

Morecambe Offshore Windfarm: Generation Assets

Development Consent Order Documents

Volume 4

Compensation Implementation and Monitoring Plan

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Glossary of Acronyms

AfL	Agreement for Lease
AEol	Adverse effect on integrity
BTO	British Trust for Ornithology
CIMP	Outline Compensation Implementation and Monitoring Plan
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ESO	Electricity System Operator
HNDR	Holistic Network Design Review
HRA	Habitats Regulations Assessment
LBBG	Lesser black-backed gull
LBBGCSG	Lesser black-backed gull Compensation Steering Group
MRF	Marine Recovery Fund
NE	Natural England
OSP	Offshore Substation Platform
KAMT	Kenneth Allsop Memorial Trust
OTNR	Offshore Transmission Network Review
RIAA	Report to Inform Appropriate Assessment
SoS	Secretary of State
SSSI	Site of Special Scientific Interest
UK	United Kingdom
WTG	Wind Turbine Generator

Glossary of Unit Terms

GW	Gigawatt
ha	hectare
km	kilometre

Glossary of Terminology

Application	This refers to Morecambe Offshore Wind Limited's application for a Development Consent Order (DCO). An application consists of a series of documents and plans which are published on the Planning Inspectorate's (PINS) website.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
Inter-array cables	Cables which link the WTGs to each other and the OSP(s).
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes OSP(s), interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV cables and associated grid connection infrastructure such as circuit breaker infrastructure. Also referred to in this chapter as the Transmission Assets, for ease of reading.
Offshore substation platform(s)	A fixed structure located within the windfarm site, containing electrical equipment to aggregate the power from the WTGs and convert it into a more suitable form for export to shore.
Wind turbine generator (WTG)	A fixed structure located within the windfarm site that converts the kinetic energy of wind into electrical energy.
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables will be present.



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1 Introduction

1.1 Project Background

1. Morecambe Offshore Windfarm Ltd (MOWL) was granted a Development Consent Order (DCO) for the Morecambe Offshore Windfarm Generation Assets (hereafter 'the Project') by the Secretary of State (SoS) for the Department of Energy Security and Net Zero (DESNZ) on 1st December 2025. The Project was one of six projects selected by The Crown Estate in its Offshore Wind Leasing Round 4 in 2021. The Agreement for Lease (AfL) for the project was received in 2023.
2. This document is an update to the outline Compensation Implementation and Monitoring Plan (CIMP) submitted to the Examination of the Project during the pre-consent period, and has been prepared in accordance with the requirements of Schedule 7 Part 1 of the DCO.
3. The Project includes the Generation Assets to be located within the offshore windfarm site (wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSPs).
4. A separate DCO consent for the Transmission Assets associated with the Morecambe Offshore Windfarm is, at the time of writing, in the decision phase of a separate DCO application.

1.2 Purpose of this document

5. This document sets out the lesser black-backed gull *Larus fuscus* (LBBG) CIMP, which has been developed to be submitted to the SoS for approval, as required by Schedule 7 Part 1 (paragraph 2(b)) of the DCO. The compensation measure has been developed in accordance with the conditions set out in the DCO, which were written following the SoS' decision that an adverse effect on integrity (AEol) cannot be ruled out for the LBBG features of Morecambe Bay and Duddon Estuary Special Protection Area (SPA) and Ribble and Alt Estuaries SPA. Prior to the SoS' decision, it was MOWL's position that AEol could be ruled out for these sites, and therefore the compensation proposals were initially presented without prejudice to this position. Natural England (NE) agreed that there would be no AEol for the Project alone, but considered that AEol for in-combination effects could not be ruled out. This LBBG CIMP has been produced by MOWL, in consultation with the Lesser black-backed gull Compensation Steering Group (LBBGCSG), given that consent for the Project has been granted and compensation for LBBG gull is required by the conditions set out in the DCO.
6. The detail included in this CIMP has been developed in accordance with the compensatory measures described in the Habitats Regulations Assessment

Without Prejudice Derogation Case that accompanied the DCO application (Document Reference 4.11). The Habitats Regulations Assessment Without Prejudice Derogation Case provided detailed evidence supporting the potential compensation measures for LBBG.

7. This LBBG CIMP includes all details, where relevant for the compensation measure (as given in **Section 4** and **Section** Error! Reference source not found.), of the:
 - Scale and location
 - Design
 - Delivery process
 - Delivery timeframe
 - Monitoring and adaptive management
 - Reporting requirements
8. A detailed delivery plan for the implementation of management and monitoring for the period 2026 to 2030 (currently assumed to the period up to the commencement of full operation of the windfarm) is provided in **Appendix A**. This Appendix has been subject to consultation with the LBBGCSG, as set out in Annex 1 to **Appendix A**. A further plan for delivery for the operational period will be provided to the SoS for approval at that time. A separate plan of work for the LBBGCSG is being submitted separately for approval by the SoS, in accordance with Schedule 7 Part 1 paragraph 4 of the DCO.

