PLAN

LESSER BLACK BACKED GULL IMPLEMENTATION AND MONITORING PLAN

Project	East Anglia ONE North and East Anglia TWO Offshore Windfarms		
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REVISION SUMMARY

Rev	Date	Prepared by	Checked by	Approved by
1	31.05.2023	GoBe Consultants	Rachael Devine	Ian Mackay
2	04.07.2023	GoBe Consultants	Rachael Devine	Marta Menchi
3	06.11.2024	GoBe Consultants	Catriona Burrow	Lisa Western

DESCRIPTION OF REVISIONS

Rev	Page	Section	Reason for issue	Description
1			Issued for Review	New Document
2	6,9	1,3	Issued for Review	Spelling of “DENSZ” corrected. By-catch information included.
3	n/a	all	Issued for Review	Moved to a new template, document sections updated Inclusion of RWE as new developers of the Norfolk Projects
3	5, 7, 9, 24	2, 2.3.2, 4, Appendix A	Issued for Use	Updated sections on by-catch and addition of Appendix A

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APPENDICES

ABBREVIATIONS

AOE	Alde-Ore Estuary
AON	Apparently occupied nests
BEIS	Department for Business, Energy & Industrial Strategy
DESNZ	Department for Energy Security and Net Zero
LBBG	Lesser Black-Backed Gull
LBBCSG	Lesser Black-Backed Gull Compensation Steering Group
LBBIMP	Lesser Black-Backed Gull Implementation and Monitoring Plan
DCO	Development Consent Order
EIA	Environmental Impact Assessment
MMO	Marine Management Organisation
NE	Natural England
RSPB	Royal Society for the Protection of Birds
SoS	Secretary of State
SPA	Special Protection Area

1. INTRODUCTION

East Anglia TWO and East Anglia ONE North offshore windfarm projects are being developed by East Anglia TWO Limited and East Anglia ONE North Limited respectively as part of the ScottishPower Renewables project portfolio. Applications for development consent were submitted to the Planning Inspectorate in October 2019, with consents for both projects being awarded on 31st March 2022. East Anglia ONE North and TWO are discrete projects with individual Development Consent Orders (DCOs); however, they share a portion of the offshore cable corridor, have the same landfall location, and share an onshore cable route. East Anglia ONE North will comprise of up to 67 wind turbines and East Anglia TWO will be comprised of up to 75 wind turbines, with both East Anglia ONE North and TWO Projects located in the Southern North Sea approximately 36 km and 32 km (respectively) from the Suffolk coast.

Consents for East Anglia ONE North and TWO were granted on the basis of the projects delivering compensation for the Lesser Black-Backed Gull (LBBG) as a feature of the Alde-Ore Estuary (AOE) Special Protection Area (SPA).

This document sets out the LBBG Implementation and Monitoring Plan (LBBIMP) for the delivery of the East Anglia ONE North and TWO LBBG predator control compensation – hereafter referred to as the predator control LBBIMP. ScottishPower Renewables are working in collaboration with RWE, who are developing the Norfolk Boreas and Norfolk Vanguard Offshore Windfarms (hereafter referred to as the "Norfolk Projects") in the implementation of this compensation. Further details on the ScottishPower Renewables and RWE collaboration are provided in Section 1.2.

A secondary compensation measure has also been developed focusing on the monitoring and reduction of seabird by-catch. Please see the Ornithological By-Catch Reduction Delivery Plan (Appendix A) for further information.

1.1 CONSENT REQUIREMENTS

This predator control LBBIMP has been prepared pursuant to Paragraph 3 of Schedule 18, Part 2 of the East Anglia ONE North DCO and Paragraph 3 of Schedule 18, Part 2 of the East Anglia TWO DCO; both hereafter referred to as the "compensation schedules". This predator control LBBIMP aims to discharge the following requirements of the Projects compensation schedules summarised below:

Following consultation with the LBBCSG, the LBBIMP must be submitted to the Secretary of State for approval (in consultation with the MMO, the local planning authority for any land containing the predator control fencing, and the relevant statutory nature conservation body). The LBBCSG must be consulted further as required during the approval process. The LBBIMP must be based on the strategy for lesser black-backed gull compensation set out in the lesser black-backed gull compensation plan and include—

a. *details of the location where compensation measures will be deployed, why the location is appropriate ecologically and likely to support successful compensation, and details of agreements demonstrating how any land and/or rights will or have been secured to deliver the ecology objectives of the LBBIMP;*
b. *details of designs of any predator control fencing including the type of fencing and area and location of enclosure, and details of any other habitats management measures;*
c. *an implementation timetable for delivery of any predator control fencing and any other habitat management measures that ensures relevant compensation measures are in place to allow four full lesser black-backed gull breeding seasons prior to the operation of any wind turbine generator forming part of the authorised development;*
d. *details of the proposed ongoing monitoring of the measures including: survey methods; survey programmes; success criteria; recording of LBBCSG consultations and project reviews; adaptive management measures and details of the factors used to trigger alternative compensation measures and/or adaptive management measures.; (e) details of the maintenance schedule for any predator proof fencing; and*
e. *details of the work in respect of ornithological by-catch measures as set out in Appendix 7 of the Offshore Ornithology Without Prejudice Compensation Measures, that could support practical*

management measures to reduce ornithological by-catch[1], and which would be undertaken alongside or in place of the predator control fencing.

As the intention is to deliver the compensation for both East Anglia ONE North and TWO projects together, a single predator control LBBIMP has been drafted to discharge the relevant conditions of the compensation schedules for both DCOs.

1.2 COLLABORATIVE APPROACH TO COMPENSATION

The Norfolk Projects are also required to deliver LBBG compensation. RWE and ScottishPower Renewables have entered into a cooperation agreement and are working collaboratively to deliver a combined predator control solution to meet the LBBG compensation requirements for their respective projects. Due to the requirement for a greater level of compensation by RWE to offset a greater loss of adult birds per annum (2.6 and 2.1 adult birds for Norfolk Vanguard and Boreas, respectively), RWE[2] have taken a secretarial lead role in the consultation and development of the predator control LBBIMP. The proposed compensation would provide sufficient capacity for all four of the ScottishPower Renewables and RWE windfarms. ScottishPower Renewables has prepared this predator control LBBIMP in line with the approach developed by RWE in their approved LBBIMP (approved by the Department for Business, Energy and Industrial Strategy (BEIS[3]), on 26 January 2023). However, LBBG predator control compensation for the Norfolk Projects (including any related monitoring and adaptive management measures) has been approved separately and this LBBIMP does not form part of that approval. Further details on consultation are provided in Section 1.3 and details of the development of the plan are provided in Section 1.4.

1.3 CONSULTATION

Under the Norfolk Projects and East Anglia ONE North and TWO consents, there are requirements to set up LBBG Compensation Steering Groups (LBBCSG) to discuss and agree the predator control LBBIMP. A LBBCSG was set up by RWE in which details of the Norfolk Projects predator control LBBIMP were discussed; East Anglia ONE North and TWO were in attendance for the third and fourth LBBCSG meetings (12th August 2022 and 5th October 2022, respectively). As noted above, the Norfolk Projects took a secretarial role in the LBBCSG and led in the consultation. It is important to note, that the LBBCSG agreed that any discussions and subsequent agreements on compensation that were made at the Norfolk Projects' meetings are applicable for East Anglia ONE North and TWO (agreed during meeting three, on 12th August, 2022, see Annex 1 and Plan of Works, EA1N-GEN-ENV-PLN-IBR-000002 and EA2N-GEN-ENV-PLN-IBR-000002 for East Anglia ONE North and TWO, respectively). Further details of this are provided in the Agreement Log of this predator control LBBIMP. Details of consultation can be found in the Norfolk Projects Consultation Report[4] which can be found on the PINs website. The East Anglia ONE North and TWO projects' project specific Plan of Works has been approved by Department for Energy Security and Net Zero (ESNZ), thereby confirming that the consultation led by the Norfolk Projects was applicable to East Anglia ONE North and TWO.

1.3.1 LBBCSG Members

The LBBCSG was comprised of representatives of East Anglia ONE North and TWO, the Norfolk Projects, Natural England (NE), the Marine Management Organisation (MMO), East Suffolk Council (ESC) and the Royal Society for the Protection of Birds (RSPB).

[1] East Anglia ONE North and TWO will be developing an updated Plan of Work and a second LBBIMP in respect of ornithological by-catch research project as set out in Appendix 7 of the Offshore Ornithology Without Prejudice Compensation Measures (thereafter referred to as 'by-catch LBBIMP').

[2] Note, the Norfolk Projects were previously being developed by Vattenfall, who originally had the secretarial lead role.

[3] Note, as of February 2023, BEIS is no longer active and has been replaced by the Department for Energy Security and Net Zero. (DESNZ). However, since the approval of the Norfolk Projects' LBBIMP, the department was under still recognised as BEIS at the time. Therefore, in this instance, it has been referred to throughout this document under the title as the department name at the time of approval, then referenced as ESNZ throughout the rest of this document.

[4] EN010079-004562-The Norfolk Projects LBBGIMP Annex 1 Consultation report .pdf (planninginspectorate.gov.uk)

1.3.2 East Anglia ONE North and TWO Consultation

For ScottishPower Renewables to wholly discharge their conditions, an East Anglia ONE North and TWO project specific LBBCSG has been established (including the same members of the Norfolk Projects' LBBCSG). ScottishPower Renewables will liaise with this LBBCSG via email and allow members to review and comment on the East Anglia ONE North and TWO predator control LBBIMP and supporting documents prior to formal submission to the SoS. This process is to be followed as previously agreed with the LBBCSG.

Terms of reference as agreed with the East Anglia ONE North and TWO LBBCSG members are detailed in the LBBG Steering Group Plan of Work (PoW, EA1N-GEN-ENV-PLN-IBR-000002, EA2-GEN-ENV-PLN-IBR-000002).

ScottishPower Renewables will utilise the Agreement Log as prepared by RWE and will update it with any comments received specifically as part of the East Anglia ONE North and TWO consultation.

A working group was also established to focus on the delivery of the seabird by-catch reduction compensation measure. Please see the Ornithological By-Catch Reduction Delivery Plan (Appendix A) for further details.

1.4 Document Development

This predator control LBBIMP, for discharging the relevant conditions of the East Anglia ONE North and TWO consents, has been based on the final iteration of the Norfolk Projects' predator control LBBIMP (PB5640.009.0005 Version 1F) which was reviewed by the LBBCSG and submitted to the SoS in October 2022, with approval provided in January 2023.

Version one of this East Anglia ONE North and TWO predator control LBBIMP has been submitted for review to the East Anglia ONE North and TWO LBBCSG prior to formal submission to the SoS.

1.5 Document Structure

Summarised below is the document structure and all the relevant Annexes that accompany the submission of this predator control LBBIMP.

Section	Title	Detail
1	Acronyms	A list of acronyms pertinent to the contents of this document.
2	Introduction	Section introduces the project, the purpose of the predator control LBBIMP including consent requirements and progress to date.
3	Summary of Proposed Compensation Measures	Outlines the proposed compensation measures.
4	By-catch Research Project	Reference to the Ornithological By-Catch Reduction Implementation and Monitoring Plan
5	Location of Compensation Measures	Details the area that the LBBG nesting structure will be constructed and why this location was considered.
6	Landowner Agreements	Outlines the option agreement for lease.
7	Compensation Measures	Provides the key aspects of the fence design.
8	Delivery Timetable	Outlines the programme for construction and implementation of compensation.
9	Maintenance Schedule	Details the maintenance plan of the nesting structure post construction.
10	Mammal Monitoring	Outlines the monitoring required to track mammal and predator activity around the compensation site.
11	Monitoring and Reporting	Outlines the ongoing monitoring and reporting aims.
12	Compensation Performance - Monitoring and Adaptive Management	Discusses the need for annual reporting and describes how the success of the compensation delivery is measured, as well as potential adaptive management measures.

Section	Title	Detail
13	LBBG Steering group minutes	Details of discussions with LBBG steering groups.
14	References	
Appendix A	Ornithological By-Catch Reduction Delivery Plan	Details of the ornithological by-catch reduction project.

1.5.1 The Final Submission Structure

The final iteration of the predator control LBBIMP for submission to the SoS will include an Agreement Log which reflects the topics of discussion between members of the LBBCSG and the Norfolk Projects and East Anglia ONE North and TWO. The Agreement Log outlines topic specific matters agreed, not agreed and any actions to resolve areas of disagreement. This has been provided to the LBBCSG for review prior to formal submission to the SoS;

Note, the Norfolk Projects also submitted the following Annexes alongside their LBBIMP which are applicable to the submission of the East Anglia ONE North and TWO predator control LBBIMP. These Annexes can be accessed via the Planning Inspectorate (PINS) website; hyperlinks have been provided in the footnotes.

- Site Suitability Report: Summary of a habitat survey carried put in June 2022 determining site suitability for LBBG nesting[5].
- Compensation plan: Outlines specifics details of LBBG compensation measures (e.g. location and design)[6].
- Consultation Report: Reports on the consultation which has occurred to date in order to develop the LBBG compensation (led by the Norfolk Projects[4]).

2. SUMMARY OF PROPOSED COMPENSATION MEASURES

2.1 PREDATOR CONTROL MEASURES

The general approach to compensation was set out in the Offshore Ornithology Without Prejudice Compensation Measures documents. This confirmed that measures to control nest predation within the AOE SPA, and hence increase productivity within the SPA population, would be the most effective means of compensating for in-combination effects on LBBG populations.

Numbers of LBBG breeding at the AOE SPA have declined dramatically since 2000. Although part of that decline could be related to reductions in the availability of fisheries discards (Sherley *et al*. 2020), the primary cause of decline has been attributed to impacts of predation by foxes in the colony. At Orford Ness, in 2000, 75% of nests (in a colony of 23,000 pairs), failed due to fox predation (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 because fox control was not carried out there in 2002 (Mavor *et al*. 2003). Numbers of LBBG breeding at Orford Ness dropped to a few tens of pairs, with, until recently, all of these nesting on the rooftops of buildings there, which further supports the hypothesis that this species has become unwilling to nest on the ground at Orford Ness because of the impact of mammal predators (notably foxes) on breeding success. 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. These birds appear to have expanded from the adjacent Havergate Island colony, managed by the RSPB, which has averaged around 1,700 pairs over the last ten years. This colonisation began during the Covid-19 lockdown and the associated lack of human disturbance. This and reduced fox numbers at the southern end of Orford Ness is thought to have made colonisation a viable option. It may also be likely that non-predatory but disturbing species such as Chinese

[5] EN010087-003019-The Norfolk Projects LBBIMP Annex 2 Site Suitability Survey Report.pdf (planninginspectorate.gov.uk)

[6] Section 4.6.2 of the Lesser Black-Backed Gull Compensation Plan (planninginspectorate.gov.uk)

water deer are present in much lower numbers in this area owing to the much less suitable habitat (although this has not been confirmed).

Reduction in predation and disturbance from non-predatory mammals will be achieved through the creation of six hectares (ha) of fenced enclosure at Orford Ness. A predator exclusion fence will be installed to achieve effective exclusion of foxes, other mammalian predators and non-predatory but disturbance causing species (e.g. deer and hare). The predicted magnitude of collision mortality for which compensation is required by the East Anglia ONE North and TWO projects is small (the combined annual mortality will be in the order of 0.3 and 1.6 for East Anglia ONE North and TWO, respectively and 2.1 and 2.6 for Norfolk Boreas and Norfolk Vanguard respectively – see Table 3-1). In reality, the proposed area which will be protected from mammals (6ha) will be capable of supporting a breeding colony which could produce many times more adult birds than required to offset the predicted losses of adult birds.

Table 2-1: LBBG compensation requirements for East Anglia ONE North and East Anglia TWO.

Site	Predicted LBBG loss due to collision	3:1 ratio (required compensation)
East Anglia ONE North	0.3	0.9
East Anglia TWO	1.6	4.8
Norfolk Boreas	2.1	6.3
Norfolk Vanguard	2.6	7.8
Total	6.6	19.8

3. ORNITHOLOGICAL BY-CATCH REDUCTION PROJECT

East Anglia ONE North and TWO have developed a standalone Plan of Work, including Terms of Reference, and a single Implementation and Monitoring Plan covering all species of concern in respect of the ornithological by-catch research project, in consultation with the Ornithological By-Catch Reduction Working Group. The detailed Ornithological By-Catch Reduction Implementation and Monitoring Plan (IMP), which was developed in consultation with the Ornithological By-Catch Reduction Working Group, is provided in Appendix A.

4. LOCATION OF COMPENSATION MEASURES

Potential location(s) for the proposed predator proof enclosure were presented at the first steering group meeting, to enable discussion and input to final site selection (as seen in Figure 4-1).

Following this, a site visit was conducted with the landowner and representatives of NE to discuss the proposed sites. It was agreed that the proposed location appeared to be appropriate but that a site suitability survey should be conducted, focused primarily on the physical structure of the vegetation, to confirm this. The survey scope was reviewed by NE and the RSPB and refined in line with the comments received. The survey was subsequently conducted in June 2022 and identified areas within the proposed site that are suitable for LBBG nesting with no intervention required, as well as areas where simple vegetation management would create suitable nesting conditions. To estimate possible nesting numbers a nest density of 0.04/m^2 has been used (Ross-Smith *et al*. 2015). Allowance has also been made for the fact that not all of the area within each suitability classification would be expected to be utilised. The survey report, including assumptions for estimating nest densities, is included in the Site Suitability Survey Report[5] and the conclusions are summarised here:

- The habitat at the site was reported to be very similar to that used by breeding LBBG when the population was at its peak (in the early 2000s), comprising structured grassland which was a preferred habitat;
- Proximity of LBBG breeding on the roof of nearby buildings was noted and considered to be an important feature for rapid colonisation following fence installation;
- Approximately 0.7ha was estimated to be suitable for nesting with no modifications (which could accommodate up to 165 pairs);

- Approximately 1ha would require minimal management (cutting back small patches of grass to create short sward which could accommodate up to 230- 340 pairs); and

Approximately 4ha would require moderate management (denser sward requiring more cutting to create short sward patches which could accommodate up to 1,000-1,500 pairs).

