as noted in paragraph 2.4.9, will be convened by VE OWFL. This group will help steer the delivery of any compensation measure implementation and maintenance, monitoring, reporting, and any other relevant matters as determined by VE OWFL in discussion with the OOEG participants It is envisaged that core members of the OOEG will be the relevant Statutory Nature Conservation Bodies (SNCBs), as well as the local planning authority, and owners and/or managers of the site(s) at which habitat creation is planned to be implemented. The Royal Society for the Protection of Birds (RSPB) and other relevant parties will also be invited to form part of the OOEG in an advisory capacity.

3.4.10

MONITORING PLAN

3.4.11 It is anticipated that monitoring will be required for all stages of the proposed habitat creation program (i.e., pre-, during and post- habitat creation). The details of monitoring proposals will be discussed with the OOEG, with key details to be agreed upon likely to include the frequency, duration and nature of monitoring methodology, as well as data analysis and reporting requirements.

3.4.12 Pre-implementation monitoring will be undertaken at the selected site(s), with the goal being to establish the current habitat condition and extent of required improvements. Pre-implementation monitoring will also incorporate collection of other relevant data, such as up-to-date seabird population counts and productivity data where possible. It is envisaged that population data can be obtained from the SMP database, but this could be supplemented with local or more recent datasets – consultation with site managers can be used to identify such additional data sources. Where needed, additional pre-implementation in-field monitoring of lesser black-backed gull could take place. The pre-implementation datasets will be used as a baseline, against which any population and/or productivity changes can be assessed to determine the success of the habitat creation measure.

3.4.13 Following implementation of the habitat creation measure, post-implementation monitoring of the habitat and lesser black-backed gull populations will be undertaken and compared to data collected during pre-implementation monitoring. It is expected that monitoring will be undertaken at regular intervals during the operational phase of VE, with the frequency and duration of the monitoring program to be agreed with the OOEG. It is envisaged that monitoring will initially be undertaken annually, and the monitoring program continued until the required compensation quantum is reached (or alternative adaptive management measures have been implemented if required, see paragraph 2.4.13).

ADAPTIVE MANAGEMENT

3.4.14 Should post-implementation monitoring reveal that the habitat creation program is unsuccessful, or less successful than anticipated, an assessment will be undertaken to determine the reasons underlying the lack of success, and to inform the next steps. Notably, next steps will consist of identifying potential improvements (or extensions) to the implemented measure, based on potential issues discovered during the assessment. Should the assessment determine that the measure cannot be improved or extended sufficiently, then alternatives, such as contribution to the Marine Recovery Fund (or equivalent), may be considered in consultation with the OOEG.

4 COMBINING MEASURES

4.1.1 It should be noted that whilst predator fencing and habitat creation are here presented as standalone measures to allow progression of both options as standalone compensation measures, a combination of both measures may be required or desirable. In particular, habitat creation or improvement may be needed or beneficial within a proposed fenced area to increase success. In cases where habitat creation may be needed as part of the delivery of predator fencing, the relevant roadmap steps for habitat creation can be incorporated into the workstreams for predator fencing as required (e.g. habitat creation included in the consultation, implementation plans and monitoring plans for predator fencing).

5 CONCLUSION

5.1.1 This document has collated and presented the ecological evidence for predator exclusion fencing and habitat creation, outlined site selection work progressed to date, and provided a roadmap for compensation development and implementation for both compensation measures. VE OWFL is confident that the proposed compensation measures are ecologically effective. As outlined in the roadmap, site selection, stakeholder engagement and implementation planning will be continued by VE OWFL to further ensure and evidence that the proposed measures are viable and can be appropriately secured within the project DCO.