2 Background

9. The Report to Inform an Appropriate Assessment (RIAA; document reference 4.9) for the Project concluded that there would be no risk of an AEol for the LBBG features of Morecambe Bay and Duddon Estuary SPA and Ribble and Alt Estuaries SPA. This is because MOWL considered that the predicted mortality for the Project alone apportioned to these SPAs (0.33 birds and 0.69 birds respectively) was so small that it would make no meaningful contribution to in-combination effects. However, NE, in its representations to the Examination for the Project, did not agree with MOWL's position on this matter. While it agreed that there would be no AEol as a result of Project alone effects, it considered that the Project would contribute to in-combination effects, for which AEol could not be ruled out. In the determination of the DCO, the SoS agreed with NE's position and therefore set out requirements in the DCO of compensation for LBBG.
10. This CIMP has been further developed from MOWL's initial without prejudice derogation case and compensation proposals that were submitted to the Examination with the DCO application (Document Reference 4.11). It provides detail of the delivery and monitoring of compensation measures at Steep Holm Island, located in the Bristol Channel (**Section 4**). Different to previous versions (i.e. the outline CIMP), this version does not contain any alternative measures (previously measures at Banks Marsh and South Walney) as MOWL has opted for a single measure situated at Steep Holm, which is predicted to provide sufficient compensation for the requirements set out in the DCO, as per the Project's contribution to in-combination effects on LBBG.
11. The DCO (Schedule 7 Part 1 paragraphs 1-3) includes the option to deliver compensation through a contribution to strategic measures, such as the Marine Recovery Fund (MRF). However, at this stage delivery is proposed at a Project-led level, through implementation of measures at Steep Holm. The Project does not, therefore, expect that use of strategic measures will be required, but will retain this option in the event that adaptive management is necessary. The potential requirement for Adaptive Management is set out in **Section 4.4**, in accordance with Schedule 7 Part 1, paragraph 6e(iii) of the DCO. In addition, the DCO maintains the option of a contribution towards strategic compensation measures should these become available. Further details of these potential measures can be found in the without prejudice derogation case and compensation proposals document (Document Reference 4.11).
12. It is noted that MOWL began the measures at Steep Holm in 2025, ahead of a decision from the SoS as to whether such measures would be required. To that end, an interim LBBGCSG was established with agreed Terms of Reference and proposals for implementation of the first-year measures set out in a methodology document, which was developed with the interim LBBGCSG,

whose members include MOWL, NE and the Island managers (Kenneth Allsop Memorial Trust; KAMT). The RSPB later joined the interim LBBGCSG. In accordance with the requirements of the DCO, the local authority (North Somerset Council) have also been invited to join the LBBGCSG, but a response has not yet been received. These parties (pending a response from North Somerset Council) form the core members of the LBBGCSG.

3 Consultation

13. **Table 3.1** presents a summary of relevant consultation undertaken to inform the development of the compensation measures to date. This has occurred primarily through the LBBGCSG, and has informed the development of the CIMP. It captures any key decisions, agreements, and where relevant, any outstanding issues under discussion (with clarity as to the steps necessary to resolve any such matters), noting that there are currently no outstanding issues.
14. **Table 3.2** presents specific comments received by Natural England on the previous version of the CIMP (Rev 03) and how these have been addressed.

Table 3.1 Summary of Consultation

Consultee	Timeframe/ Date(s)	Summary of consultation response
KAMT and NE	Initial meetings started in April 2024 and continued on an ad hoc basis until December 2024	Initial discussions on site suitability and logistics for Steep Holm.
KAMT	HSE site visit 1 November 2024	Site visit for MOWL to draft HSE Report to inform recommendations for contractor welfare and discuss practicalities of delivering compensation measure
KAMT and contractors	December 2024 to March 2025	Contractor meetings to discuss individual work package requirements for baseline surveys and scrub clearance and to refine methodology for delivering the initial works. Contract negotiations and on-boarding with Project Team. Discussions on HSE improvements and commercial terms with KAMT.
Interim LBBGCSG	Established January 2025 and monthly meetings to date.	Establishment of the interim LBBGCSG and development and agreement of the Terms of Reference and methodology for habitat management measures on Steep Holm. Contractor attendance as required to plan the delivery of works in 2025-26.
NE	Representations in examination on scale of compensation	NE will advise on appropriate calculations to be used for the final agreed compensation quantum.
KAMT and contractors	30 April 2025	Site visit with contractors to discuss work programme delivery and draft site risk assessments for individual work packages
LBBGCSG meetings	October 2025- January 2026	Consultation and discussion on the management and monitoring undertaken during 2025, including issue of the annual report and consultation on the 2026-2030

Consultee	Timeframe/ Date(s)	Summary of consultation response
		Implementation and Monitoring Plan (Appendix A). Comments and advice on the latter were incorporated into the report, details of which are provided in Annex 1 of Appendix A . No points of disagreement within the LBBGCSG were identified.
LBBGCSG	13 February 2026	Consultation on LBBG CIMP (Rev 03). Received comments have been addressed in this document (Rev 04) as appropriate.