The minimal management areas are estimated to require no more than 2 days of grass cutting per year, using handheld strimmers. The moderate management areas are estimated to require up to approximately 20 days per year using handheld strimmers, which will include removal of cut material.

To improve the understanding of LBBG preferred nesting conditions it was proposed that in the first year, vegetation will be cut in one minimal management area (Figure 4-2, compartment 7) and one moderate management area (Figure 4-2, compartment 11) to inform better understanding of LBBG preferred nesting conditions and future management. Compartment 7 was strimmed to obtain a patchwork of short (target <=10 cm height) and longer sward heights to complement the existing suitable habitat in adjacent compartment 10 (it was suggested that this should have resulted in approximately equal areas of short and long sward). Area 11 was divided into two approximately equal sections, with one half cut to around 20 cm throughout and the other half strimmed to create a patchwork of short and long sward heights equivalent to those in compartment 7 (i.e., <=10 cm height). The areas to be cut were marked out in advance for the contractor, to ensure an appropriate combination of sward heights is obtained, providing adults with opportunities to nest against features (objects or patch edges) and for chicks to have stands of grass with a longer sward height to take cover in. A site visit in autumn 2022 was used to mark out management areas.

Following the first breeding season in 2023 and the second breeding season in 2024, and the results obtained, cutting management was reviewed, and a cutting plan was proposed for discussion with the LBBCSG.

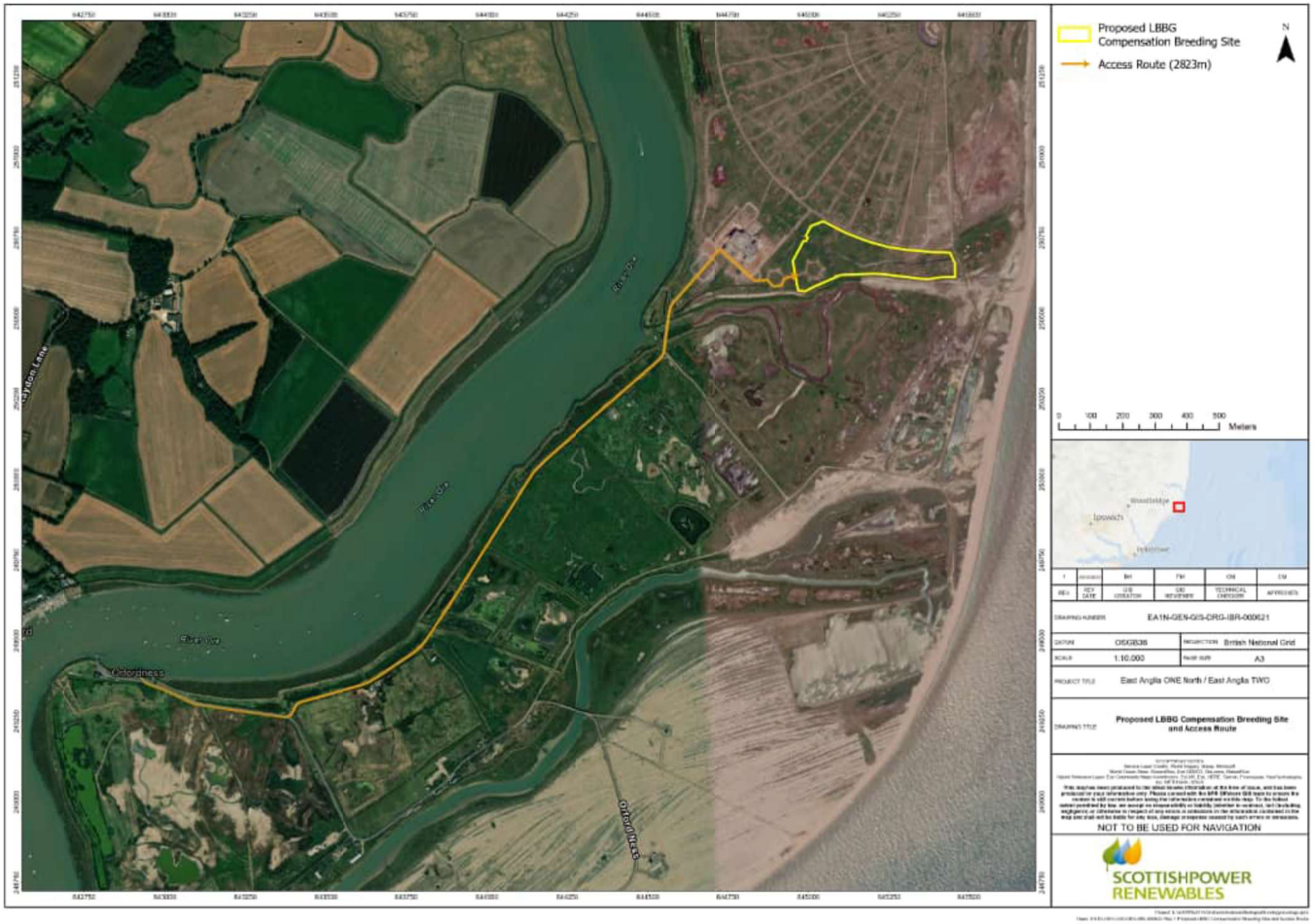

Figure 4-1: LBBG compensation breeding site (yellow boundary) and access route (orange line).

Figure 4-2: LBBG compensation breeding site (red boundary) with sub compartments identified during site suitability survey. Compartments considered suitable with no management (2,10), within minimal management (7, 12) and moderate management (1,3,4,5,6,8,9) in the first breeding season.

5. LANDOWNER AGREEMENTS

On 29th July 2022 East Anglia ONE North Limited and East Anglia TWO Limited (along with Norfolk Vanguard Limited and Norfolk Boreas Limited) entered into a lease with Cobra Mist Limited in relation to the land (within the red line shown in Figure 4-2) lying to the South and East of the River Ore, Orford and Orfordness (forming part of the property registered at HM Land Registry under title number SK170668) (the "Property"). The lease is for a term of 40 years beginning on, and including 1st August 2022 and ending on, and including 31st July 2062.

The Permitted Use of the Property is for LBBG nesting as well as the erection, use, repair, renewal, replacement and removal of the Installations (as defined below) and the works of construction, maintenance and repair of the Installations. It also includes other measures and strategies as may be required pursuant to the LBBG Compensation Measures. These are defined as the measures and strategies to compensate for the predicted loss of LBBG as a result of the project DCOs and/or the LBBG implementation and monitoring plan or plans (including any modification, amendment or re submission thereof approved in writing by the SoS).

The lease gives East Anglia ONE North and TWO (in collaboration with the Norfolk Projects) the right to carry out the works of construction, maintenance and repair of the Installations on the Property, as well as to install, operate, maintain, repair, renew, remove, replace and use the Installations on the Property. Within the lease Installations are defined as the installations, equipment or erections detailed in or compliant with the Installations Specification. The Installations Specification includes a predator exclusion fence, mammal monitoring equipment, playback equipment, dummy birds, ditch-crossing structures, a small shed and a ground mounted or roof mounted (on shed) solar array of a scale commensurate with providing power to the above mentioned equipment. It also includes any other installations, equipment or erections required or to be used for the purpose of or ancillary to the Permitted Use on the Property and approved by the Landlord.

East Anglia ONE North and TWO are also granted a right of way over the access forming part of the Landlord's Retained Land, namely the property registered at HM Land Registry under title number SK170668, conditional on locking the gates immediately following use.

The lease gives East Anglia ONE North and TWO the right to construct and use temporary lay down areas and construction compounds on the Property for the purposes of carrying out the works and also the right to carry out tests and surveys for the purposes of assessing the suitability of the Property for the use for and as LBBG nesting.

East Anglia ONE North and TWO are also granted the right to construct, install, lay, repair, maintain, renew, replace and connect into service media on the Landlord's Retained Land and to use any such service media subject to causing as little damage as possible and making good all damage caused.

The lease additionally gives East Anglia ONE North and TWO the right to install, maintain and operate photovoltaic solar panels and all ancillary equipment for the purposes of powering monitoring equipment installed on the Property, should this ever be required.

With regards to use of vehicles and access, East Anglia ONE North and TWO are granted navigation rights for boats and other water-based vehicles through and across the River Ore and the right to park a single motor vehicle for use as a pool car within 175 metres of the slipway in an agreed location. The lease also grants East Anglia ONE North and TWO the right to land boats and other water-based vehicles on the slipway forming part of the Landlord's Retained Land and to use the slipway for loading and unloading of vehicles, equipment, machinery and people together with rights to pass and repass at all times.

The lease grants East Anglia ONE North and TWO the right to install, operate and maintain security and monitoring systems, fencing and signage and the right of support, shelter and protection from the Landlord's Retained Land. East Anglia ONE North and TWO are also granted the right to alter, redirect or manipulate any existing drainage channel or water course on the Property subject to the Landlord's consent.

6. COMPENSATION MEASURES

The fence design has been informed through discussions with the LBBCSG, and in particular, with reference to the RSPB guide on predator exclusion fencing (White and Hirons 2019). Furthermore, the appointed fencing contractor has undertaken fence installation for the same purposes (protection of ground nesting birds from

mammalian predators) at other nature conservation reserves, including ones managed by the RSPB. ScottishPower Renewables therefore has very high confidence that the fence is fit for purpose and has been installed with the necessary attention to detail required.

The key aspects of the fence design include:

a) A height between 1.8 m and 2.0 m;

b) Wire mesh with vertical wires at 50 mm spacing and horizontal wires at 100 mm spacing and a gauge of at least 1 mm to prevent foxes chewing through it;

c) The wire rolls have a total height of 2.4 m of which approximately 600 mm are buried horizontally at a depth of 100 – 150 mm;

d) Material at the base is scraped back using a digger to a depth of 100 – 150 mm and width of no more than 1 m, into which the lower section of the fence has been laid, before being recovered with the scraped back material;

e) Water crossings include mesh to the base of the drainage channels to prevent access by aquatic species (e.g. otter);

f) Incorporation of a 'floppy' overhanging top of 300-450 mm angled at approximately 45° to the outside, comprising less tightly strained wire which offers unsecure footholds to prevent foxes climbing;

g) Metal strainer and support posts with a hollow cross section pushed (not hammered) into the ground using the arm of a digger, thereby reducing impact noise during installation and avoiding the need for excavation or use of concrete. The posts are resistant to salt water corrosion in case of flooding events; and

h) Non-electrified (although this may be used as an adaptive measure if agreed with the LBBCSG).

Following approval of the Norfolk Projects' LBBIMP (as outlined in Section 1.2) the fence has been installed in line with the design details described above (see Figure 6-1).

Figure 6-1: A photograph of the completed LBBG compensation measure fence installation

7. DELIVERY TIMETABLE

The East Anglia ONE North and TWO DCOs state that "*no operation of any turbine forming part of the authorised development may begin until four full breeding seasons following the implementation of the measures set out in the LBBIMP have elapsed. For the purposes of this paragraph each breeding season is assumed to have commenced on 1 March in each year and ended on 30 September*."

As noted above, installation of the predator fence was completed in February 2023 prior to the commencement of the typical LBBG breeding season on the 1 March according to the DCOs and in April according to Waggitt *et al*. (2019). The installation of the fence prior to the start of the 2023 breeding season, allows for a minimum of four breeding seasons (defined as 1st March-30th September, as per the East Anglia ONE North and TWO DCOs) before the proposed first operation of turbines within East Anglia ONE North and TWO.

For completeness the following described the details of the award of relevant planning permissions and next steps regarding the delivery of the compensation.

Planning permission under the Town and Country Planning Act 1990 for the installation and maintenance of the fence was granted on 21st October 2022. The application was not considered to constitute an 'EIA development' under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) or the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (hereafter referred to as the "EIA Regulations"). The planning application and planning decision can be found on the ESC planning portal (planning reference DC/22/3447/FUL)[7].

Site of Special Scientific Interest (SSSI) Assent from NE for the installation and maintenance of the fence was granted on 4th October 2022. This assent also covers the proposed vegetation management. A separate SSSI assent for survey activities required to monitor the breeding birds will be sought once the precise nature of the survey activities has been confirmed with the SoS and the LBBCSG. Further SSSI Assents from NE may also be sought for site management proposals which differ from 'normal' site management activities should these arise in future.

Key milestones for the delivery of the proposed compensation measures included:

- Consultation with the LBBCSG between April and August 2022 to agree the location and design.
- Planning application submitted to ESC on 31st August 2022.
- SSSI Assent sought for fence installation, fence maintenance and vegetation control on 6th September 2022.
- SSSI Assent granted on 4th October 2022.
- Planning permission granted on 21st October 2022.
- SSSI Assent for monitoring of nesting birds sought on 21st November 2022.
- Fence installation commenced and completed between December 2022 – January 2023.
- Implementation for the purposes of the DCO completed by the end of February 2023 (with the fenced area available for LBBG to nest within).
- Post installation consultation with the LBBCSG to discuss any unforeseen aspects which occur as a result of installation and how these may be factored into any adaptive management required; and
- Annual ongoing reporting to the LBBCSG and SoS.

The projected delivery timetable for the LBBG compensation measures is summarised in Figure 8-1.

[7] https://publicaccess.eastsuffolk.gov.uk/online-applications/

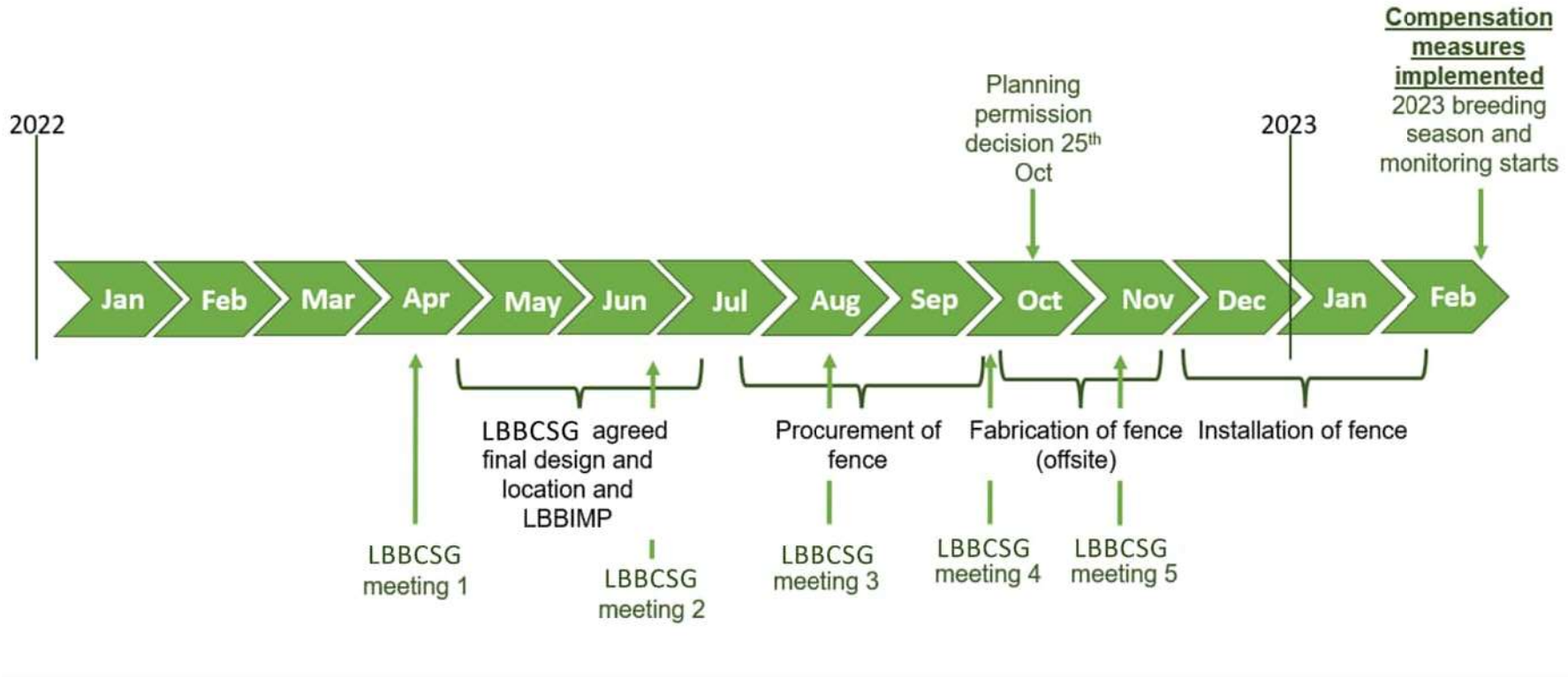

Figure 8-1: Implementation timetable for the delivery of the LBBG predator control compensation measures

8. MAINTENANCE SCHEDULE

8.1 OVERVIEW

The following section describes the details of the LBBG compensation maintenance schedule as agreed via the LBBCSG. Whilst a collaborative approach between RWE and ScottishPower Renewables is being pursued, it is important to be cognisant of the fact that East Anglia ONE North and TWO and the Norfolk Projects are independent commercial entities and have their own individual consents. Therefore, in the very unlikely event that a collaborative approach cannot be delivered (and noting that there is no indication of such an outcome at the time of writing), ScottishPower Renewables would seek to discuss a proportionate monitoring approach that suitably reflects the level of compensation East Anglia ONE North and TWO are required to deliver. This is as applicable to and should be considered throughout Sections 8, 9 and 10 that follow.

8.2 LBBG MAINTENANCE SCHEDULE APPROACH

The critical feature of the LBBG compensation is that the fence continues to prevent entry by mammalian predators. Thus, it is critically important that the full length of the fence is inspected on a regular basis and any damaged or weak areas are rapidly repaired. The breeding season maintenance schedule will be:

- Inspected on a two-weekly basis (March to August) as per the recommendation in White and Hirons (2019); and
- Any damaged or weak areas will be rapidly repaired if essential to maintain integrity or if possible, to do so with minimal disturbance.

During the non-breeding season, the following maintenance schedule is proposed:

- Less regular inspections (e.g. 2-3 times per winter), but inspections will also take place following periods of severe weather;
- More substantive maintenance, such as replacing rusted sections of wire or weak posts will be undertaken at this time to avoid undue disturbance to the breeding birds; and
- Routine inspections will take place at such times to allow sufficient time for any substantive repairs to be completed prior to the return of LBBG to the SPA (i.e., before the end of February).