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11 APPENDIX C - PREVIOUS LESSER BLACK-BACKED GULL SITE SELECTION NOTE SUBMITTED AT PEIR

FIVE ESTUARIES
OFFSHORE WIND FARM

FIVE ESTUARIES OFFSHORE WIND FARM

LESSER BLACK-BACKED GULL COMPENSATION – SITE SELECTION NOTE

Document Reference	004755323-01
Revision	A
Date	May 2023

Project	Five Estuaries Offshore Wind Farm
Sub-Project or Package	Work Package 1
Document Title	Lesser Black Backed Gull Compensation – Site Selection Note
Document Reference	004755323-01
Revision	A

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
A	May-23	Final for issue	GoBe	GoBe	VE OWFL

CONTENTS

TABLES

DEFINITION OF ACRONYMS

Term	Definition
AON	Apparently Occupied Nests
AOT	Apparently Occupied Territories
IND	Individuals
SMP	Seabird Monitoring Programme
SPA	Special Protection Area

1 INTRODUCTION

1.1 BACKGROUND

1.1.1 Five Estuaries Offshore Wind Farm (VE) is a proposed extension to the operational Galloper Offshore Wind Farm. VE will be situated approximately 37 km off the coast of Suffolk, England (at its closest point).

1.1.2 In order to allow for sufficient time to engage with stakeholders and develop compensation plans, VE Offshore Wind Farm Ltd (VE OWFL) is investigating compensation options for species deemed likely to require compensation at this early stage in the pre-application period, however it should be noted that this does not prejudice the outcome of the ongoing HRA process.

1.1.3 AOE SPA is 15 km away from the VE array, which is within the mean-max foraging range (MMF) of breeding lesser black-backed gull, a protected feature of AOE SPA. Given the proximity of VE to the AOE SPA and results of preliminary assessment, it is deemed likely that there will be an AEoI in relation to the LBBG feature of the AOE SPA from VE, and that compensation for this effect will thus be required.

1.1.4 VE OWFL has identified potential compensation measures for lesser black-backed gull, and following shortlisting of compensation options and subsequent stakeholder feedback, it was considered that the compensation options of predator exclusion fencing and habitat creation are deemed most feasible for lesser black-backed gull. Subsequently, preliminary site selection to identify potential locations for compensation delivery was commenced. For further detail on the ecological evidence for these compensation measures and the preliminary site selection process, please refer to the document titled "Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap" (VE OWFL, 2023[1]).

1.1.5 In short, as part of preliminary site selection, lesser black-backed gull colonies, both within and outside SPAs, which could provide potential locations for compensation delivery were identified using the Seabird Monitoring Programme (SMP) survey data.[2] All lesser black-backed gull colony count data were downloaded and filtered according to the following criteria:

- Country = England
- Year = 1998-2022. The most recent complete colony census was Seabird 2020, which was surveyed from 1998-2002. Therefore, including data from 1998 onwards ensures comprehensive coverage of all colonies.
- Site type = "coastal" or blank (to remove colonies labelled "inland")
- Site habitat = "natural" or blank (to remove colonies on "man-made structures")
- Count ≥ 50 (to only extract larger colonies, as colonies with few breeding pairs are unlikely to be large enough to provide sufficient compensation)

1.1.6 For the remaining list of sites, only the most recent entry for each site was retained.

[1] VE OWFL (2023), 'Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap

[2] Seabird Monitoring Programm [redacted] Accessed August 2022]

1.1.7 For sites at which “site type” and “site habitat” were left blank, the site coordinates were plotted on a map, using the grid reference provided in the SMP data, to find out whether the colony was coastal or inland, and located on natural or man-made structures. All remaining inland and/or man-made colonies were removed.

1.1.8 The resulting list of potential sites is shown in Table 1.1 below.

Table 1.1: Coastal, natural lesser black-backed gull colonies in England with a count of 50 or more Apparently Occupied Nests or Apparently Occupied Territories (data source: Seabird Monitoring Programme[3]). AON: Apparently Occupied Nests; AOT: Apparently Occupied Territories; IND: Individuals. * indicates SPAs for which lesser black-backed gulls are a qualifying feature.