Table 3.2 Natural England Comments on Rev 03 of the LBBG CIMP (6th March 2026)

Comment	Response
Natural England recognises that drone habitat surveys may not be necessary annually after 2027 once the whole area of proposed scrub clearance is complete and mapped and considers that another survey in 2030 at the end of the current CIMP is sensible. However, we welcome the intention to check vegetation structure and regrowth as part of the proposed annual gull monitoring and management works in case vigorous re-growth prior to 2030 necessitates remedial measures.	Noted. No changes to the CIMP required.
Natural England considers that considerable quantities of Alexanders seed may be stored in the seedbank and may germinate in areas recently cleared of scrub. We therefore welcome the intention of undertaking clearance of Alexanders prior to lesser-back-backed gull establishment of nests in March and April if identified as a constraint to gull nesting, in addition to planned clearance works in the period September to November.	Noted. No changes to the CIMP required.
Use of nocturnal thermal drone surveys is likely to be substantially more efficient at detecting mammals such as muntjac than diurnal RGB surveys. Nevertheless, estimating the total population of muntjac on the island using thermal drone surveys alone may not be entirely realistic due to the species small size, unobtrusive nature and ability to move around under thick vegetation. We note however that thermal drone surveys should at least reliably record any muntjac use of the newly cleared or managed open areas at the time of the survey.	Additional text added to Paragraphs 52 and 58 to confirm approach to monitoring of muntjac populations, noting that absolute counts of deer may not be possible.
Natural England advises that an increase in the lesser black-backed gull nesting population sufficient to satisfy the Project's compensation quantum will need to be achieved and evidenced before any change to the frequency of monitoring is considered.	Additional text added to Paragraph 45 to confirm that the frequency of monitoring will only be reduced once it has been confirmed that the required quantum of additional LBBG nests is being met, and

Comment	Response
	subject to agreement with the LBBGCSG.
<p>Natural England welcomes the intention to monitor for signs of predation of lesser black-backed gull eggs by muntjacs, particularly if any suspected damage or loss could be cross-referenced with thermal drone results. Recording nest damage or egg loss may help to inform whether adaptive management measures are necessary in this regard.</p>	<p>Additional text added to Paragraph 82 to confirm evidence of predation/disturbance to LBBG nests by muntjacs will be cross-referenced to thermal drone results, where possible.</p>

4 Habitat Management

4.1 Scale and Location of Compensation

15. The Steep Holm habitat management measures are being undertaken at Steep Holm Island (approximate centroid 51°20.375'N; 3°6.503'W), which is located in the Bristol Channel approximately 8.5 km west of Weston-super-Mare and 13 km south of Cardiff. Measures are being implemented on an area known as the Plateau, in the centre of the island, the location of which is shown on Figure 2-1 of **Appendix A**.
16. It has been agreed by the LBBGCSG that an area of scrub totalling approximately 0.96 ha will be cleared within this area (refer to Figure 2-2 in **Appendix A**) to create new LBBG nesting habitat. Approximately 0.75 ha of scrub was cleared as part of the first phase of the compensation delivery in autumn 2025, and therefore approximately 0.21 ha remains to be cleared.
17. This area is derived from a nest density estimate of 452 nests / ha (Ross-Smith et al., 2015; refer to Annex 2A of the Derogation Case (Document Reference 4.11)) which is applied to the calculated quantum of compensation. These calculations are based on an updated method, following the confirmation by the SoS in their HRA (DESNZ, 2025) that:
 - The mean (or central impact value; CIV) predicted mortality should form the basis of the compensation quantum;
 - A 3:1 compensation ratio should be utilised to provide confidence on the measure's success; and
 - Philopatry (i.e. the likelihood that birds will return to their natal site to breed, and conversely the likelihood that they would enter the wider population) should be taken into account.
18. Therefore calculation of the required quantum of compensation is as follows below.