At any time, if a breach in the fence is found, careful monitoring will be conducted to check for the presence of mammals within the fenced area.

While the primary concern is predatory mammals, specifically fox, otter and badger, the presence of non-predatory species such as deer (Chinese water deer are present in large numbers in the SPA) and hare may also reduce the productivity of the LBBG through disturbance, which may offer opportunities for avian predators (other species of gull and corvids) to steal eggs and chicks. There are also potential welfare issues from trapping such species within the fence. Hence inspection will also consider signs of the presence of these species.

9. MAMMAL MONITORING

This section describes the approach to mammal monitoring and mammal removal. As stated within Section 7, in the very unlikely event that a collaborative approach cannot be delivered, ScottishPower Renewables would seek to discuss a proportionate monitoring and mammal removal approach that suitably reflects the level of compensation East Anglia ONE North and TWO are required to deliver.

9.1 MAMMAL MONITORING APPROACH

Immediately prior to completion of the fence installation, a thorough inspection of the enclosure area was undertaken to attempt as far as possible to ensure there were no large mammals present inside.

This took the form of a group of personnel, walking a line across the site, in a manner which flushes any mammals in front and out through the last unfenced section of the enclosure. Several passes were conducted (over the course of a day) to increase confidence that all larger mammals had been flushed out.

Although there are no historical records of otter holts on the site and the ground conditions are considered unsuitable, if there are any holts within the enclosure the mammal flushing method may be ineffective. Therefore, as a precaution a survey for the presence of holts was conducted prior to fence installation, with no holts found.

As well as regular fence inspections it is important that the presence of predators inside the fence, should they manage to penetrate, is detected rapidly. Monitoring for predators during the breeding season will be combined with fence inspections. A combination of monitoring options will be used:

- Sand traps will be placed at intervals around the inside of the fence to help the detection of footprints. These may also be placed on the outside of the fence to record the presence of foxes patrolling the fence;
- Camera traps located at corners and/or gateways, checked at least weekly, possibly twice per week; and
- Weekly night vision surveys from suitable vantage points.

During the non-breeding season, monitoring for predators will use the same methods as above, but at a reduced frequency of once per month (September to January). During February a concerted effort to ensure the enclosure is predator free will be undertaken, with twice weekly checks and night-time visits until such time as monitoring staff are confident no predators are present within the fence.

9.2 MAMMAL REMOVAL PROTOCOLS

Should the presence of predators be detected inside the fenced enclosure it will be necessary to take steps to ensure their rapid and safe removal. The nature of these steps will depend on the species in question. Following consultation with the LBBCSG, mammal removal protocols will be drafted and agreed. It has been agreed with the LBBCSG that these will not be included in the predator control LBBIMP but instead produced as a standalone guide for the monitoring staff.

Removal protocols will be developed for fox, otter, badger, mink, hare and Chinese water deer.

The time of year when a mammal is detected (or suspected) inside the enclosure will determine the speed of response required. If the detection is between September and January, then there will be a slightly lower urgency than if the detection is between February and August. In the case of the latter there would be an immediate and concerted effort to address the situation.

Irrespective of when the mammal is detected, or which species, the fence itself would be inspected in the first instance to determine the entry point and repairs quickly effected to prevent any further ingress.

Following first detection, or indication that mammals may have gained entry to the enclosure it will be necessary to:

a) Determine the species of mammal(s) inside the enclosure, by way of camera traps, footprints and scats;
b) Determine, as far as possible if the mammal(s) are still within the enclosure; and
c) Establish the remedial steps to be taken (if required) and refer to the appropriate mammal removal protocol(s).

The mammal removal protocols will consider statutory considerations, such as any licensing requirements. Removal of species for which a license is required will adhere to existing licensing requirements, such as those for removal of otters from fisheries. If it is considered feasible, efforts will be made to flush out individuals from within the enclosure, rather than attempting to trap and release animals. However, this course of action will only be attempted if it is permitted under relevant legislation (e.g. The Invasive Alien Species (Enforcement and Permitting) Order 2019), there are no welfare

concerns (e.g. causing additional stress or a risk the animal will harm themselves by running at the fence) and the level of disturbance to nesting LBBG is considered to be low.

It is not anticipated that smaller mammal species, such as rats, will require control measures (for example rats are present in the LBBG nesting areas on Havergate Island and are not considered to have a detrimental effect on reproductive success, J. Miller pers. comm.). However, should it become apparent that rats are causing reduced reproductive success in the compensation colony (e.g. through direct observation or monitoring camera footage of rat predation of eggs or chicks) it may be necessary to undertake control efforts. A rat control protocol will be developed should this occur, noting that it will not be appropriate to use rodenticides for this purpose as this could result in secondary poisoning of non-target species, including LBBG.

All cases of mammal entry to the enclosure will be noted, communicated to an agreed management group and included in the annual reporting.

10. MONITORING AND REPORT

This section describes the approach to monitoring LBBG within the compensation breeding site. As stated within Section 7, in the very unlikely event that a collaborative approach cannot be delivered, ScottishPower Renewables would seek to discuss a proportionate monitoring approach that suitably reflects the level of compensation East Anglia ONE North and TWO are required to deliver.

10.1 LBBG MONITORING APPROACH

The LBBG compensation has been developed with the aim of enabling increased productivity in the SPA population to offset a combined loss of 1.9 adults per annum from the AOE SPA population (0.3 for East Anglia ONE North and 1.6 for East Anglia TWO).

The following activities will form the core requirements for monitoring, undertaken annually following installation of the fence (i.e., first monitoring activity undertaken in 2023) and continue for the period the compensation is required, and is derived from Gilbert *et al*. (1998):

- Counts of the number of pairs (and/or apparently occupied nests, (AON)) in the enclosure. In the first three years following fence installation these would be undertaken in March, April, May (x2), June (x2), July (x2) and August (9 in total). Subject to agreement from the LBBCSG, the count frequency and total (per year) may be reduced in later years on the understanding that the quality of data collection is not compromised (this would be informed by review of the data collected to date).
- Alongside the AON counts (as outlined above), productivity will be estimated (number of eggs, chicks and fledged young/pair) for mapped pairs that can be reliably observed, until such time as chicks can no longer be associated with their nest. It is likely that not all nests will be observable so this will represent a minimum productivity estimate.
- Observations to obtain both counts and productivity will be made from outside the enclosure to minimise disturbance. Ideally observations will be made from within a vehicle as this will cause much less disturbance, although portable hides (e.g. fabric tent style) may also be useful for this. Vehicle observations will primarily be made from the access track which runs along the west and north of the site. If it is suitable, and access can be arranged, the shingle ridge that runs along the south of the site may also be used for vehicle based observations (it is not currently known if larger vehicles such as Land Rovers can use this track). Alternatively, hide based observations will be made from the shingle ridge.
- Because it is unlikely that all nests will be visible from any given location it will be necessary to map observed AON to cross-check between vantage points. This will also permit tracking of nest success over the course of the breeding season.
- Counts will be conducted during the daytime (0900-1600) and conditions of good visibility; poor weather (heavy rain, fog, high winds) will be avoided.
- Surveyors will also collect opportunistic observations, such as instances of predation by avian species (e.g. other large gull species and corvids), in particular if these appear to be related to

disturbance events such as vehicle movements or animal activity outside the fenced area which may highlight the need for management changes or temporary movement restrictions.

- The above methods will be complemented with high resolution photography, to provide a permanent record of how the enclosure is being used. Consideration will be given to the use of drones to obtain aerial images across the site, but only if this is agreed with the landowner and can be done without causing disturbance (a review of best practice drone use indicates that nesting large gulls are highly intolerant of drones, so this option will be progressed with great caution and will only be undertaken if there is high degree of confidence that it will not have negative effects).
- If access is agreed with the owner, the roofs of the adjacent buildings will also be surveyed to collect the same data as above, although since the presence of people will cause disturbance to birds which nest on the buildings the number of visits will be minimised (no more than three per season).
- Any observations of avian predation (or suspected avian predation), for example egg stealing by corvids or other large gulls, will also be noted and included in the annual report.

Further details of the monitoring methods outlined above can be found in Gilbert *et al*. (1998).

In the first three years following installation of the fence, and subject to any restrictions on work within bird colonies due to avian influenza, the following additional monitoring will be undertaken:

- Ringing of chicks (BTO metal and colour rings), linked with resighting efforts (for birds colour-ringed as chicks) commencing four years after the first season of colour-ringing at sites within the regional population (primarily the SPA).
- Diet studies, through collection of pellets and/or regurgitated material during handling of birds for ringing (note this aspect will be opportunistic and it is not proposed that efforts to force regurgitation will be made).
- Ringing (BTO and colour rings) of chicks produced at other regional populations may also be undertaken, at a sample of locations where such work is considered feasible (e.g. Havergate). This will enable the origins of ringed birds which recruit to the compensation population to be determined.

Additional monitoring will be considered during the operation of the wind farm and thereafter whilst the fence remains in place, subject to discussions and agreement with the LBBCSG. This may include collection of blood and faecal samples (subject to appropriate licensing being obtained) to assist in monitoring of avian influenza.

All monitoring and bird handling will be undertaken by qualified and experienced ornithologists to ensure it is conducted to a high standard and causes the minimum of disturbance. In particular, all ringing efforts will be undertaken in a careful manner as disturbance in gull colonies can often result in chicks being predated. The Norfolk Projects will continue to take a secretarial lead and engage with other parties undertaking LBBG monitoring at the SPA, in collaboration with East Anglia ONE North and TWO in order to ensure consistency in methods and to avoid duplication of effort which would be both inefficient and also could result in unnecessary additional disturbance to breeding birds.

10.2 TIMESCALES FOR REPORTING

In accordance with Paragraph 7 of Schedule 18, Part 2 of the East Anglia ONE North and TWO DCOs, an annual report will be produced following the breeding season and provided to the LBBCSG and SoS as soon as is practical each year (with the aim of providing this by the end of November).

Following each year's monitoring at least one LBBCSG meeting will be organised to present the findings and discuss how these will be reported. The anticipated stages and the anticipated timing for producing the annual reports are provided in Figure 10-1.

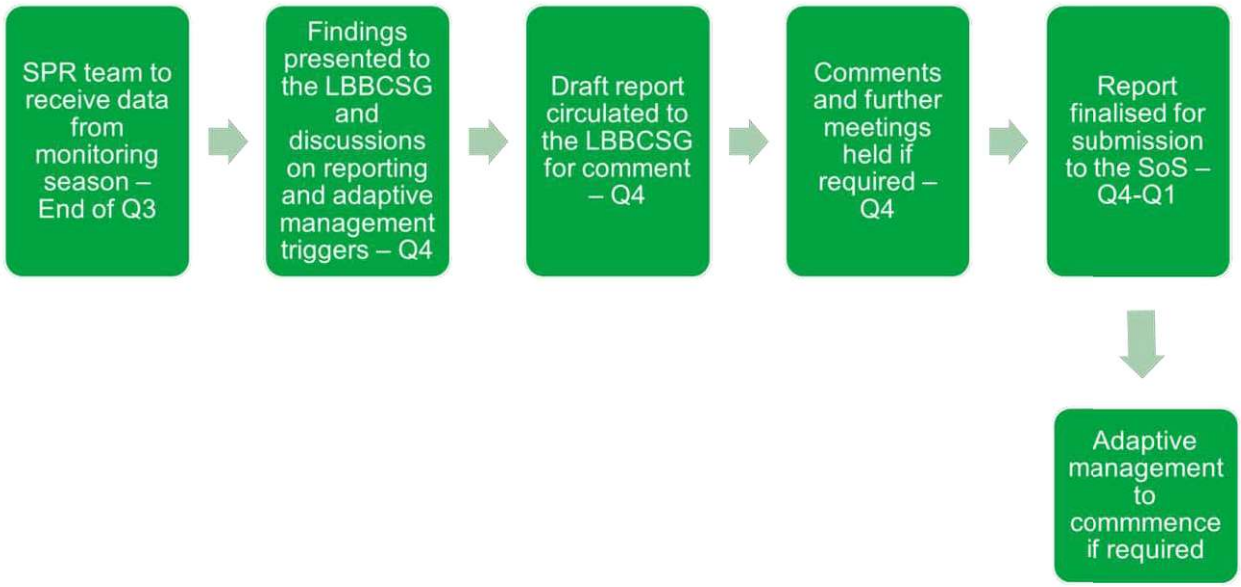

Figure 10-1: Anticipated annual reporting timescales to the LBBCSG and SoS.

Once the population has become established, the extent of monitoring may be reduced, but only following discussion with the LBBCSG and agreement in writing with the SoS.

11. COMPENSATION MANAGEMENT – MONITORING AND ADAPTIVE MANAGEMENT

The East Anglia ONE North and TWO DCOs state that the annual reporting: *'must include details of any finding that the measures have been ineffective in securing an increase in the number of adult lesser black backed gulls available to recruit to the SPA and, in such case, proposals to address this. Any proposals to address effectiveness must thereafter be implemented by the undertaker as approved in writing by the Secretary of State in consultation with the relevant statutory nature conservation body.*

Productivity is considered to be the ultimate measure of success when reviewing the performance of the colony, however it will be critical that the reasons for any shortfall against expectations are recorded in order that appropriate remedial steps (if warranted) can be taken. Thus, while it is considered sensible to set targets for colony performance (the performance target for compensation for all four projects and agreed to in Meeting 4 of the LBBGCSG was at least 20 chicks fledged per year in at least 3 out of 5 years, from year 5 of the scheme onwards), these metrics are a guiding principle only and should be viewed in the context of the understanding of the wider population demographics.

Thus, the performance of the new colony should not be viewed in isolation but should be seen in the wider context of LBBG breeding success locally (i.e. within the SPA) and regionally (e.g. southern North Sea). Hence, poor breeding success at the compensation colony 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 at the compensation colony. However, under these circumstances East Anglia ONE North and TWO (in collaboration with the Norfolk Projects) would look to understand the reasons for poor reproductive performance at the compensation colony, 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 compensation colony performs less well than other monitored sites, this would be a strong indicator that action is required to identify and address the causes.

During the initial years following installation of the fence (e.g. years one to five), monitoring is expected to be focussed on understanding the mechanisms for colonisation. For example, there may evidence that birds are not prospecting within the enclosure, or prospecting but not settling, or settling but abandoning during nest building, etc. and each of these would lead to a requirement for different remedial measures. Data will be collected with the aim of understanding the reasons for whichever of these may be occurring, such as the suitability of the vegetation or disturbance (e.g. mammal movements outside the fence or vehicle movements) and the most appropriate corresponding responses. Other factors which will be monitored if feasible (i.e. if focal nests can be identified and monitored without itself causing disturbance) will include nest attendance rates and foraging trip duration, as these will indicate the degree of effort required by the breeding adults and may indicate reasons for reproductive failure. As noted above, it will also be necessary to conduct similar monitoring at a sample of other locations to understand if any observed patterns are replicated elsewhere.

If colonisation does occur in the initial years (i.e. years one to five following fence construction) and initial recruits have good breeding success, but the rate of colony growth appears to be lower than would be needed for the colony to reach capacity (i.e. approx. 15 nests, allowing for approx. 1.5 fledglings/nest) within five years, then reasons for this will be investigated. This may highlight avoidance of particular areas of the enclosure (e.g. areas of less preferred vegetation, or the absence of sleepers, etc.), which could be targeted for modification or highlight that additional effort in attracting birds would be beneficial (e.g. use of decoys and broadcasting colony calls).

The monitoring and requirements for adaptive management will be conducted collaboratively with the Norfolk Projects on an annual basis at least until such time as it is agreed that the colony is self-sustaining and performing at least as well as other local colonies.

As discussed above the adaptive management measures to be considered will depend on the circumstances, however actions may include:

- Additional habitat management, conducted over winter and prior to LBBG arrival in spring, to enhance the attractiveness for LBBG, e.g. through closer sward mowing, more careful patchwork strimming, creation of additional bare ground (e.g. removal of the top layer of material), placement of old sleepers (or similar) to provide structures for birds to nest against;
- If avian predation is identified as resulting in a significant loss of eggs (e.g. corvids or other gull species) then options for minimising this which are not detrimental either to other conservation objectives or have a risk to the LBBG themselves will be investigated;
- If initial recruitment to the enclosure is below the target level then colony call playback and placement of decoy birds within the enclosure will be undertaken (although it should be noted that decoys may also be used to encourage birds to colonise the enclosure from the first breeding season year following fence installation, in which case this would represent an enhancement of the compensation measure already delivered);
- If productivity is lower than would be anticipated for the estimated number of AON, supplementary feeding of chicks will be considered. This would need to be done in a manner that achieved the aim of improving chick health, whilst not encouraging other species such as rats and foxes which could be detrimental (e.g. elevated 'bird tables', although as these would also attract corvids this would need careful consideration). Furthermore, this option would require careful consideration to rule out other more systemic causes, such as collapse of prey stocks, that short-term feeding would be unable to make up for;
- If it is considered that vegetation cutting is not creating suitable ground conditions for LBBG to nest successfully, East Anglia ONE North and TWO will enter into discussions with the landowner to investigate the possibility of raising the water levels within the enclosure in order to modify the habitats (subject to all the agreements set out in the lease); and
- In the event that the above methods are undertaken, and the enclosure remains under-utilised or unused then careful consideration will be given to the potential of alternative or additional locations.

12. LBBG STEERING GROUP MINUTES

Minutes of the LBBCSG meetings (where approved by the group for publication) are included within the LBBCSG Consultation Report[4].