Master site	Site	County	Count Year	Count type	Count
Alde Ore Estuary SPA*	Havergate Island	Suffolk	2019	AON	1670
	Orfordness Beach	Suffolk	2018	AON	97
Blackwater Estuary SPA	Pewet Island	Essex	2009	IND	171
Bowland Fells SPA*	Langden Head	Lancashire	2018	AON	5573
Coquet Island SPA	Coquet Island RSPB	Northumberland	2005	AON	50
Farne Islands SPA	Farne Islands	Northumberland	2019	AON	681
Hamford Water SPA	Hamford Water	Essex	2009	AON	600
Highbridge and Isleport	Highbridge	Somerset	2016	AON	131
Isles of Scilly SPA*	Annet	Isles of Scilly	2006	AOT	281
	Great Arthur	Isles of Scilly	2015	AON	76
	Great Ganilly	Isles of Scilly	2015	AON	70
	Gugh	Isles of Scilly	2019	AON	422
	Norwethal	Isles of Scilly	2015	AON	102
	Puffin Island	Isles of Scilly	2015	AON	97
	Samson	Isles of Scilly	2015	AON	978
	Shipman Head	Isles of Scilly	1999	AON	50
	St Helen's	Isles of Scilly	2015	AON	448
	Tean	Isles of Scilly	2015	AON	136
	White Island (St Martin's)	Isles of Scilly	2015	AON	106
Lundy	Lundy	Devon	2021	AON	91
Maryport	Maryport	Cumbria	2013	AON	95
Medway Estuary and Marshes SPA	Greenborough	Kent	2018	IND	56

[3] Seabird Monitoring Programme database [redacted]

Master site	Site	County	Count Year	Count type	Count
Morcambe Bay and Duddon Estuary SPA*	Hodbarrow RSPB	Cumbria	2009	AON	250
	South Walney	Cumbria	2020	AON	381
North Norfolk Coast SPA	Blakeney Point	Norfolk	2001	AON	171
	Holkham NNR	Norfolk	2014	AON	85
Ribble and Alt Estuaries SPA*	Ribble Estuary	Lancashire	2021	AON	4489
South Solway	RAF Carlisle	Cumbria	2009	AON	520
	Rockcliffe Marsh	Cumbria	2019	AON	260
St Martin's Island	St Martin's	Isles of Scilly	1999	AON	52
Steep Holm	Steep Holm	Avon	2018	AON	596
The Wash SPA	Outer Trial Bank	Norfolk	2018	AON	1294

1.2 AIMS AND OBJECTIVES

1.2.1 In this site selection note, the potential for compensation delivery at each of the sites identified in Table 1.1 is considered in more detail. The information collated in this note is based on a review of publicly available information (e.g. site descriptions and management plans), expert ornithological opinion, and investigation of the habitat characteristics at and near the potential site, using publicly available habitat maps and satellite imagery (Google Maps).

1.2.2 Connectivity between the proposed sites and Alde Ore Estuary SPA was also considered. Connectivity for each site was based on the LBBG tracking study from Orfordness (Thaxter *et al.*, 2012)[4], taking into account both foraging ranges during the breeding season and migration routes during the pre- and post-breeding periods.

1.2.3 Note that whilst connectivity to Alde Ore Estuary SPA is described here to establish optimal connectivity between the potential compensation delivery site and the impacted site, connectivity with Alde Ore Estuary SPA is not a prerequisite for feasible compensation. As discussed in "Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap" (VE OWFL, 2023[5]), compensation measures should meet the requirement of maintaining the national site network coherence.

[4] Thaxter *et al.* (2012). Measuring the interaction between marine features of Special Protection Areas with offshore wind farm development zones through telemetry: second year report. BTO Research Report No. 610.
[5] VE OWFL (2023), 'Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap'

1.2.4 Thus, whilst prioritising sites close to, and with connectivity to, Alde Ore Estuary SPA is desired, alternative sites for compensation delivery, such as sites near other SPAs, can also be considered should compensation delivery at sites with connectivity to Alde Ore Estuary SPA be deemed infeasible (e.g., following further stakeholder engagement or land owner discussions). The document “Lesser black-backed gull compensation - ecological evidence, preliminary site selection and roadmap” (VE OWFL, 2023) outlines the prioritisation of potential sites, based on connectivity with SPAs, in further detail.