Predicted mortality (CIV) = 1.02 adults

Fledglings required to reach 1.02 adults of breeding age: $1.02 / (0.798 \times 0.885 \times 0.885 \times 0.885^1) = 2.08$ fledglings

To account for philopatry: $2.08 / 0.470^2 = 4.42$ fledglings

Adjusted for productivity: $4.42 / 0.45^3 = 9.83$ nesting pairs

3:1 compensation ratio: $3 \times 9.83 = 29.50$ nesting pairs

19. At a density of 452 nests / ha , the full 0.96 ha will provide sufficient space for up to 434 LBBG pairs, and 0.75ha (the area cleared in the first phase of the compensation delivery) would provide space for 339 nests. As set out above, MOWL estimates that 30 nests (29.50) will sufficiently compensate for the predicted mortality as a result of the Project's operation. At a density of 452 nests / ha, 30 nests would be equivalent to an area of 0.07 ha (664 m²).
20. The full 0.96 ha of clearance would be approximately 14 times the required area to compensate for the predicted mortalities (1.02) alone, therefore there is high confidence that the scale of clearance will significantly over-compensate for the potential loss of LBBGs from their respective SPAs.
21. These measures will continue be delivered for the operational lifetime of the wind turbine generators (WTGs) (35 years).
22. The DCO (Schedule 7 Part 1 paragraphs 2-3) includes the option to deliver compensation through a contribution to strategic measures, such as the Marine Recovery Fund (MRF). However, at this stage delivery is proposed at a Project-led level, through the implementation of measures at Steep Holm. The Project does not, therefore, expect that use of strategic measures will be required, but will retain this option in the event that adaptive management is required.

4.2 Design

23. The compensation measures at Steep Holm comprise the following elements:

¹ Based on Horswill and Robinson (2015) LBBG demographic rates, except herring gull rate (0.798) for juvenile survival due to low confidence in LBBG rate.

² From Horswill and Robinson (2015). This rate was proposed by Natural England in its submission to the Examination [REP5a-070]. It is noted that the ExA and SoS suggested that the inverse of this value should be used (i.e. $1 - 0.470 = 0.530$). However, The Applicant agrees that Natural England is correct in this respect, as natal dispersal (0.470) represents the proportion of chicks entering the wider population, which is the number relevant to delivery of the compensation to the wider NSN. The inverse (0.530) would estimate the number of birds returning to the island to breed.

³ From JNCC (2021)

- Pre-implementation baseline surveys to establish the extent of scrub, LBBG population and productivity.
 - Clearance of approximately 0.96 ha scrub (approximately 0.75ha of which was cleared during 2025) from the Plateau area to increase available habitat for nesting LBBG.
 - Ongoing management of the cleared area and adjacent existing open habitat (total area approximately 1.6 ha; refer to Figure 2 in **Appendix A**) to maintain suitable open habitat for nesting gulls throughout the life of the Project.
 - Monitoring to inform delivery, establish the success of compensation and, if required, identify adaptive management measures.
24. Information on the proposed measures is provided below; refer also to **Appendix A**. Future updates will be undertaken if required, subject to discussion and agreement with the LBBGCSG, and will be submitted for further approval by the SoS, in accordance with the requirements of the DCO.

4.2.1 Pre-compensation baseline surveys

4.2.1.1 Habitat survey

25. A habitat survey was conducted prior to the implementation of the scrub clearance and vegetation management to assess the structure and distribution of vegetation on the 30th April 2025, which was deemed an appropriate time during the LBBG breeding season. The results of the 2025 surveys are documented in the 2025 Annual Lesser Black-Backed Gull Compensation Report (ref: MOR001-FLO-CON-ENV-RPT-0165) that will be submitted separately to the SoS, in accordance with Schedule 7 Part 1 paragraph 9 of the DCO.
26. A drone (unmanned aerial vehicle) was used to carry out the habitat survey. The drone survey was able to clearly differentiate the extent of scrub from areas of Alexanders (*Smyrniium olusatrum*) and open ground. The drone surveys were followed up by ground truthing habitat surveys to validate the drone surveys. Ground truthing will not be required for the 2026 and 2027 surveys (see below), as significant changes in vegetation type are unlikely to have occurred. However further ground truthing will take place in 2030 following to identify any changes in scrub and vegetation five years after the initial baseline surveys.

Aims and objectives

27. The key aim of the pre-compensation habitat survey was to provide a baseline assessment of the extent and, if possible, maximum height of the scrub and vegetation present on Steep Holm.
28. Objectives of the habitat surveys include:

- Establishment of a baseline of scrub and other vegetation types' extent against which ongoing management measures will be measured;
- Initial assessment of the availability of suitable habitat for LBBGs across the island;
- Confirmation of where habitat management (scrub clearance and vegetation management) was to be located; and
- Assessment of the locations of potential sources of disturbance (e.g. presence of public footpaths and buildings).