13. REFERENCES

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APPENDIX A ORNITHOLOGICAL BY-CATCH REDUCTION DELIVERY PLAN

TABLE OF CONTENTS

ABBREVIATIONS

AOE	Alde-Ore Estuary
BMP	Bycatch Monitoring Programme
CEFAS	Centre of Environment, Fisheries and Aquaculture Science
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
EM	Electronic Monitoring
FFC	Flamborough and Filey Coast
ICES	International Council for the Exploration of the Seas
IMP	Implementation and Monitoring Plan
LBBCSG	Lesser Black-Backed Gull Compensation Steering Group
LBBIMP	Lesser Black Backed Gull Implementation and Monitoring Plan
MMO	Marine Management Organisation
NFFO	National Federation of Fishermen's Organisation
OTE	Outer Thames Estuary
RSPB	Royal Society for the Protection of Birds
RTDCSG	Red-Throated Diver Conservation Steering Group
RTDIMP	Red-Throated Diver Implementation and Monitoring Plan
SMP	Seabird Monitoring Programme
SoS	Secretary of State
SPA	Special Protection Areas

1. OVERVIEW AND REQUIREMENTS

1.1 INTRODUCTION

East Anglia ONE North and TWO offshore windfarms both received consent on 31 March 2022. In consenting both projects, the Secretary of State (SoS) concluded that an adverse effect on the integrity (AEoI) of the Outer Thames Estuary Special Protection Area (SPA) could not be excluded due to potential disturbance and displacement of red-throated diver (*Gavia stellata*) for both the projects alone and in-combination. Additionally, the SoS concluded that an AEoI of the Alde-Ore Estuary SPA could not be excluded due to in-combination collision impacts on lesser black-backed gull (*Larus fuscus*). The SoS also concluded that an AEoI of the Flamborough and Filey Coast SPA could not be excluded due to in-combination collision impacts on black- legged kittiwake (*Rissa tridactyla*). Therefore, both East Anglia ONE North and TWO are required to provide compensation for these three species. The compensation measures proposed for these three species are discussed in their respective Implementation and Monitoring Plans (IMPs).

In addition to the primary compensation measures, a secondary compensation measure proposed was to support practical management measures to reduce accidental ornithological by-catch in fisheries. This Ornithological By-Catch Reduction Delivery Plan, hereafter referred to as the "Delivery Plan", focuses solely on the delivery of the ornithological by-catch reduction compensation measure.

1.2 CONSENT REQUIREMENTS

This Delivery Plan has been prepared pursuant to Paragraph 3 (f) of Part 2 (Lesser black-backed gull Compensation Measures) and Paragraph 3 (f) of Part 3 (Red-throated diver Compensation Measures) of Schedule 18, of the East Anglia TWO Offshore Wind Farm Order 2022 (the 'East Anglia TWO DCO') and Paragraph 3 (f) of Part 2 and Paragraph 3 (f) of Part 3 of Schedule 18 of the East Anglia ONE North Offshore Wind Farm Order 2022 (the 'East Anglia ONE North DCO'). This document serves to discharge these provisions for both projects. The provision stipulates the document must include:

> *(f) details of the work in respect of ornithological by-catch measures as set out in Appendix 7 of the Offshore Ornithology Without Prejudice Compensation Measures, that could support practical management measures to reduce ornithological by-catch.*

1.3 APPROACH

The development of the ornithology by-catch reduction compensation measure is to be based on proposals set out in Appendix 7 of the Offshore Ornithology Without Prejudice Compensation Measures Report[8].

This Delivery Plan sets out further details on each of the actions outlined in the Without Prejudice Compensation Measures Report, the mechanism for delivery of these actions and the timescales involved. The development of this Delivery Plan has been discussed with the core members (Natural England and the Marine Management Organisation (MMO)) of the Ornithological By-Catch Reduction Technical Working Group and relevant by-catch experts to ensure expert input is incorporated and that the proposed delivery of actions is aligned with the wider by-catch reduction work that is ongoing around the UK.

East Anglia ONE North and TWO has ratified this Delivery Plan with all core members of the Ornithological By-Catch Reduction Technical Working Group prior to its inclusion in the Lesser Black-Backed Gull Implementation and Monitoring Plan (LBBIMP). The LBBGIMP has then be consulted upon and ratified by the Lesser Black-Backed Gull Compensation Steering Group (LBBCSG) prior to submission to the Secretary of State ('SoS') for approval in accordance with Schedule 18, Part 3 of the East Anglia TWO

[8] Offshore Ornithology Without Prejudice Compensation Measures for East Anglia ONE North and TWO. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010077/documents [Accessed: May 2024].

DCO and East Anglia ONE North DCO ('the Compensation Schedules'). This process is outlined below in Figure 2.

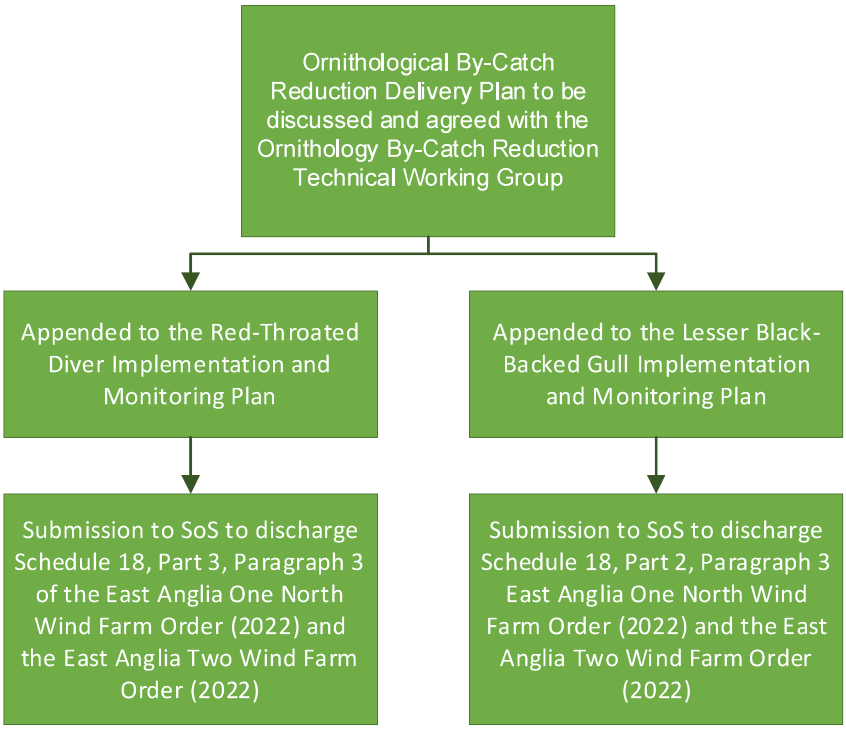

Figure 2 Showing the process by which the Ornithological By-Catch Reduction Delivery Plan shall be submitted for discharge.

2. CONSULTATION

This document sets out details of the secondary compensation measures in the form of the ornithological by- catch reduction compensation measures. This Delivery Plan has been developed by the Ornithological By-Catch Reduction Technical Working Group. A record of consultation and engagement with the Ornithological By- Catch Reduction Technical Working Group has been provided as an Agreement Log in Annex 1 with the intention being that this agreement log be maintained and provided alongside any version updates to this document and future reporting (as detailed in Section 11).

3. SUMMARY OF PROPOSED MEASURES

Seabird by-catch from commercial fishing activity is recognised as a global concern (Žydelis *et al.*, 2013; Anderson *et al.,* 2011; Miles *et al.,* 2020) with approximately 100 species impacted worldwide (Dias *et al.*, 2019). Hundreds of thousands of seabird mortalities are estimated globally each year in gillnets (400,000; Žydelis *et al.,* 2013) and longline fisheries (320,000; Anderson *et al.*,2011). As such, by-catch is considered one of the top three threats to global seabird populations (Dias *et al.,* 2019).

The focus of research, and in turn by-catch reduction, has largely been on longline fishery by-catch, however there is evidence to suggest that gillnet fisheries likely pose a greater risk to global seabird populations (Žydelis *et al.*, 2013; Pott and Weidenfeld, 2017; Dias *et al.*, 2019). Despite this, on-board observer monitoring coverage is low relative to the scale of commercial fishing, and as such by-catch monitoring and reporting is limited (Pott and Wiedenfeld, 2017). Total by-catch mortality estimates are often derived from incidental recordings of by- catch and as long-term datasets available are limited to only a small proportion or recordings are from dedicated by-catch monitoring programmes (ICES, 2018). Recent analysis of the UK Bycatch Monitoring Programme (BMP) data by Northridge *et al.* (2020) and

Miles *et al.* (2020) has identified areas of concern around the UK and contributed to closing knowledge gaps. Within the UK, Northridge *et al.* (2020) identified static net (set gillnet) fisheries as an important fishery with regards to guillemot, razorbill and gannet by-catch, and longline fisheries as an important fishery with regards to gannet by-catch. However, the coverage of the UK BMP remains insufficient, with <1% of static net, 1-2% of longline, and roughly 5% of midwater trawl fishing effort being monitored.

Given the impacts of by-catch on seabirds, and thus the potential benefits gained from building better knowledge and solutions to reduce by-catch, an ornithological by-catch reduction compensation programme was selected as the secondary compensation measure for East Anglia ONE North and TWO offshore windfarm projects under the compensation schedules for lesser black-backed gull and red-throated diver. It should be noted that whilst the consent requirements (as outlined in Section 1.2) focus on red-throated diver and lesser black-backed gull, the proposed ornithological by-catch reduction programme is a seabird by-catch programme, therefore providing benefits beyond just those two species; the Offshore Ornithology Without Prejudice Compensation Measures document showed that reduction in by-catch could have benefits for both lesser black-backed gull (*Larus fuscus*) from Alde-Ore Estuary (AOE) SPA and red-throated diver (*Gavia stellata*) from the Outer Thames Estuary (OTE) SPA and potential wider reaching benefits for other seabird species. Whilst recent UK-based studies (Northridge *et al.,*2020 and Miles *et al.,*2020) did not record red-throated diver by-catch, it has been widely recorded in other countries, as was highlighted by Miles *et al.* (2020), and Natural England (2023) stated entanglement in fishing gear is one of the primary causes of red-throated diver mortality.

The proposed ornithological by-catch reduction compensation programme will consist of the following five actions:

- Action 1 – Convene an ornithological by-catch reduction working group;
- Action 2 – By-catch monitoring;
- Action 3 – Investigate new by-catch reduction measures;
- Action 4 – Technology trials; and
- Action 5 – By-catch reduction fund.

This document discusses these actions in more detail, the programme for delivery, location, monitoring, reporting and potential outcomes for the five proposed actions, thereby setting out a plan for the implementation and monitoring of the project.

4. PROGRAMME OF DELIVERY

The programme for delivery of the ornithological by-catch reduction compensation measure is outlined in **Table 2**.

Table 2 Outlines the intended programme for delivery of the key Actions to be undertaken for the ornithological by-catch reduction compensation measure.

Actions	Approximate Proposed Timescales
Commence engagement with Ornithological By-Catch Reduction Steering Group	2023
First Ornithological By-Catch Reduction Working Group meeting held	26th March 2024
Finalised Plan of Works/Terms of Reference for the Ornithological By-Catch Reduction Working Group circulated	13th May 2024

Actions	Approximate Proposed Timescales
Provision of first draft of Ornithological By-Catch Reduction Delivery Plan circulated to working group for review and comment	18th June 2024
Second Ornithological By-Catch Reduction Working Group meeting held	26th July 2024
Second draft of the Ornithological By-Catch Reduction Delivery Plan incorporating member feedback distributed to working group for review and comment	Mid-October 2024
Final version of the Ornithological By-Catch Reduction Delivery Plan incorporated into the Lesser Black-Backed Gull Implementation and Monitoring Plan for submission to SoS	October 2024
Final version of the Ornithological By-Catch Reduction Delivery Plan incorporated into the Red- Throated Diver Implementation and Monitoring Plan for submission to SoS	December 2024
Action 2: One year of monitoring of fishing vessels for seabird by-catch	Q1 2025 – Q1 2026
Action 3: Investigate solutions for reducing sea by-catch through alternative fishing gear designs	January 2025 – November 2025
Report produced detailing the methodology, analysis and results from the monitoring project. This will be circulated to the Ornithological By-Catch Reduction Working Group to help direct discussions and decisions on next steps.	Q2 2026
Action 4: Trials undertaken of fishing gear solutions to reduce seabird by-catch at the direction of the working group (more information is included in Section 9)	June 2026 – June 2027
Action 5: Fund set up to support fishers in improving gear to reduce seabird by-catch	August 2027 onwards

5. ACTION 1 – CONVENE AN ORNITHOLOGICAL BY-CATCH REDUCTION TECHNICAL WORKING GROUP

The first action outlined in this report is to convene an ornithological by-catch reduction technical working group with a focus on fisheries working around the East Anglia region or join any existing working groups with the same objective. Engagement with potential group members was undertaken throughout 2023 and with no working groups in the region already in progress, this action has been implemented with the formation of the "Ornithological By-Catch Reduction Technical Working Group". In order to maximise stakeholder input and make the process efficient, a joint technical working group has been convened to inform the delivery of the ornithological by-catch reduction compensation measures for both projects. The group comprises representatives of East Anglia ONE North and TWO offshore windfarm projects, Natural England and the MMO as core members. To ensure the group works in a collaborative way with

ongoing UK by-catch workstreams, the Ornithological By-Catch Reduction Technical Working Group core members have discussed and agreed to invite the following organisations to join the technical panel meetings as advisory members:

- RSPB;
- Joint Nature Conservation Committee (JNCC);
- DEFRA;
- Centre for Environment, Fisheries and Aquaculture Science (CEFAS);
- SMRU (co-ordinator of UK Bycatch Monitoring Programme);
- Eastern Inshore Fisheries and Conservation Authority (Eastern IFCA);
- Norfolk and Suffolk Wildlife Trusts; and
- Fishers representatives (National Federation of Fishermen's Organisations (NFFO)).

See **Table 3** for a summary of the meetings held to date. Terms of Reference for the group have been discussed and agreed (see the agreement log in Annex 1 (**Table A 1**)). Updates on the meetings, discussions and agreements of Ornithological By-Catch Reduction Technical Working Group will be reported through an agreement log within the annual report (see Section 11 for reporting commitments).

Table 3 Summary of Ornithological By-Catch Reduction Technical Working Group meetings.

Meeting	Date	Attendees	Context
Working Group #1	26 March 2024	Natural England MMO	Provide an overview and update on the by-catch reduction compensation measure. Discussion on the Plan of Works and Terms of Reference. Identify next steps for the Ornithology By-Catch Reduction Technical Working Group
Working Group #2	26 July 2024	Natural England MMO	Discuss the information contained within the Ornithological By-Catch Reduction Delivery Plan [DRAFT] (document references: EA1N-GEN-CNS-PLN-IBR-000157/EA2-GEN-CNS-PLN-IBR-000112), with a key focus on: • Proposed timelines for programme delivery; • Monitoring methodology (Electronic Monitoring and on-board observers (see Section 6 of the Delivery Plan); • The location(s) of the by-catch monitoring and trials and the overlap of key species (red-throated diver and lesser black-backed gull) with fishing effort in the East Anglia region (see Section 10 of the Delivery Plan); and • The decision tree process after the results of Action 2 (monitoring) become available (see Section 12 of the Delivery Plan). Discuss the DCO condition Schedule 18, Part 2, Paragraph 5 for lesser black-backed gull in the context of the by-catch reduction measure.

6. ACTION 2 - MONITORING

Action 2 is to undertake one year of monitoring, in collaboration with the East Anglia based fishing industry, to record seabird by-catch by species and quantity and to gauge actual fishing effort, current techniques being employed and by-catch risk.

A review of recent by-catch workstreams across the UK has been undertaken, the findings of which were presented as part of the briefing note provided before the first Ornithological By-Catch Reduction Technical Working Group (26th March 2024). The briefing note highlighted that further monitoring effort will be required to deduce by-catch risk of key species within the East Anglia region.

One year of monitoring will be carried out in line with the timescales presented in **Table 2** in collaboration with fishers working around grounds where there is likely overlap with key species (primarily from the ports of Lowestoft and Southwold). The total number of fishers taking part in the monitoring will be discussed and confirmed with the Ornithological By-Catch Reduction Technical Working Group. SPR consultation with fishers has revealed the diverse nature of fishing methods used by individuals depending on a multitude of factors including catch market price, bait costs, fish abundance, regulations etc.. The following information will be recorded in addition to recording any seabird by-catch events:

- GPS for locations of hauls;
- Sea state;
- Wind direction / speed;
- Water depth;
- Soak time;
- Target species; and
- Relevant gear information (e.g. net/line length and mesh size).

Images will be captured of any seabird by-catch events to aid with species identification, and where possible identify age and sex (noting sex will only be applicable for sea ducks).

It should be noted that if no by-catch (or limited by-catch) of red-throated diver or lesser black backed gull is recorded during the monitoring the location, scale and/or scope of Actions 4 and 5 will be discussed and agreed with the Ornithological By-Catch Reduction Technical Working Group and reported through the reporting mechanisms outlined in Section 11 (also see Section 12 for further detail on adaptive management).

To monitor the contribution Action 2 has made to further understanding of seabird by-catch off East Anglia, monitoring will include (but not be limited to):

- Quantification of total fishing effort (e.g. number of vessels, hours, hauls or metres of net); and
- Quantification of data collected e.g. hours monitored, total number of by-catch events recorded.

It is likely that other relevant information will be collected alongside such as vessel type, net type, location of fishing activity.

6.1 METHOD

The two main methods for undertaking monitoring on fishing vessels have been explored in more detail these are; Electronic Monitoring (EM) and on-board observers. Details of both methods alongside advantages and disadvantages are provided in the following sections. The decision on the method employed for the monitoring project was made following discussions with fisheries liaisons, individual fishers feedback, and consultation with the Ornithological By-Catch Reduction Technical Working Group, particularly taking into consideration group members' experience and feedback on each option. It was noted that both EM and on-board observers would be suitable to carry out this action and was decided that EM would be taken forward as the method for monitoring.

6.1.1 Electronic Monitoring

EM systems are generally comprised of cameras, gear sensors, video storage, and satellite positioning (Ewell *et al.*, 2020). EM has been trialled within various fisheries globally as a complementary or alternative method to on-board observers (Ewell *et al.*, 2020; Murua *et al.,* 2020). A review undertaken by van Helmond *et al.* (2019) of 100 EM trials and twelve fully implemented EM programmes identified the three key benefits of EM.