2 SITE SUITABILITY NOTE

2.1 LESSER BLACK-BACKED GULL COMPENSATION SITES

2.1.1 All SPA sites listed in Table 1.1 were considered and assessed for suitability for any habitat management/creation for LBBG breeding sites. The potential for compensation work for each site is highlighted, prioritising sites close to the Alde Ore Estuary SPA.

Table 2.1 Site selection notes and potential for compensation work at each site. * indicates SPAs for which lesser black-backed gulls are a qualifying feature.

Master Site	Site selection notes	Potential
Alde Ore Estuary SPA*	> Potential to work with landowners to create LBBG nesting habitat nearby to the Alde Ore Estuary SPA.	> High potential
	> Expansion/work with nearby nature reserves to create nesting habitat.	> Moderate potential
	> Potential to work with other local major onshore infrastructure developments could be considered where suitable land for habitat restoration is available.	> High potential
	> Farmland north of Alde Ore SPA. The coast is eroding quickly here so farmland may be abandoned or available to purchase, which may provide good opportunity to secure areas for habitat creation.	> Moderate potential (long-term viability unknown)
	> Rafts and/or habitat creation/restoration could be considered in nearby suitable broads/lakes. Further research would be needed to find out the rate at which the area is eroding into the sea.	> High potential

Master Site	Site selection notes	Potential
Blackwater Estuary SPA	> Potential to work with landowners to create LBBG nesting habitat.	> Moderate potential
Bowland Fells SPA*	> Large managed moorland, no connectivity and already managed for wildlife. Might be hard to expand/restore any habitat here.	> Low potential
Coquet Island SPA	> Already managed for terns, gulls and auks, thus likely limited opportunity here.	> Low potential
	> Local Nature Reserves on mainland near to Coquet. Habitat creation, e.g. more pools with islands for nesting sites could be explored here.	> Low potential
	> No connectivity.	> Low potential
Farne Islands SPA	> Already managed for terns, gulls and auks, thus likely limited opportunity here.	> Low potential
	> No connectivity.	> Low potential
Hamford Water SPA	> Nesting habitat creation on the SPA or on the rough grassland near the north end of the SPA could be a feasible option.	> High potential
	> Proposed Realignment site – Shingle bank construction for compensation for Bathside Bay Container Terminal (BBCT) - potential to work with developer.	> High potential

Master Site	Site selection notes	Potential
Highbridge and Isleport	> No connectivity.	> Low potential
Isles of Scilly SPA*	> Already a lot of work being undertaken on the islands for seabirds, probably little scope for more.	> Low potential
	> No connectivity.	> Low potential
Lundy	> As above with Isles of Scilly.	> Low potential
Maryport	> No connectivity, and small lesser black-backed gull population only.	> Low potential
Medway Estuary & Marshes SPA	> Scrubland near to the SPA could be suitable for habitat restoration.	> Moderate potential
	> Farmland adjacent to the SPA could be suitable for habitat creation.	> Moderate potential
Morcambe Bay and Duddon Estuary SPA*	> No connectivity.	> Low potential
North Norfolk Coast SPA	> Difficult to create/restore near here as the coastline around both sites are reserves/managed for wildlife already.	> Low/moderate potential
	> Consider work with local nature conservation groups to create breeding habitat.	> Low/moderate potential

Master Site	Site selection notes	Potential
Ribble and Alt Estuaries SPA*	> No connectivity.	> Low potential
South Solway	> No connectivity.	> Low potential
Steep Holm	> No connectivity	> Low potential
	> Potential to work with private landowners to manage land for LBBG.	> Low potential
	> Flat Holm is nearby, which is already partway through a funding project to manage habitats and wildlife.	> Low potential
The Wash SPA	> Could conduct work to maintain the habitat on the bank, and/or consider rafts nearby to expand breeding potential.	> Low/moderate potential

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