Scale and location

29. The habitat survey was conducted over the whole island of Steep Holm, including as far as practically possible, the cliffs and the plateau as shown on Figure 2-1 in **Appendix A**.

Timing

30. The initial pre-compensation habitat survey took place during the 2025 LBBG breeding season (30th April; season being March – August). Consideration was given to measures to minimise disturbance to nesting birds at this time (e.g. the drone was operated at 50 m above ground level), although disturbance risk from the drone operation is considered to be low. These will be repeated in 2026 and 2027 to confirm the extent of the scrub clearance completed, and again in 2030 (including ground truthing) to identify wider vegetation changes across the island (refer to **Appendix A**).

Habitat survey methodology

31. A drone was used to record aerial imagery over the whole of Steep Holm Island, leading to the creation of a predicted habitat map. Following which, ground truthing surveys were additionally carried out on the 13th July 2025 to validate or correct the predicted habitat map and collect further information on habitats within the Site (e.g. vegetation height / structure, plant species present, wing shelter / break opportunities, ground slope, and if present: number of nests).
32. Details of the drone (and ground truthing) methodology, including suitable imagery resolution requirements and data analysis outputs were discussed with the Contractor prior to the survey taking place.
33. In addition to drone-based monitoring of vegetation extent, checks of vegetation structure and regrowth will be undertaken as part of the proposed gull monitoring and management works. The checks will be undertaken twice each year, see **Appendix A** for further details.

Fieldwork

34. Objectives of the drone survey fieldwork conducted on Steep Holm included:

- photographing the entire island of Steep Holm including cliffs and the plateau to produce one complete image of the vegetation on the island; and
- deriving a habitat map from the aerial imagery to show extent of vegetation types, georeferenced to enable future monitoring as part of the CIMP.

Data analysis

35. Images collected from the drone survey were used to produce a digital surface model. Objectives of the digital surface model included:
- provision of an estimate of the extent and location of scrub cover over the whole island, differentiated to different vegetation types where possible;
 - provision of an estimate of the extent and location of other vegetation types over the whole island;
 - provision of an estimate of the percentage of scrub on the plateau only; and
 - provision of an estimate of the range of vegetation heights on the plateau, if possible.

4.2.2 Scrub Clearance and Vegetation Management

4.2.2.1 Aims and objectives

36. The aim of the scrub clearance and vegetation management is to create and maintain additional open habitat at Steep Holm suitable for nesting LBBG.

4.2.2.2 Scale and location

37. An area of approximately 0.96 ha scrub will be cleared from the plateau area, with 0.75 ha of this cleared in 2025, as shown outlined in black and pink in Figure 2-2 of **Appendix A**. Ongoing management of this area, together with adjacent existing habitat (shown outlined in yellow on Figure 2-2 of **Appendix A**; total area approximately 1.6ha) will be undertaken to maintain suitable nesting conditions for LBBGs.

4.2.2.3 Timing

38. Scrub clearance and vegetation management works on Steep Holm will be implemented during the LBBG non-breeding season (September to February), after the birds have departed the island for their wintering grounds, as did the 2025 works.
39. As winter weather conditions are likely to result in logistical constraints for the scrub clearance and vegetation management works, the aim will be to

complete the scrub clearance and vegetation management works between September to November.

40. Ongoing management of vegetation will be undertaken during the same period each year for the lifetime of the Project, though potentially with reduced frequency during the post-2030 period (subject to monitoring results and discussion with the LBBGCSG; see Sections 2.7 and 5 of **Appendix A**).
41. If required, additional clearance of Alexanders may also be undertaken outside of this period, e.g. in March/April (prior to LBBG settlement) where the plant may be growing vigorously at the time where LBBGs may be settling to nest. This is not proposed for the period to 2030, but may be considered for future adaptive management if monitoring suggests that this would be beneficial.

4.2.2.4 Methodology

42. Scrub clearance (location illustrated on Figure 2-2 in **Appendix A**) will be undertaken using appropriate tools (e.g. chainsaw / clearing saw / brushcutter).
43. Vegetation management (location illustrated on Figure 2-2 in **Appendix A**) will also be undertaken using appropriate tools (e.g. flail-mower, strimmer).
44. The approach to the scrub clearance and vegetation management works is detailed in Section 2.7.1 of **Appendix A**.