Firstly, EM is considered a cost-efficient monitoring option in the medium to long term for fishing vessels, as large volumes of data can be collected once EM systems are installed. However, it is important to note an initial investment for the system equipment and installation is required (van Helmond *et al.,* 2019). Given the potential initial financial burden associated with EM systems, detailed costings will be needed to inform the decision as to whether EM or on-board observers are used during the by-catch monitoring. Furthermore, an EM system can provide a broader and more representative coverage of the fleet compared to on-board observers, as well as providing enhanced recording of fishing activity, which can be revisited at a later date (van Helmond *et al.,* 2019). Additionally, EM systems can increase crew safety by remotely monitoring vessel activities, thereby potentially reducing the need for on-board observers in hazardous conditions.

One of the downsides of EM that needs to be considered is that there is evidence to suggest EM is less effective in quantifying target catch in mixed-species net fisheries, where many individuals are hauled together (Lara-Lopez *et al.,*2012; van Helmond *et al.,* 2015). Therefore, if target catch, as well as by-catch, needs to be quantified, this downside needs to be considered.

It has also been reported that during EM trials on fishing vessels in the USA, obstructed views rendered footage unusable for analysis, despite the systems working properly. The main cause of data loss, which reached up to 48%, was unclear footage due to dirty lenses, often a result of the camera positioning challenges (van Helmond *et al.*, 2019). Additionally, crew members often blocked the camera view while working, particularly on smaller vessels with open decks or sorting tables, making video analysis challenging (Bergsson *et al.*, 2017; Needle *et al.*, 2015; Plet-Hansen *et al.*, 2019; Marine Management Organisation, 2013b).

Table 4 presents further advantages and disadvantages of using EM on fishing vessels, informed by van Helmond *et al.* (2019) and Bartholomew *et al.* (2018).

Table 4 Pros and cons of using EM on fishing vessels to monitor seabird by-catch, based on Bartholomew *et al.* (2018) and van Helmond *et al.* (2019).

Pros	Cons
Potentially more cost efficient (compared to on-board observers)	Procurement timescales
Allows higher effort of monitoring as the system can monitor during adverse conditions unlike human on-board observers	Financial compensation to fishers may be required as EM systems require electricity use on-board
Data could feed into wider DEFRA EM trials and workstreams	Potential concerns from fishers around intrusion of privacy
Reduced Health and Safety risk	Requires initial financial investment in equipment
High and randomised coverage	Challenging set-up on small vessels (Are vessels large enough to accommodate gear without hindering operations?)
High spatial and temporal GPS resolution	Time and people needed to adjust set-up to match workflow, set-up unique to each vessel

Pros	Cons
High precision on effort estimation	Maintenance of equipment e.g. cameras must be cleaned
Provided verifiability of observations (replay)	High data storage demand
Independent recording of catch information	Requires training of video inspection personnel
High acceptance amongst fishers who have previously had EM installed on vessels	High resource requirement for video inspection personnel (unless automated)
	Can affect workflow for crew
	Risk of system failures
	Difficult to distinguish similar-looking seabird species
	Low acceptance in the fishing industry in general
	Coverage of the vessel is dependent on the field of view and positioning of the camera

6.1.2 On-Board Observers

On-board observers have traditionally been used to monitor by-catch (Caretta *et al.*, 2004; Gales *et al.*, 1998; Rogan and Mackey, 2007) and target catch (Alfaro-Cordova *et al.*, 2017; Haigh *et al.*, 2002; Mangel *et al.*, 2013) on fishing vessels, including small scale fisheries (Doherty *et al.*, 2014; Mangel *et al.*, 2010; Ortiz *et al.*, 2016).The UK Bycatch Monitoring Programme (BMP) has used on-board observers on UK fishing vessels since 1996 to collect operational, environmental and catch/by-catch data to quantify by-catch rates of various protected species (Northridge *et al.*, 2020). One of the key advantages of having on-board observers on fishing vessels is their ability to provide real-time, firsthand data on catch composition, fishing practices, and environmental conditions (Bartholomew *et al.*, 2018). However, unlike EM these observations cannot be revisited at a later date unless the observer takes photographs (Bartholomew *et al.*, 2018).

Furthermore, there are limitations to relying solely on on-board observers. The cost of deploying and maintaining on-board observers can be significant, especially for small-scale or remote fisheries (van Helmond *et al.*, 2019). Data collected by on-board observers can be biased as a result of low fleet coverage (McCluskey and Lewison, 2008) and observer effects (Benoît and Allard, 2009; Faunce and Barbeaux, 2011). And there are safety concerns that need to be considered when using on-board observers especially during hazardous weather (van Helmond *et al.*, 2019).

Table 5 presents a list of the advantages and disadvantages of using on-board observers on fishing vessels to monitor by-catch.

Table 5 Pros and cons of using on-board observers to on fishing vessels to monitor seabird by-catch, (Bartholomew *et al.*, 2018).

Pros	Cons
Potentially more (anonymity etc.) acceptable to the fishers	Lower monitoring effort (adverse conditions can prevent human on-board observers from going out on vessels)

Pros	Cons
More cost effective when number of days fishing is low	Lower coverage meaning rare catches/ event may be missed (may be a concern for red-throated diver by-catch)
Logistically easier	Higher health and safety risk
Whole vessel can be covered	Space required on smaller vessels for extra person
Multiple cues can be used to identify species e.g., visual, touch	Difficult to implement on a large spatial and temporal scale
Observers can alter position to aid identification	Behavioural changes as a result of observer presence
	Identification once and in real-time unless a picture is taken
	Potentially higher cost compared with EM (depending on coverage required)

7. ACTION 3 - INVESTIGATE NEW MEASURES

The working group will investigate alternative fishing gear designs and/or new methods of gear, with the overarching aim of finding alternatives to the currently used gear types which may have the potential to reduce ornithological by-catch (which can then be trialled in Technology Trials (Action 4)). This action will be undertaken in parallel with the by-catch monitoring work (Action 2). Details on the methodology for this investigation will be decided with the Ornithological By-Catch Reduction Technical Working Group but is likely to take the form of a literature review, also supported by any findings published from other ongoing by-catch trial initiatives, such as The Cornwall Bycatch Project[9] and the trials undertaken by Ørsted as part of Hornsea Four Offshore Wind Farm's suite of compensation measures. In addition, the review will be informed by consultation with industry experts and other individuals and/organisations with knowledge of fishing technology. Findings from this Action will be reported to the Ornithological By-Catch Reduction Technical Working Group in the form of a report and will then feed into further discussions around Action 4. Findings will also be presented in the subsequent annual report.

8. ACTION 4 - TECHNOLOGY TRIALS

Action 4 is to undertake a year of at sea-trials of the alternative gears identified by Action 3, working in collaboration with the fishing industry as advised by the Ornithological By-Catch Reduction Technical Working Group. Controlled trials of alternative fishing gear designs, technology and/or new deployment/hauling methods will be carried out in East Anglia (subject to findings of the by-catch monitoring – see paragraph below), with methodology and wider plans advised by the working group and external advisors. This initiative includes compensating fishers on a non-targeted and confidential basis to deploy innovative technology, record catch values and species, and provide recommendations for future use. Additionally, fishers will be paid to use alternative techniques with their current gear if a year of monitoring shows by- catch or potential by-catch risks (see Sections 9 and 12 for further detail

[9] The Cornwall Bycatch Project is a joint initiative between the RSPB, Birdlife International, Cornwall Inshore Fisheries and Conservation Authority, Natural England (NE), and Cornish gillnet fishers. Further info: https://www.cornwall-ifca.gov.uk/looming-eyes (Accessed June 2024).

on the Fund (Action 5)). The results of these trials will be documented in a technical report and a plain English report for public dissemination to share findings and recommendations.

It should be noted that the implementation of at sea-trials will be dependent on the findings of the by-catch monitoring (Action 2). If little to no by-catch (or very limited by-catch) is recorded during the monitoring, carrying out technology trials in the East Anglia region may be deemed unnecessary through discussions with the Ornithological By-Catch Reduction Technical Working Group due to the lack of any benefit from a technology trial in that situation. This is due to the fact that conducting by-catch reduction trials in a region with little to no recorded by-catch is unlikely to provide useful information or data. Any decisions on the implementation of technology trials, or alternative actions in the event by-catch monitoring results conclude little to no by-catch, will be undertaken in collaboration with the Ornithological By-Catch Reduction Technical Working Group. Decision flowcharts outlining the interdependencies between the actions are provided in Section 12.

Monitoring the success of the at-sea trials would consist of (but is not limited to) the collation of information on:

- Benefits achieved monitoring of fishing efforts to quantify changes in by-catch events following employment of new gear/methods and any changes in target catches as a result of new gear;
- Quantification of number of fishers and vessels participating in the trials;
- Quantification of amounts of each gear/equipment type or method trialled; and
- It could also include a narrative around willingness by fishers to partake in trials, and their feedback about their experience of using of the alternative gear/methods, and any impacts upon their fishing operations.

9. ACTION 5 - FUND

Action 5 will be to establish a fund to the total value of £500,000 to support fishers to make improvements to fishing gear and equipment to reduce by-catch of seabirds. The gear and equipment eligible will be informed by the recommendations that come out of Action 3 and 4 and will be advised through discussion with the Ornithological By-Catch Reduction Technical Working Group and wider UK by-catch work (such as the Clean Catch By-Catch Mitigation Hub). The fund will be administered by SPR.

It is envisaged that the fund will be used to support fishers in the East Anglia region in the first instance. However, if low numbers of by-catch are established from monitoring, the allocation and priorities of the fund will be discussed with the Ornithological By-Catch Reduction Technical Working Group in order that it is used in a way that will have the greatest benefit for the reduction of seabird by-catch. This may result in the fund being made available to a wider geographical region if agreed that this would be the most appropriate use of the fund by the Ornithological By-Catch Reduction Technical Working Group. SPR commit to the creation of a Heads of Terms for the fund which will detail the objectives of the fund, how fishers can apply and eligibility criteria, commitment to payment schedules, reporting obligations for successful applicants. This Heads of Terms will be discussed and agreed with the Ornithological By-Catch Reduction Technical Working Group and published through channels such as local fishers associations, known individual fishers and the relevant Inshore Fisheries and Conservation Authority, to ensure the fund is accessible to all.

In order that the fund is used to support the highest benefit for the reduction in seabird by-catch in fishing gear, it is likely that any applicants to the fund will be required to provide information such as:

- Extent of their participation in the monitoring work undertaken as part of Action 2 or any other by-catch monitoring work;
- The gear they currently use and the gear they would like to replace or upgrade to;
- Their total fishing effort and location of fishing; and
- A commitment to using the new gear and self-reporting of any subsequent by-catch through the CleanCatch UK app (or best practice at the time).

The information required for application to the fund will be dependent on the results of Action 2 monitoring and discussion and agreement with the Ornithological By-Catch Reduction Technical Working Group on the most valuable use of the fund (i.e. target region, fishing method and high-risk species). Selection of successful applicants to the fund will be based on the potential scale in the reduction of seabird by-catch from the new gear type being requested, the likelihood of success and other criteria that will be discussed and agreed with the Ornithological By-Catch Reduction Technical Working Group.

Monitoring the ongoing commitment to the use of alternative fishing gear (or new methods) would require ongoing liaison with the fishing industry. Individuals will be expected to commit to the new gear having only disposed of old gear as part of a gear swap scheme if the alternative would be similar or better, or regulated against. The key monitoring components would be:

- Recording the uptake of alternative gear (or methodology changes) (e.g. numbers of fishers, amount/types of gear swapped, details of vessels taking part etc.); and
- Engaging with participants to record and assess incidences of by-catch after deploying new gear or methodology changes (including looking to collect anecdotal evidence from fishers of changes in by-catch following gear swap/methodology change).

Results on uptake including the proportion of successful applicants will be reported to the Ornithological By-Catch Reduction Working Group and the Secretary of State through the annual reporting process as detailed in Section 11.

10. LOCATION

The five key actions to the by-catch reduction compensation measure will focus on the East Anglia region as far as possible. This area was selected for two reasons. Firstly, focusing efforts in the East Anglia region can provide further detail of the level of by-catch of the species of concern for the Projects (red-throated diver and lesser black-backed gull) in relevant waters. In addition, ScottishPower Renewables, has a longstanding positive relationship with the fishing industry in that region, and a track record of ensuring co-existence between fisheries and offshore wind, having commissioned post-construction long-lining and trawling compatibility surveys on East Anglia ONE. As such there is an existing platform for working together. In the sections below, distributions of red-throated diver, lesser black-backed gull and fishing efforts are discussed and areas of overlap outlined. This information will be used to select the location(s) of the by-catch monitoring and trials, with decisions on locations consulted upon by the Ornithological By-Catch Reduction Technical Working Group.

It should be noted that if no by-catch (or limited by-catch) is recorded during the monitoring (Action 2), the location, scale and/or scope of actions 4 and 5 will be discussed and agreed with the Ornithological By-Catch Reduction Technical Working Group to ensure the work undertaken is of benefit to reducing by-catch (see Section 12). Furthermore, the methodology and wider plans for the trials will be informed by further discussions with the Ornithological By-Catch Reduction Technical Working Group. Any decisions on changes to the proposed location would be taken in consultation with the Ornithological By-Catch Reduction Technical Working Group and informed by research and detailed in annual reporting. For example, several by-catch hotspots were identified around the UK by Northridge *et al.* (2020) including the coast around Shetland, north of the Humber Estuary, and along the south of England; each of which were highlighted as key areas that would benefit from by-catch reduction effort.

10.1 RED-THROATED DIVER

The OTE SPA is located in the southern North Sea along the east coast of England, extending northward from the Thames Estuary to the marine area off Great Yarmouth on the East Norfolk Coast. In February 2018, HiDef conducted two aerial surveys of the OTE SPA, with red-throated diver being the most abundant bird species within the SPA (Irwin *et al.*, 2019). The population of red-throated diver was estimated to be 21,997 individuals within the 'original' OTE SPA and 22,280 individuals within the enlarged OTE SPA (i.e. approximately 3.5 times greater than the notified population of the original SPA designation of 6,466 individuals (2010) (Irwin *et al.*, 2019). The density estimate for red-throated diver

was 2.66 birds/km² during the first survey (equating to 10,136 birds) (**Figure 3**) and 5.78 birds/km² during the second survey (equating to 21,997 birds within the SPA) (**Figure 4**).

10.2 LESSER BLACK-BACKED GULL

AOE SPA is located on the east coast of Suffolk encompassing the estuary complex of the rivers Alde, Butley and Ore, and includes Havergate Island and Orfordness. As of 2023 this SPA supports a breeding population of 1,524 lesser black-backed gulls, according to the seabird monitoring programme (SMP) database (British Trust for Ornithology, 2024).

There is limited data available on the distribution of lesser black-backed gull in and around the AOE SPA. In order to identify important locations for lesser black-backed gull associated with the AOE SPA during the breeding season, monthly densities estimates derived from Waggitt *et al.* (2019) have been presented in **Figure 5** (January to April), **Figure 6** (May to August) and **Figure 7** (September to December). This data was based upon 2.68 million km of aerial and vessel survey data were collected from 1980 to 2018. It should be noted, Waggitt *et al.* (2019) caveated that the data should not be treated as absolute densities and fine scale distribution, but rather as a representation of relative densities and broad scale distributions. Overall, the data shows lesser black-backed gull densities within the East Anglia region are highest during September and October (**Figure 7**). During the breeding season (April to August, Furness (2015)) lesser black-backed gull densities appear to be highest in and around the AOE SPA (**Figure 5** and **Figure 6**).

Woodward *et al.* (2019) reviewed of measured foraging ranges for a wide range of seabird species including lesser black backed gull. The mean-maximum refers to the maximum range reported for each colony, averaged across all colonies for a particular species. Mean-maximum foraging rate for lesser black-backed gull is estimated to be 127±109km (**Figure 8**). Colony specific ranges were also provided by Woodward *et al.* (2019), **Figure 8** illustrates the maximum foraging ranges from Orfordness (124km) and Havergate (22.5km) alongside the mean- maximum range (127±109km) for lesser black-backed gull. Based on foraging ranges presented in Woodward *et al.* (2019), there is the potential for lesser black-backed gull breeding at AOE SPA to forage across (and beyond) the East Anglia region, thus including the area within which the by-catch monitoring is proposed to occur (Action 2, see section 6).

During the breeding season lesser black-backed gull typically forage at sea, to a greater extent than other large gulls (Kubetzki and Garthe, 2003). There is evidence to suggest this species often feed on fishery discards, and as such are often observed interacting with fishing vessels (Leopold *et al.*, 2013; Vanermen *et al.*, 2020). Studies show that their foraging activity overlaps with commercial fishing effort, indicating they feed on fisheries discards (Camphuysen, 2013). While some gulls may be attracted to areas of high activity without feeding on discards themselves (Götmark *et al.*, 1986), the overlap between foraging trips and fishing activity, along with the presence of benthic fish in their diet, strongly suggests lesser black-backed gull are indeed feeding on discards (Camphuysen, 2013).

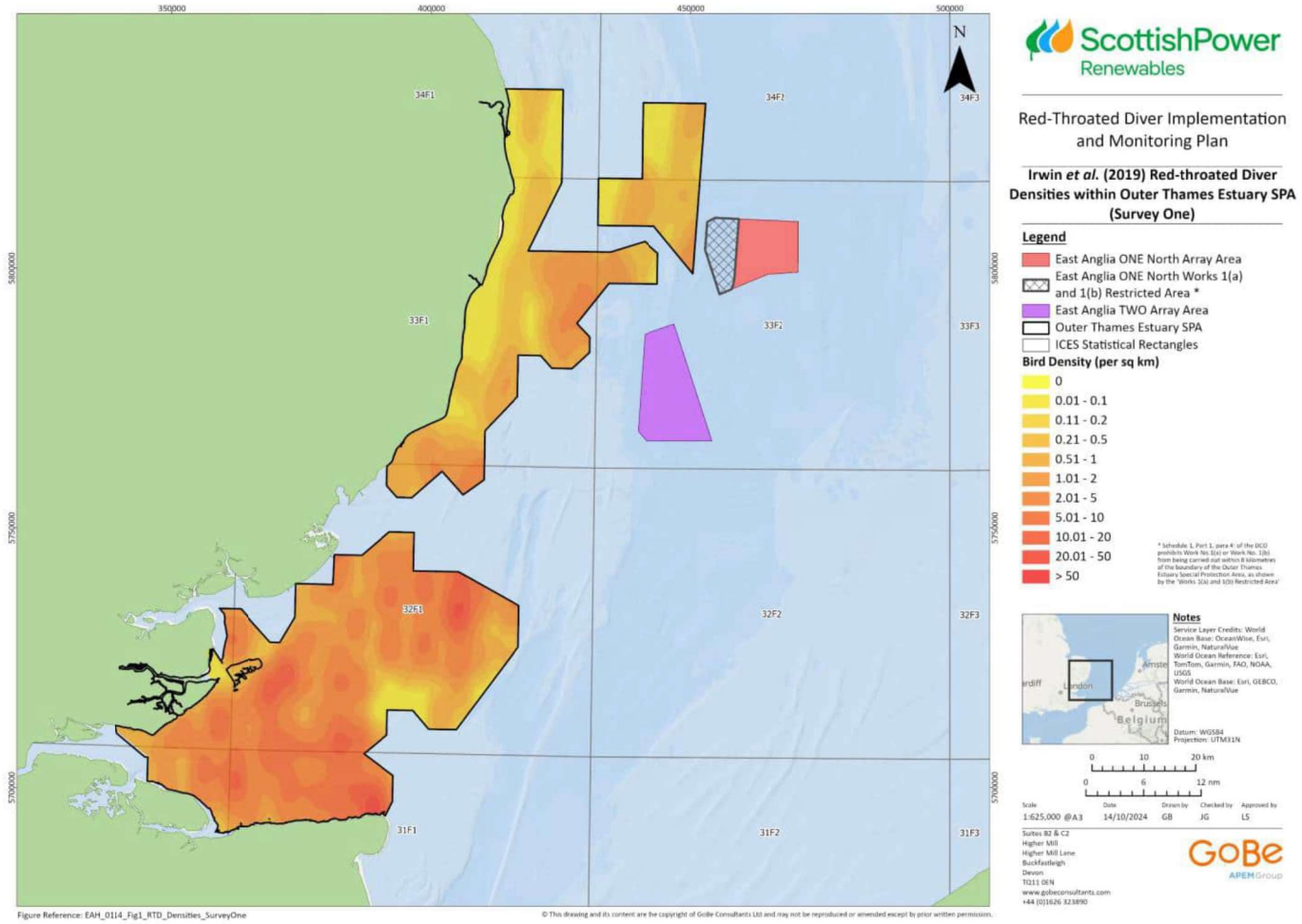

Figure 3 Red-throated diver densities within Outer Thames Estuary SPA during Survey One (4 February 2018). Data source: Irwin *et al.* (2019).

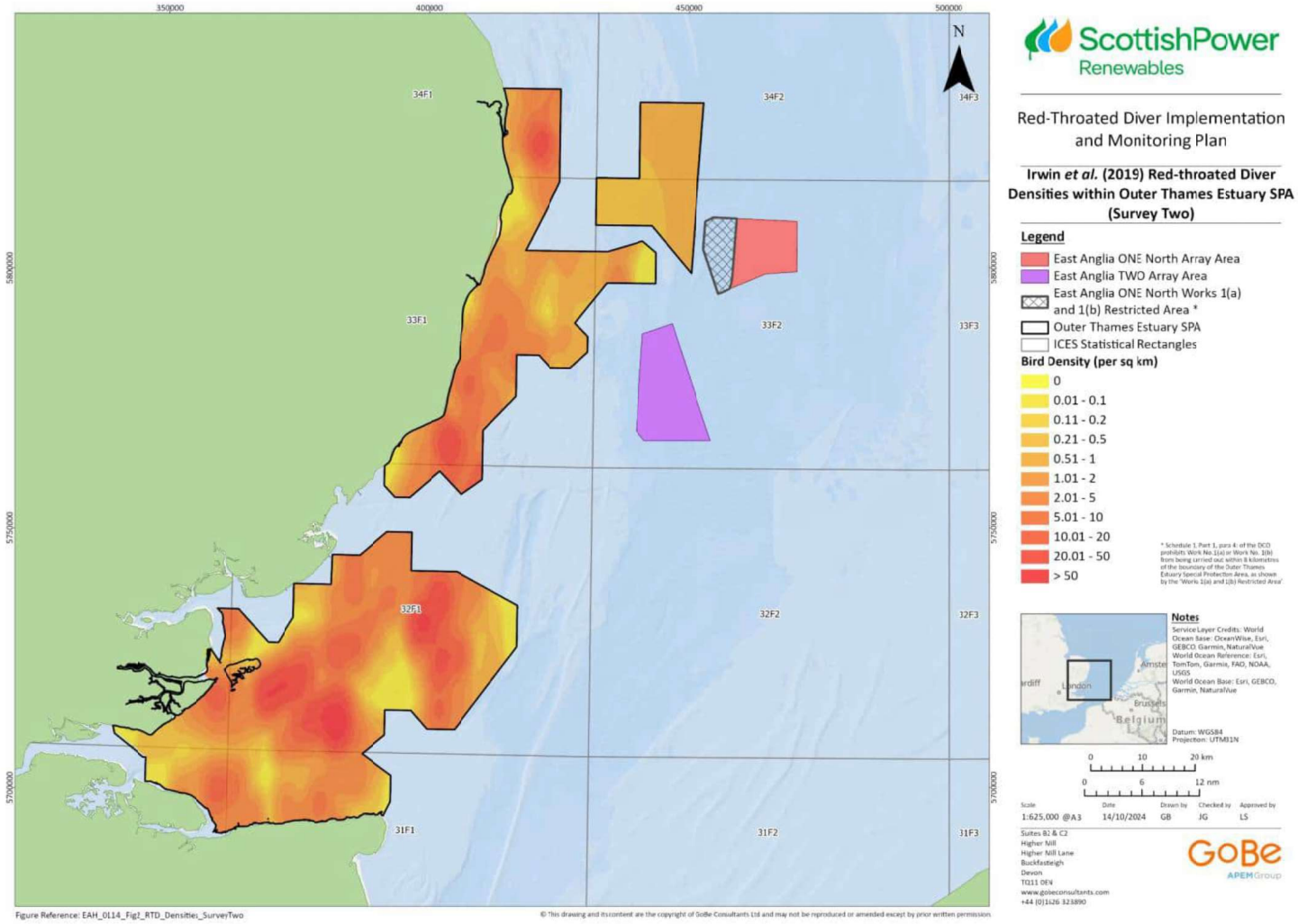

Figure 4 Red-throated diver densities within OTE SPA during Survey Two (17 February 2018). Data source: Irwin *et al.* (2019).

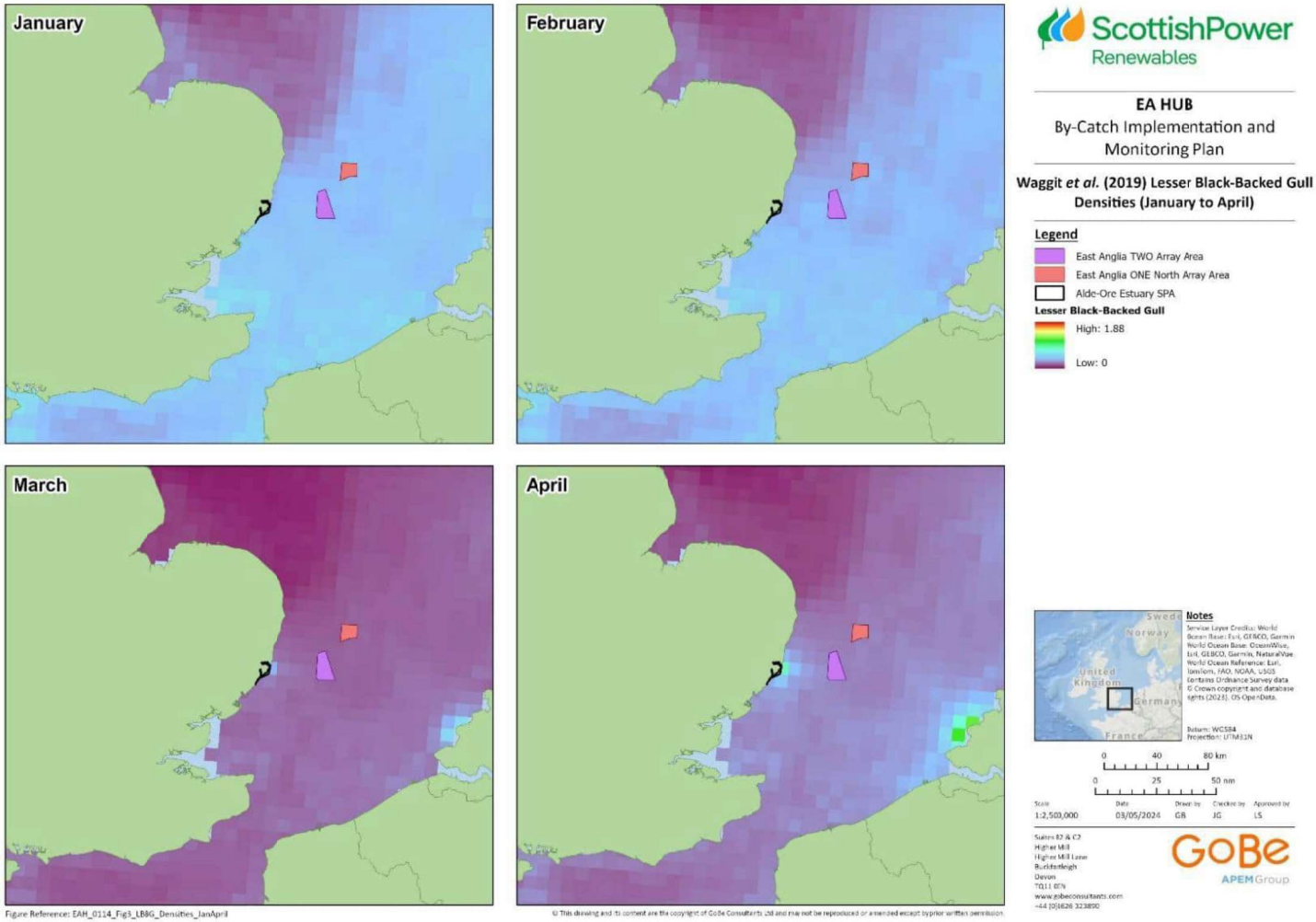

Figure 5 Spatial variation in predicted densities of lesser black-backed gull (bird per km^2) in January to April. Values are provided at 10km resolution and colour gradient represents increase in densities. Data source: Waggitt *et al.* (2019).

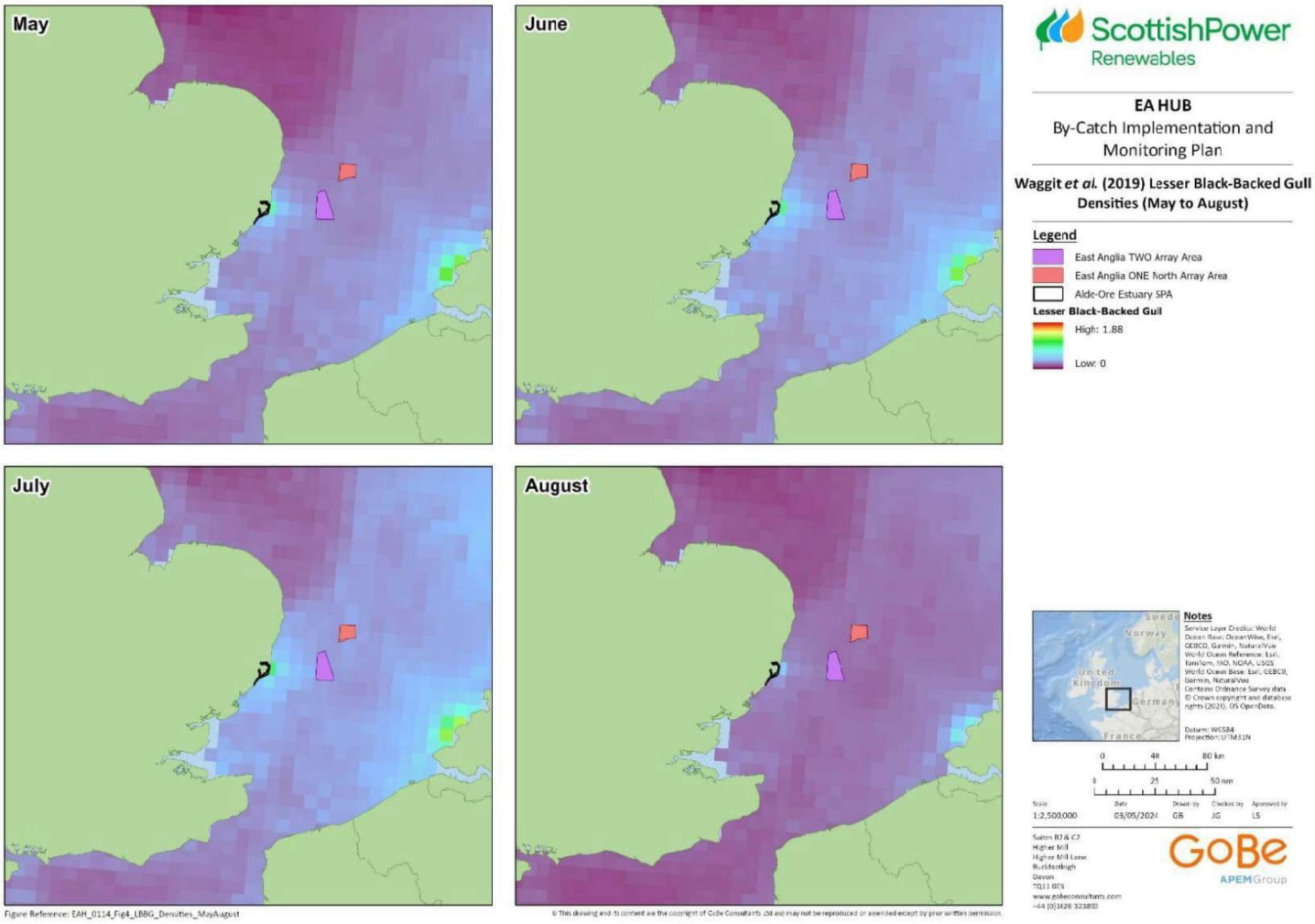

Figure 6 Spatial variation in predicted densities of lesser black-backed gull (bird per km^2) in May to August. Values are provided at 10km resolution and colour gradient represents increase in densities. Data source: Waggitt *et al.* (2019).

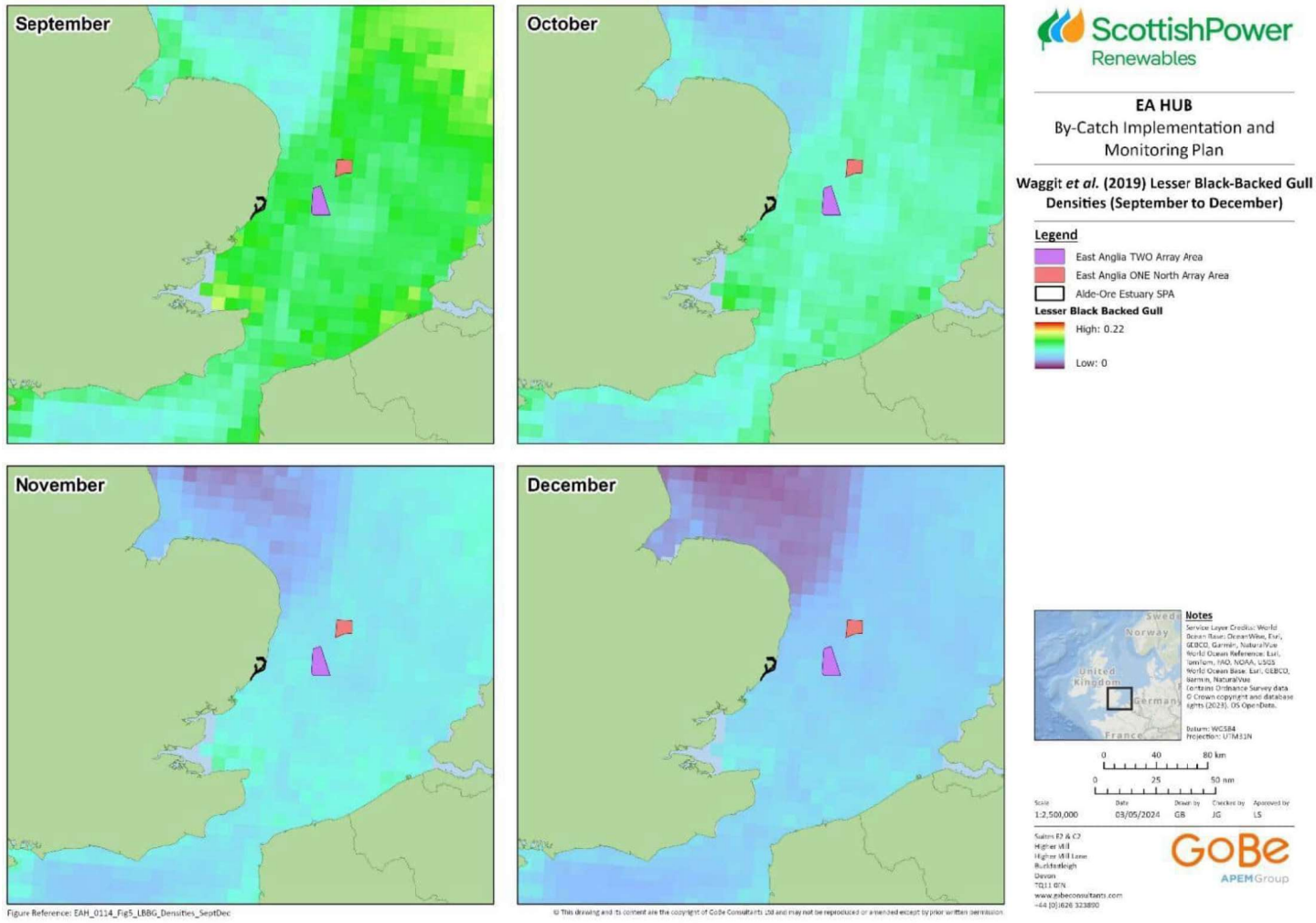

Figure 7 Spatial variation in predicted densities of lesser black-backed gull (bird per km^2) in September to December. Values are provided at 10km resolution and colour gradient represents increase in densities. Data source: Waggitt *et al.* (2019).