4.2.3 LBBG surveys

45. Pre-implementation LBBG surveys have been undertaken to establish the baseline population size and distribution of birds on Steep Holm, and a baseline assessment of productivity for this species. Surveys undertaken in 2025 provide the baseline from which future survey results can be compared and analysed. These surveys will continue annually until 2030, when operation is expected to commence, and after which LBBG monitoring on a five-yearly basis is proposed (at the same time as habitat management, see **Section Error! Reference source not found.**) for the lifetime of the Project, with results sent to the LBBGCSG and SoS as is required by the DCO (Schedule 7 Part 1 paragraphs 9 and 11). The frequency of monitoring during the post-2030 period will be confirmed in response to the results of monitoring up to that time, and in discussion with the LBBGCSG, and subject to confirmation that the required quantum of additional LBBG nests is being met (refer to **Section 4.1**).

4.2.3.1 Population survey

Aims and objectives

46. The key aim of the pre-compensation population surveys in 2025 was to provide a baseline assessment of the initial population size and distribution of breeding LBBGs on Steep Holm. Baseline survey data will be used to inform the efficacy of the compensation measure when compared with data collected following the scrub clearance, from 2026 onwards.
47. Objectives of the pre-compensation bird surveys and surveys thereafter include:
 - estimation of the breeding population of LBBGs on Steep Holm;
 - confirmation of breeding locations of LBBG on the island;
 - estimation of the density of breeding birds on the plateau of Steep Holm; and,
 - confirmation as to where habitat management (scrub clearance and vegetation management) should be located for the Implementation of the Compensation Measure (addressed as part of 2025 surveys).

Scale and location

48. A drone bird count survey will be conducted annually over the whole island of Steep Holm, including as far as practically possible, the cliffs and the plateau as shown on Figure 2-1 in **Appendix A**. This is following the initial surveys in 2025.
49. Surveyor 'ground truthing' surveys will be focussed on the Steep Holm plateau only, as in 2025. The ground truthing will be coordinated with the productivity surveys, to ensure, as far as possible, consistency between the two surveys.

Timing

50. The daytime (RGB) bird count surveys (three total) will take place during April / May each year, as in 2025. The single required Nighttime survey will be planned to occur the night before or after one of the RGB surveys. The timing of the surveys is planned to occur when LBBG territories are established and the birds are on nests. See Section 3.3.1 in **Appendix A** for further details.
51. Note that the drone and ground truthing surveys will not be conducted on the same day if possible, to avoid ground surveyors disturbing gulls while the drone survey takes place, but these surveys will take place as close together in time as possible to minimise changes to bird numbers and distribution occurring between the two surveys.

Methodology

Drone Survey Fieldwork

52. A conventional drone camera will be used for the RGB surveys to record gull imagery to aid species identification. The drone surveys will also be used to give yearly estimates the population of muntjac deer present on the island, noting that the species' small size, unobtrusive nature and ability to move around under thick vegetation may limit the ability to determine absolute population numbers. However, an accurate indication of muntjac use of the cleared/managed areas at the time of the survey should be achieved.
53. A drone with thermal camera will be used to take aerial imagery over the whole of the island of Steep Holm during one nighttime survey. All drone flights will be undertaken by a suitably experienced specialist contractor and meeting any licensing requirements (e.g. from the Civil Aviation Authority (CAA)).
54. The thermal camera is capable of recording images from which the location of each gull can be identified, but it is not possible to tell apart herring gull *Larus argentatus* from LBBG in the thermal imagery.
55. The approach to the thermal drone survey is as follows:
 - record gulls and muntjac deer present over the entire island of Steep Holm including cliffs and the plateau; and
 - ensure that people are not walking on the ground either prior to, or at the time of, the drone survey, in order to minimise disturbance and limit the number birds in flight.
56. Further details on the population surveys can be found in Section 3.3.1 of **Appendix A**.

Drone Survey Data Analysis

57. Images collected from each of the drone surveys (together with the counts recorded during the ground truthing survey) will be analysed to estimate the population size and distribution of gulls breeding on Steep Holm, as in the initial surveys in 2025.
58. The approach to the drone image data analysis is as follows:
 - produce a total count of individual gulls present on the whole island;
 - produce a total count of individual gulls present on the plateau only;
 - produce an Excel Spreadsheet and GIS Shapefile containing a georeferenced location for each individual gull recorded in the images; and,
 - produce a total count of the number of muntjac deer visible on the whole island, and within the cleared/managed plateau area.

59. In total, on 30th April 2025, 1,662 individual nests were recorded. Of which, 1,165 were identified as belonging to herring gull, 413 to LBBG, and 83 to 'other *Larus* species'.