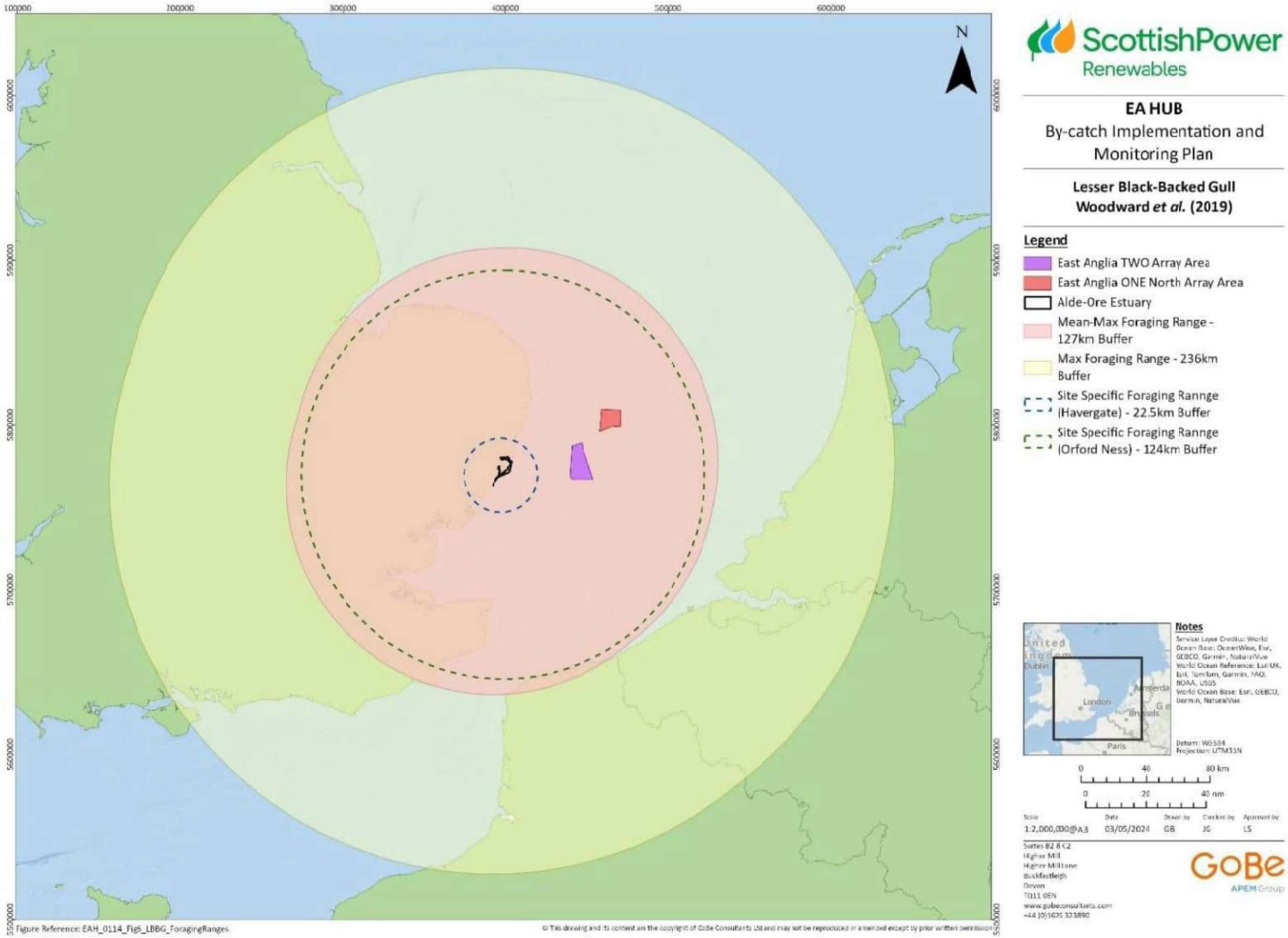

Figure 8 Mean- maximum and maximum foraging ranges of lesser black-backed gull from the AOE SPA. Data source: Woodward *et al.* (2019).

10.3 FISHING EFFORT

Gillnetting generally has a higher fishing effort compared to long-lining (**Figure 9**). The greatest gillnetting activity is observed in 32F1 and 33F1.This area sees concentrated effort along the coast extending out to 12 nautical miles (**Figure 10**). The highest longlining effort occurs in 33F1 and 33F2 (with some additional activity in 32F1) within the East Anglia TWO study area, with some overlap with the Export Cable Corridor (**Figure 11**).

The distribution of red-throated diver and fishing efforts (**Figure 3**, **Figure 4**, **Figure 10**, **Figure 11**) show that overlap is present across the East Anglia region. Given the fishing effort in the area, it is suggested to focus monitoring efforts primarily within ICES rectangles 32F1 and 33F1, with potential consideration for rectangle 34F1 as well.

Based on the evidence on distribution and foraging ecology presented in Section 10.2, it is considered likely that lesser black-backed gull from AOE SPA will interact with the fishing vessels in the East Anglia region, thus increasing the risk of being by-caught. The specific location chosen for the by-catch monitoring (Action 2) is less important in terms of this species as lesser black-backed gulls will likely associate with vessels across the East Anglia region.

Overall, the evidence outlined in the sections above suggest fishing activities by gillnetters and longliners overlap with the distribution of red-throated diver and lesser black-backed gulls, thereby highlighting the potential by-catch risks within this region. The information presented here will be discussed with the Ornithological By-Catch Reduction Technical Working Group in order to select the location(s) of the by-catch monitoring and trials.

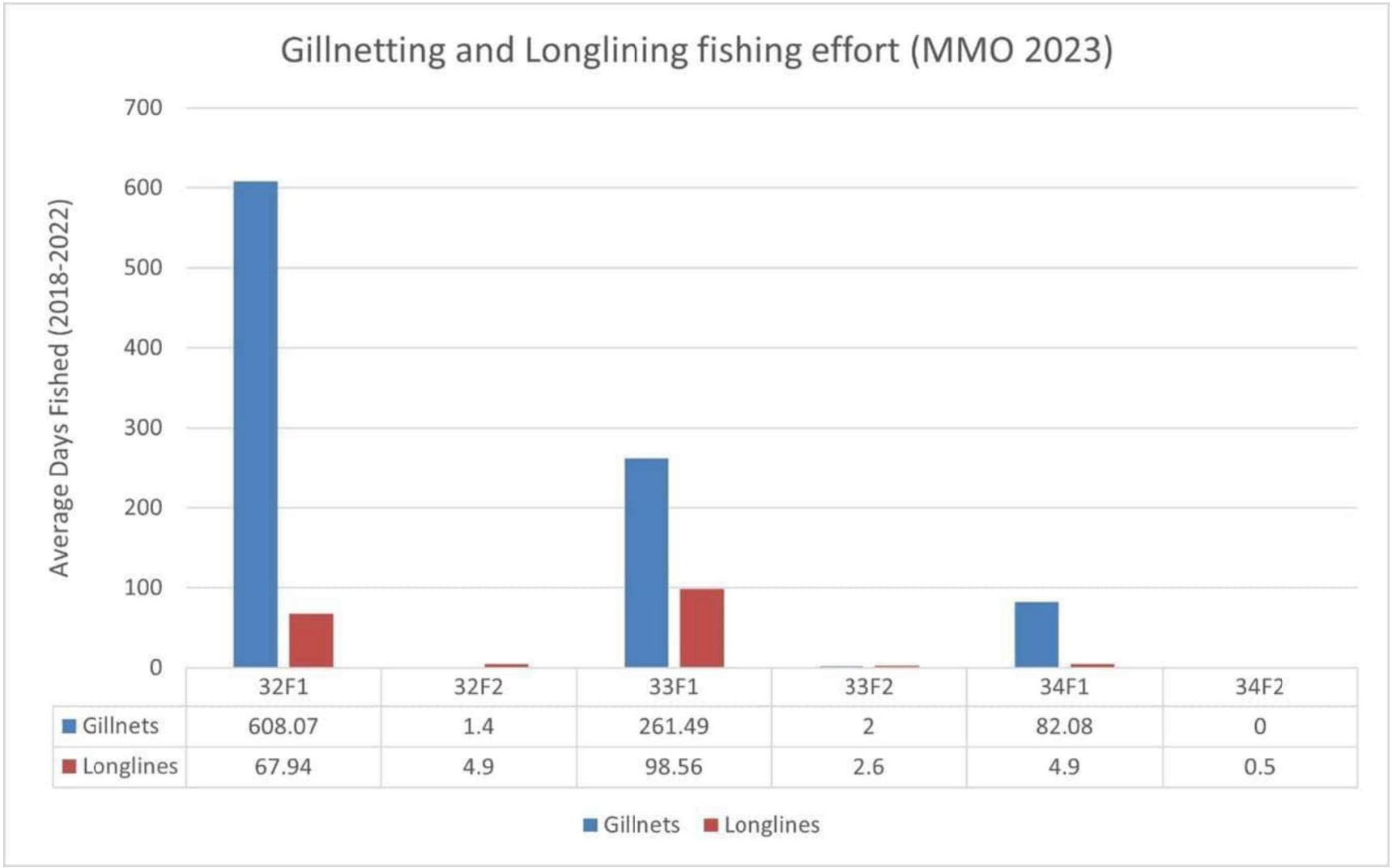

Figure 9 Gillnetting and longlining fishing effort (average days fished between 2018 – 2022) across the ICES rectangles within the East Anglia region. Data source: MMO (2023).

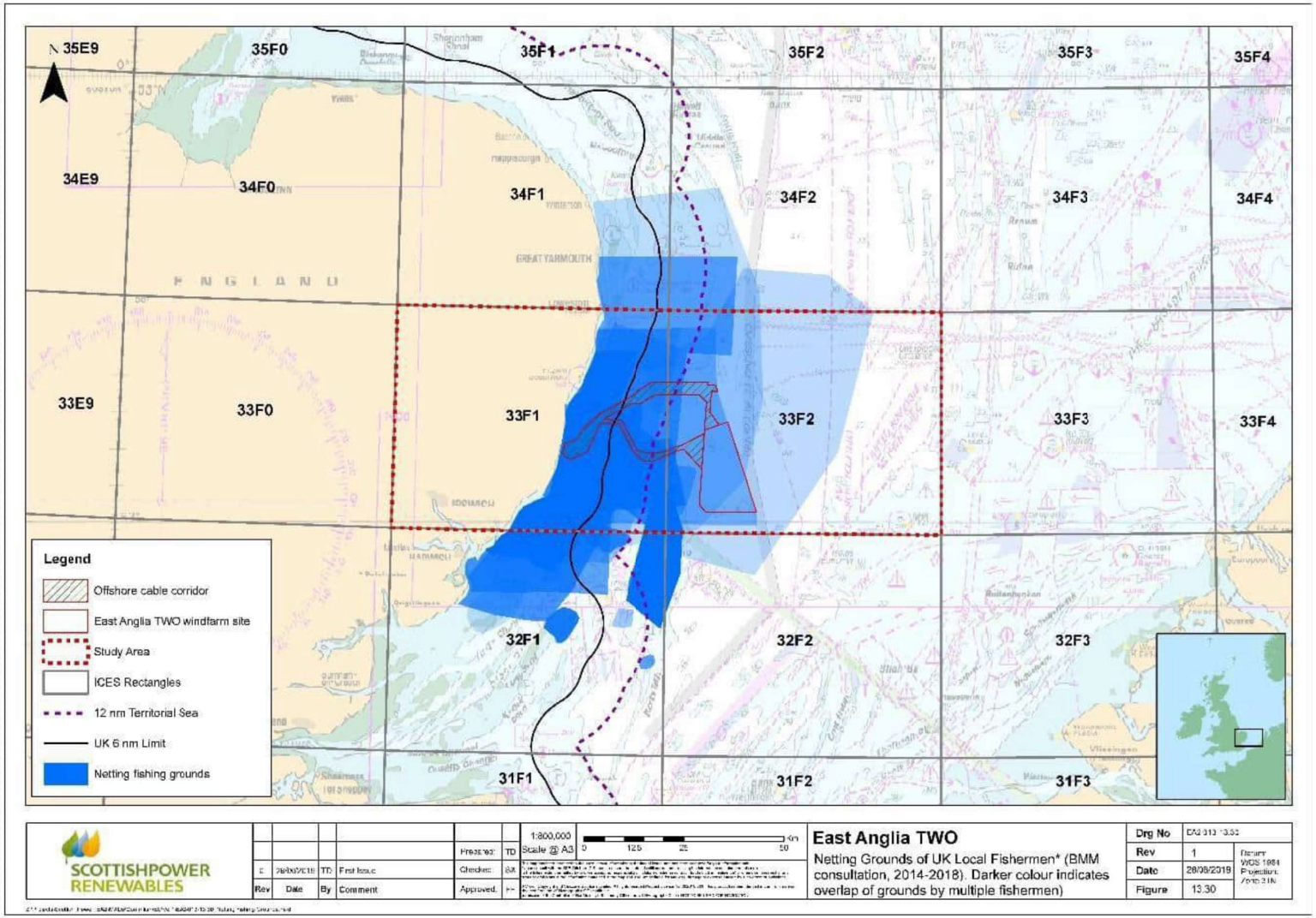

Figure 10 Netting fishing grounds in and around the study area (ICES rectangles 33F1 and 33F2), darker colour indicates overlap of grounds by multiple fishers.

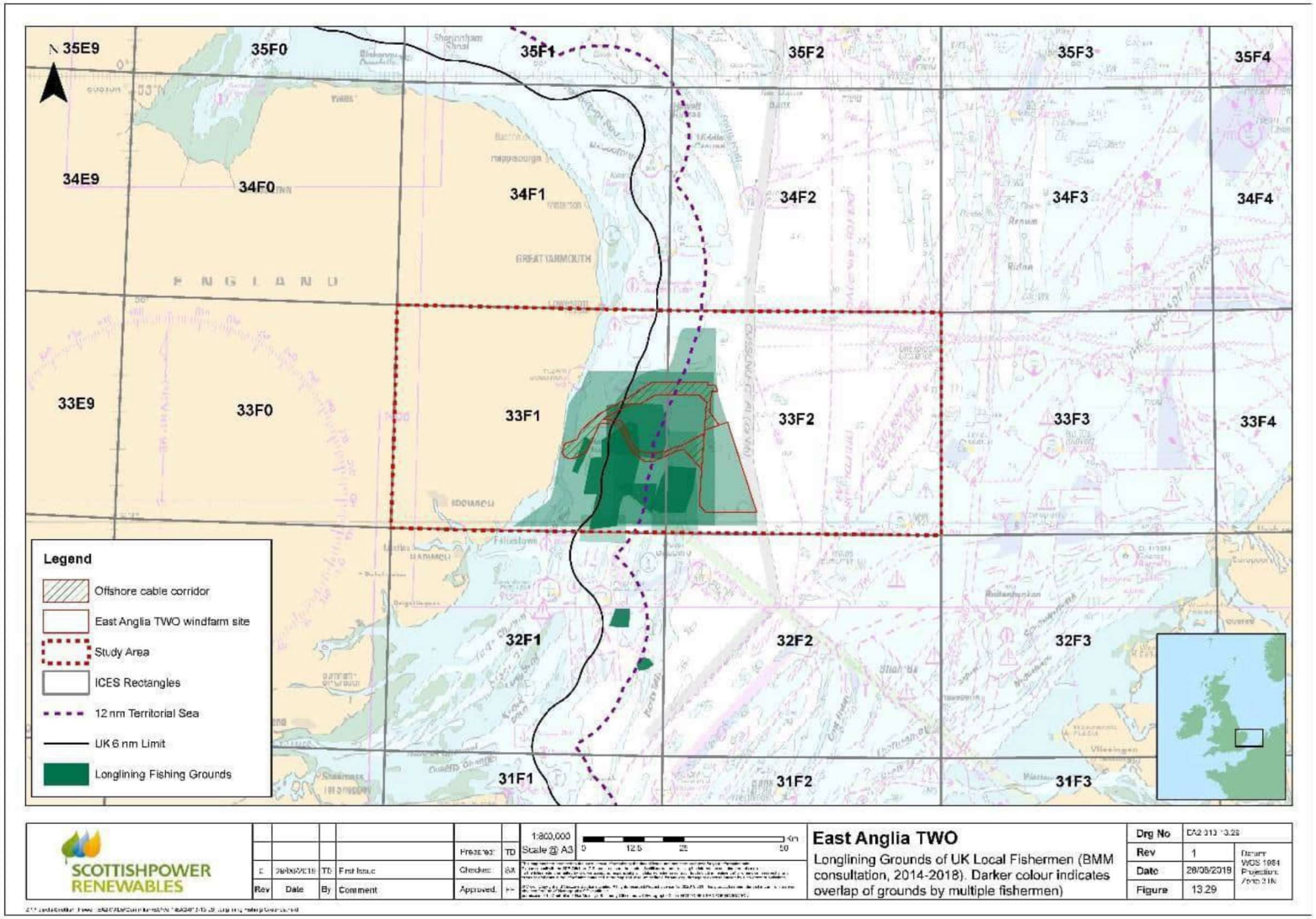

Figure 11 Longlining fishing grounds in and around the study area (ICES rectangles 33F1 and 33F2), darker colour indicates overlap of grounds by multiple fishers.