Ground Truthing Survey Fieldwork

60. In order to 'ground truth' the total gull counts recorded from the drone survey, gull counts will be additionally conducted by trained ornithological surveyors on the ground at Steep Holm.
61. Ground truthing surveys will be concentrated on the plateau of Steep Holm, although birds will be counted from all areas on the island that are safe to access.
62. Ground truthing surveys will be conducted very close in time (within two days) to the thermal drone survey to ensure that the assemblage and distribution of gulls is as close as possible between the two survey types.
63. Ground position data from the drone survey will be used to manually check accessible apparent nest sites and confirm their status (i.e. whether they are actual nests or birds roosting in opportune locations). GPS coordinates and a photograph will be recorded for each LBBG nest encountered during ground-truthing surveys; nest coordinates recorded on the ground will be compared with geo-referenced drone outputs. This comparison will allow for the establishment of an initial correction factor, which should serve to address the potential discrepancy between the number of birds recorded by drone and the number of actual nests present (Hälterlein *et al.*, 1995; Corregidor-Castro *et al.*, 2022).

Ground Truthing Survey Data Analysis

64. Bird counts recorded during the ground truthing survey fieldwork (together with the counts recorded during the drone survey) will be analysed to estimate the population size and distribution of LBBGs breeding on Steep Holm.
65. The details on the ground truthing data analysis approach can be found in Section 3.3.1.3 of **Appendix A**.

4.2.3.2 Productivity survey

Aim and Objectives

66. LBBG productivity monitoring will be repeated following the same method as for the 2025 surveys. This will comprise a minimum of four visits to:
- Undertake nest and egg counts within the LBBG colony on the island plateau.
 - Undertake colour ringing of chicks to enable subsequent identification of individuals.

- Undertake a mark-recapture study of ringed birds to provide an estimate of the number of chicks likely to fledge from the population.
67. It is proposed that surveys are undertaken annually for the duration of the 2026-2030 plan, with plans for 2030 onwards to be detailed in a future appendix to this CIMP, through discussion with the LBBGCSG.

Scale and Location

68. LBBG nests selected for the study will be located on the Steep Holm plateau, as shown on Figure 2-1 of **Appendix A**.
69. Productivity will be monitored at a representative sample of nests that are distributed throughout the LBBG colony on the plateau. The number of focal nests required for the productivity study will be discussed and agreed with the LBBGCSG.

Timing

70. The productivity study will take place during the LBBG breeding season across four visits, as in 2025. This will comprise two 'nest' visits (in late April and mid-May), and two visits for colour-ringing undertaken in late June and mid-July, with 'mark-recapture' monitoring being undertaken as soon as possible after the ringing. See Section 3.3.2 of **Appendix A** for further details.

Methodology

71. LBBG productivity will be estimated at the compensation colony by monitoring breeding success and number of chicks fledged at a representative sample of nests throughout the colony. More details on the method of these surveys can be found in Section 3.3.2 of **Appendix A**.

4.3 Delivery Process

4.3.1 Timetable for delivery

72. As set out above, pre-commencement surveys were undertaken during spring and summer 2025, with clearance work undertaken during the autumn of 2025 (itself exceeding the predicted quantum to meet compensation requirements), and further clearance proposed for autumn 2026. This will provide the additional LBBG nesting areas for the 2026 and 2027 breeding seasons, which will be maintained for the lifetime of the Project (35-year operational period). As lesser black-backed gulls typically start breeding at four years of age, this has begun the provision of the compensation measure at least four years before the start of operation of Morecambe Offshore Windfarm. Allowing four years to elapse between implementation of the compensation measure and the start of the Project's operational phase will allow for the 'additional' juveniles at the compensation colony to become adults (i.e. forming part of the breeding population) by the start of operation of the windfarm.

4.3.2 Consents and approvals

73. This section covers the necessary consents and approvals that have been sought and given for the works to have commenced in 2025, and to continue in the years following. This is in line with requirements set out in the DCO (Schedule 7 Part 1 paragraph 6(b)).
74. Site of Special Scientific Interest (SSSI) consent was granted by NE for the habitat management and monitoring works. This consent was obtained by KAMT prior to the commencement of works in 2025, and additional/updated consent will be obtained by KAMT (as the landowner) from NE as required.
75. Ringing work undertaken as part of LBBG monitoring will require appropriate NE Licence (administered by the British Trust for Ornithology (BTO)). This work will be undertaken by Licensed ringers from the Severnside Ringing Group, who will be responsible for ensuring that the required Licences and endorsements (if required) from BTO are in place to enable ringing to be undertaken.
76. All drone operators will be required to hold any necessary Civil Aviation Authority (CAA) registration and insurance and adhere to CAA guidelines.
77. No other consents or licences are required to undertake the proposed compensation works.
78. A commercial agreement with KAMT was put in place prior to the commencement of the compensation works. This enabled the Project to commence deliver the works prior to the determination of the DCO for the Project. The commercial agreement will be updated following the granted DCO from the SoS, to cover the remaining delivery period.

4.4 Monitoring and Adaptive Management

4.4.1 Aims and objectives

79. Monitoring (as set out in **Sections 4.2.1** and **4.2.3**) will be undertaken to establish the success of the compensation measures, i.e. to confirm that there a minimum of 30 additional successful LBBG nests on Steep Holm compared to the baseline survey estimate. Productivity monitoring will also be undertaken to confirm the additional birds entering the population. Colour ringing will be used to measure recruitment back into the colony.

4.4.2 Timing

80. Monitoring will be undertaken for a minimum of four years following the implementation of the compensation measures, from 2026. The requirement and frequency of monitoring after this period will be determined in consultation

with the LBBGCSG, depending on the success of the measures at that time (see Section 5 of **Appendix A**).

4.4.3 Methodology

81. Monitoring will be undertaken using the same methodology as the pre-compensation surveys, as set out in **Section 4.2.3**. This will comprise:
 - Repeat drone count surveys. This will be important to confirm that increases in population have occurred in relation to the whole island population, and that the additional habitat is not just attracting birds that would have nested elsewhere. The surveys will also monitor changes in the muntjac population.
 - Ground truthing survey counts. This will potentially mean that drone surveys would not be required every year, subject to survey results and agreement with the LBBGCSG.
 - Productivity survey, including colour ringing of chicks. Surveys of returning colour ringed birds will also be undertaken to estimate recruitment back in to the population.
82. Other relevant observations will also be recorded, for example evidence of predation or disturbance to nests by muntjac deer (cross-referenced to thermal drone results, where possible) and human visitors. Monitoring results will be reported back to the LBBGSG and SoS (as required by the DCO: Schedule 7 Part 1 paragraph 9), to enable review of the compensation success to be undertaken and any requirement for adaptive management identified (see below). Analysis will consider wider population trends for the species, for example by benchmarking data from other colonies in the Seabird Monitoring Programme database. The gull monitoring will be supported by vegetation monitoring, as set out in **Section 4.2.1**.

4.4.4 Adaptive Management

83. The requirement for adaptive management will be reviewed by the LBBGCSG in light of monitoring results, and implemented if deemed necessary – as per requirements of the DCO (Schedule 7 Part 1 paragraph 9). As above, the performance of the colony should not be viewed in isolation but should be seen in the wider context of LBBG breeding success locally (i.e. at other colonies around the Severn and Bristol Channel) and regionally (e.g. around the Irish and Celtic Seas). Hence, poor breeding success at Steep Holm in a year when this is also seen at most other LBBG colonies locally or regionally would be indicative of wider issues (e.g. reduced prey stocks, adverse weather conditions or disease) and would not automatically trigger remedial action. However, under these circumstances the Project would look to understand the reasons for poor reproductive performance at Steep Holm, attempt to identify potential remedies and collaborate with relevant groups to understand the wider context in terms of other local or regional colony breeding success.

Conversely, if the Steep Holm colony performs less well than other monitored sites, this would be a strong indicator that action is required to identify and address the causes.

84. Adaptive management would be agreed with the LBBGCSG, should this be required. This would be dependent on the reasons (if known) that the compensation was not achieving its objectives, i.e. the minimum required number of additional LBBG nests. Examples of adaptive management measures may include:
- Further increase in scrub clearance area
 - Clearance of scrub from alternative areas at Steep Holm
 - Changes to vegetation (e.g. Alexanders) management
 - Management of predators or muntjac deer, should monitoring indicate that they are affecting LBBG productivity.
85. In the event that monitoring demonstrates that adaptive management measures at Steep Holm are ineffective, MOWL will consider delivery of alternative measures (i.e. at a different location) or through contribution to strategic compensation (e.g. through the MRF). This would be undertaken through discussion with the LBBGCSG and agreed with the SoS.

4.5 Reporting

86. Annual reporting of management and monitoring results will be produced and provided to the LBBGCSG and SoS at the end of each breeding season, as required by the DCO (Schedule 7 Part 1 paragraph 9). An annual report for 2025 (2025 Annual Lesser Black-Backed Gull Compensation Report (ref: MOR001-FLO-CON-ENV-RPT-0165) is being submitted separately to the SoS. Annual reports will set out the success of the compensation measures against project objectives. This will be followed by a meeting of the LBBGCSG where the results will be discussed and comments on the annual report provided. The LBBGCSG will also review any requirement for adaptive management. The final report will be submitted to SoS to enable sign-off, and to enable any adaptive management measures to be implemented for the following breeding season.

5 Post-2030 management

87. The habitat management and monitoring of LBBG will be as is outlined in the Section 5 of **Appendix A**, however a full plan will be developed a later stage (in collaboration with the LBBGCSG and with approval from the SoS) and appended to this CIMP.

6 References

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Appendix A: Steep Holm Implementation and Monitoring Plan 2026-2030