11. REPORTING

Paragraphs 6 and 7 of Part 2 of Schedule 18 of the DCOs establish the reporting requirements that will be adhered to by East Anglia ONE North and TWO in relation to the LBBG by-catch compensation measure. These are as follows:

> *"6. The undertaker shall notify the Secretary of State of completion of implementation of the measures set out in the LBBIMP.*
>
> *7. Results from the monitoring scheme must be submitted at least annually to the Secretary of State and the relevant statutory nature conservation body. This must include details of any finding that the measures have been ineffective in securing an increase in the number of adult lesser black-backed gulls available to recruit to the SPA and, in such case, proposals to address this. Any proposals to address effectiveness must thereafter be implemented by the undertaker as approved in writing by the Secretary of State in consultation with the relevant statutory nature conservation body."*

Paragraphs 6 and 7 of Part 3 of Schedule 18 of the DCOs establish the reporting requirements that will be adhered to by East Anglia ONE North and TWO in relation to the red-throated diver by-catch compensation measure. These are as follows:

> *"6. The undertaker shall notify the Secretary of State of completion of implementation of the measures set out in the RTDIMP. Once implemented, the measures should remain in place throughout the operational lifetime of the authorised development.*
>
> *7. Results from the monitoring scheme and aerial digital surveys must be submitted at least annually to the Secretary of State and the relevant statutory nature conservation body. This must include details of any finding that the measures have been ineffective in securing the maintenance of the SPA's conservation objectives and, in such case, proposals to address this. Any proposals to address effectiveness must thereafter be implemented by the undertaker as approved in writing by the Secretary of State in consultation with the relevant statutory nature conservation body."*

Note that the DCO conditions outlined above are in reference to the wider compensation measures for red- throated diver (vessel navigation management) and lesser black-backed gull (predator control). In order to align the ornithological by-catch reduction compensation programme implementation with the DCO conditions outlined above, reporting on i) progress on, and ii) findings from, the actions from the ornithological by-catch reduction compensation programme will also be completed on an annual basis through the submission of an annual report. Each annual report will detail the actions undertaken in the previous year and the outcomes of these actions. The annual report will also include the methodology and analysis relevant to the Action being reported, along with the processed data relevant for that Action. Discussions had and agreements made within the Ornithological By-Catch Reduction Technical Working Group will also be provided, particularly details and agreements on the implementation of subsequent actions.

12. POTENTIAL OUTCOMES

Below, a series of flowcharts are provided to give a clear overview of the outcomes expected to be delivered by the ornithological by-catch reduction compensation programme. These flowcharts also clarify the interdependencies between actions, and the decision process that is proposed to aid discussion on programme direction with the Ornithological By-Catch Reduction Technical Working Group. **Figure 12** shows the decision process for determining the direction of Action 4 which will be

exclusively based on analysis and discussion around the results from the year of the monitoring undertaken in Action 2. **Figure 13** shows the decision process for determining the most beneficial use of the fund to reduce seabird by-catch. Finally, Figure 14 provides a full flowchart of all the outcomes expected to be delivered by the ornithological by-catch reduction compensation programme, with full interdependencies between actions, outputs and outcomes shows.

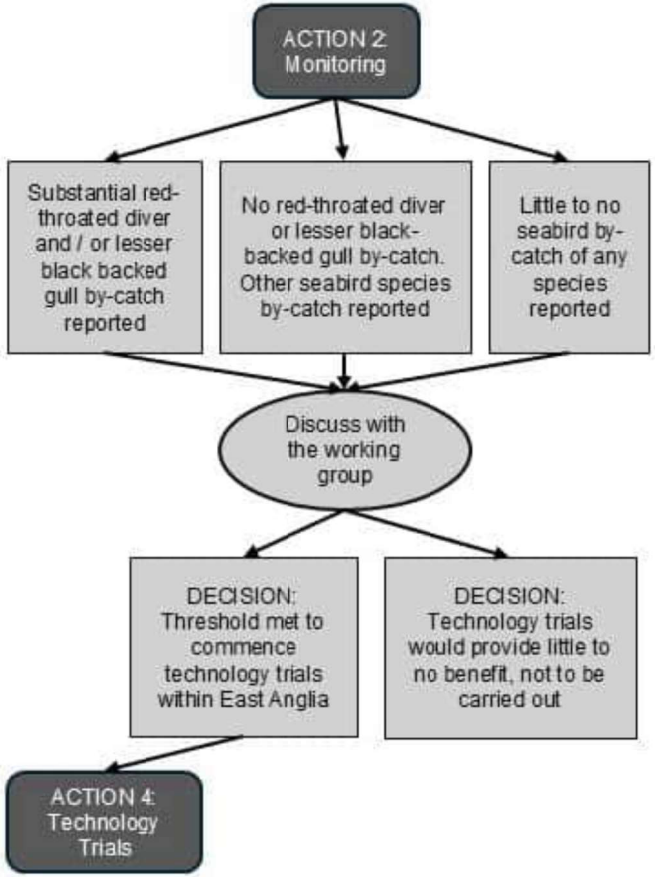

Figure 12 Decision process for deciding whether the technology trials (Action 4) should go ahead, depending on the results from the monitoring in Action 2.

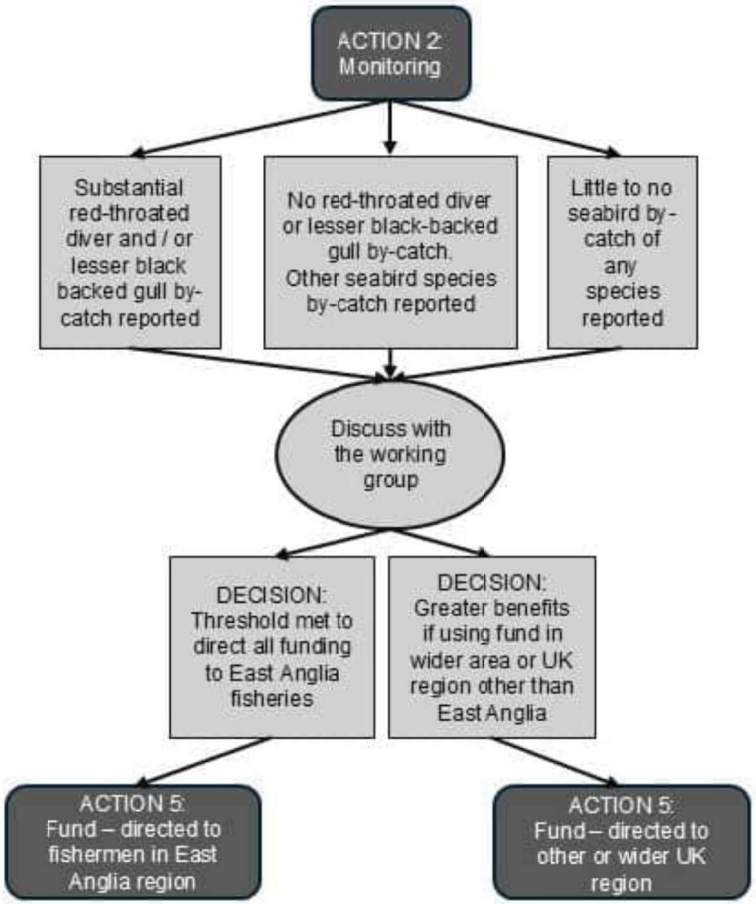

Figure 13 Decision process for deciding whether the fund (Action 5) should be targeted to East Anglia fishers, or to fisheries in a different or wider UK region.

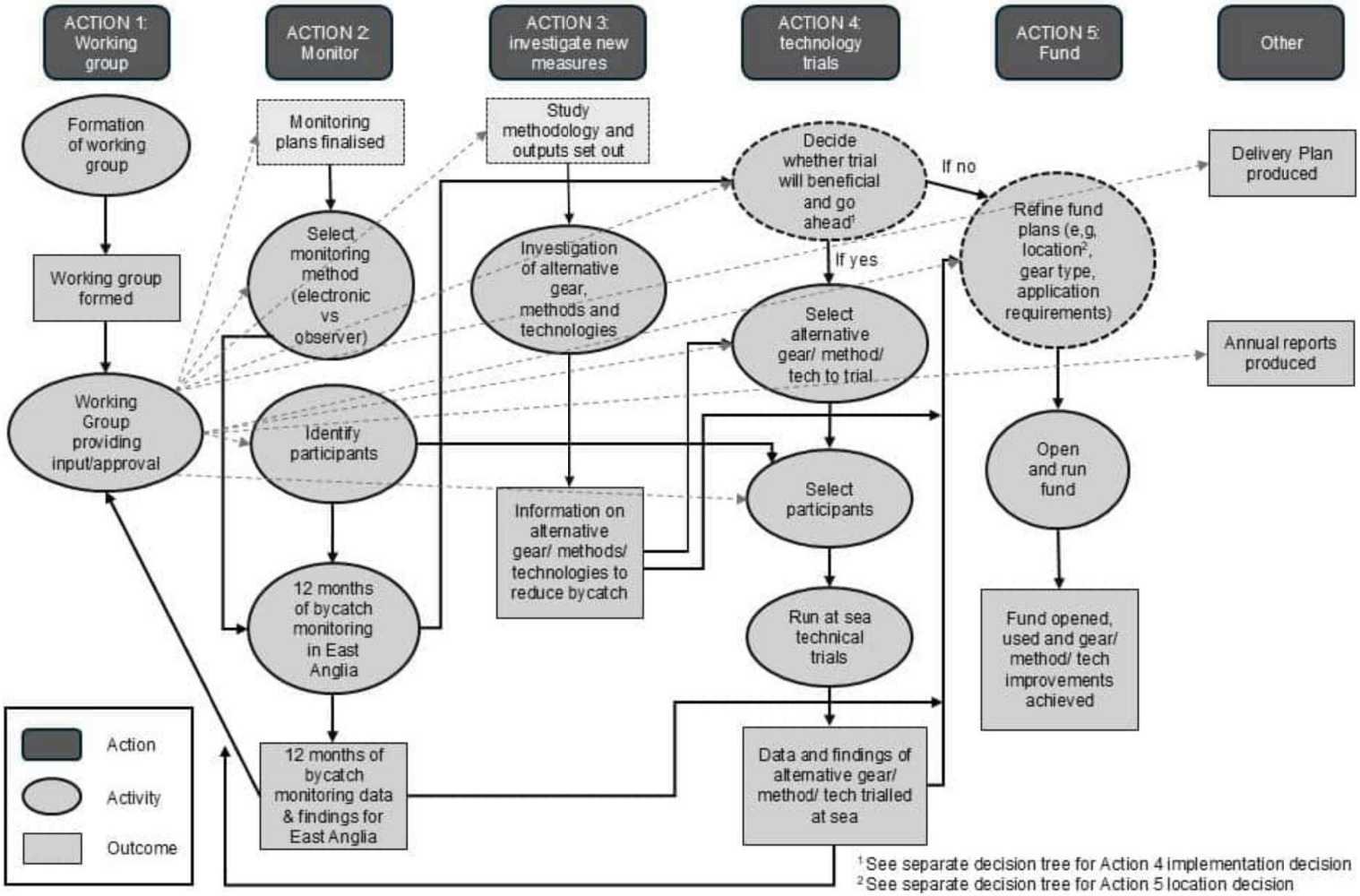

Figure 14 Flowchart showing actions, activities and outcomes of the ornithological by-catch reduction compensation programme. Solid arrows show interdependencies between activities and outcomes. Dashed arrows show input from working group.

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ANNEX 1

This Annex provides details of the comments and agreements during the development of the By-Catch Reduction Delivery Plan. The Agreement Log is provided in **Table A 1** and comments on the first draft of the Delivery Plan in **Table A 2**.

Table A 1 Ornithological By-Catch Reduction Technical Working Group Agreement Log.

ID	Topic on which SPR seeks alignment	SPR Comments	Working Group Member Comments	Agreed/Disagreed/Actions
Plan of Work for the Ornithology By-Catch Reduction Working Group				
1. Terms of Reference				
PoW1.1	That the Core members agree with the Terms of Reference	Discussed at 26/03/2024 Working Group #1 - Terms of Reference submitted to the core members on 29/02/2024	26/03/2024- Natural England noted resource constraints over the summer with a large number of projects reaching significant milestones, as such documents should be submitted 4 weeks before the relevant meeting (2 weeks at latest) and that any documents submitted after the 2-week mark will not be commented on during the meeting. Natural England also noted that anything requiring a written response from Natural Englandwill be provided 4 weeks following the meeting.	26/03/2024- ACTION- Natural England and the MMO to provide feedback on the Plan of Works and Terms of Reference.
2. Membership				
PoW2.1	That the Core members agree with the Working Group advisory members	Discussed at 26/03/2024 Working Group #1- the advisory members that have been identified (RSPB, JNCC, Defra, Cefas, Eastern Inshore Fisheries and Conservation Authority) and it was queried whether there are there any others that the core think should members be added	26/03/2024- MMO Queried if the project have spoken to the Marine Conservation team in the MMO as this team are currently looking at red-throated diver (and other species) in terms of protected areas and as such could potentially be brought into the Working group.	26/03/2024- ACTION- MMO to provide SPR with contact information for the Marine Conservation team
			26/03/2024- MMO Noted Cefas do not advice on ornithological matters so will only provide to advice regarding fisheries	26/03/2024 - Agreed
3. Engagement with Working Group				

PoW3. 1	Second Working Group meeting to be held in late June with all members.	Discussed at 26/03/2024 Working Group #1	26/03/2024 – MMO and Natural England content with the proposed timelines (noting constraints due to significant workload).	26/03/2024- ACTION- Natural England and the MMO to provide availability during June (and August)
PoW3. 2	Key tasks for the Working group (over the next 6 months)	Discussed at 26/03/2024 Working Group #1-The plan of works and terms of references are to be finalised in the next two weeks following comments from the Working group;-First draft of the By- catch Delivery Plan will be circulated with the Working Group in early June, to discuss in detail at the next Working Group meeting (late June);-Aim to address any comments on the Delivery Plan to be signed off by the Working group in July 2024 and then submitted to the Secretary of State (SoS) September 2024	26/03/2023-No further comments from MMO and Natural England.	26/03/2023- Agreed
PoW3. 3	Queried if the core members are aware of any seabird by-catch reduction groups in the East Anglia Region out- with those mentioned in the briefing note.	Discussed at 26/03/2024 Group #1	26/03/2023-No further comments from MMO and Natural England	26/03/2023- Agreed
PoW3. 4	Queried if the core members are aware of any further work that has been undertaken for seabird by-catch that could aid the development of this compensation measure.	Discussed at 26/03/2024 Working Group #1	26/03/2023- No further comments from MMO and Natural England	26/03/2023- Agreed

PoW3.5	Agreement on project timelines	Discussed at 26/07/2024 Working Group #2	N/A	26/07/2024- ACTION- Natural England and MMO to provide written feedback on project timelines 26/7/2024- ACTION- Natural England and MMO to confirm that a third working Ornithology By-Catch Reduction Technical Working Group meeting is not required
4. Lessons Learnt				
PoW4. 1	Queried if the core members are aware of any key lesson learnt from other similar/ relevant projects that could be shared with the project team.	Discussed at 26/03/2024 Working Group #1	26/03/2024- Natural England- Noted a recent meeting with Defra and some of the team at Ørsted that are attempting to deliver their by- catch reduction measure. Stated it was suggested during the meeting to set up a separate technical working group which would pull in any projects attempting to deliver bycatch reduction as compensation for offshore wind farms. The group would meet quarterly to share lessons learned and any progress made. 26/03/2024- Noted similar projects have had issues with fishers engagement and transparency of data, which in turn can lead to issues calculating bycatch rates. Noted fishers which are less willing to engage are likely the fisheries with bycatch due to the potential consequences following the findings of the monitoring. Recommended SPR engage with fishers who are willing to be fully engaged and transparent.	26/03/2023- Agreed

By-catch Delivery				
1. DCO Conditions				
Imp1.1	Confirmation on the DCO requirements.	Discussed at 26/03/2024 Working Group #1	28/03/2024 [Email]- Natural England queried whether the project is specifically looking to identify bycatch of red-throated diver and lesser black-backed gull in East Anglian coastal waters, or whether any bycatch of seabirds will be considered.	03/04/2024- Clarification Based on the DCO, the requirements are focused on red-throated diver and lesser black-backed gull, however all seabird by-catch will be considered.
Imp1.2	Confirmation of the interpretation of the DCO requirements for a four-year lead in time (LBBG).	Discussed at 26/07/2024 Working Group #2	26/07/2024 - Natural England agreed that the ecological justification regarding the DCO condition for predator fencing is to allow for chicks to turn into adults and noted that the by-catch measure that will be putting adults back into the population. Therefore, as per consultation on other by-catch measures, there is unlikely for the need for the four-year lead in time. However, also noted there may be legal issues with appending the by-catch Delivery Plan to the LBBG IMP. 19/08/2024 – Natural England provided written feedback reinstating the above.	19/08/2024 - Agreed
2. Scale and Location				

Imp2.1	-	-	28/03/2024 [Email]- Natural England suggested widening the Search area. Natural England noted a previous investigation of red- throated diver bycatch in set and drift nets in the Outer Thames Estuary SPA which found no bycatch. Noted the report is old but stated the reasoning for no bycatch compared with other locations, e.g. the Baltic, is still valid (comparatively short soak times, not set overnight, vessels often in close attendance (birds are displaced by vessels and presumably do not come back quickly enough to interact with nets)). However, Natural England also noted ringing recoveries, and some observation clearly show red-throated diver are by-caught in some areas, and it can be at quite high levels, but potentially not the case in the English southern North Sea.	03/04/2024- Comments noted and further information on by- catch in the East Anglia region is appreciated. This information will be relayed to the fisheries liaisons and the topic can be discussed in further detail at the By-catch Working Group #2 after the first draft of the Delivery Plan has been provided to the working group members. (see Imp2.4 below).

Imp2.2	-	-	28/03/2024 [Email]- Natural England noted there is some long line fishing off East Anglia, although not much. Noted there does not appear to be much bycatch compared with the North West Scotland long line fishery (presumably linked to lower fulmar densities). Stated there is very little-known bycatch of lesser black-backed gull in UK waters and there were no confirmed records in Northridge *et al*. (2020). However, noted there can be issues in purse seine fisheries in Portugal.	03/04/2024- Comments welcomed and noted. This information will be relayed to the fisheries liaisons and the topic can be discussed in further detail at the By-catch Working Group #2 after the first draft of the Delivery Plan has been provided to the working group members (see Imp2.4 below).
Imp2.3	-	-	28/03/2024 [Email]- Natural England queried whether the intention is to monitor vessels operating in East Anglian coastal waters, or from East Anglian ports/beaches. Especially with respect to long lining.	03/04/06 - ACTION- SPR to confirm with fisheries liaisons which long- lining vessels are being targeted for monitoring. 03/04/06 - ACTION - SPR to confirm with fisheries liaisons which long-lining vessels are being targeted for monitoring.
Imp2.4	Confirmation of monitoring in the East Anglia region.	Discussed at 26/07/2024 Working Group #2	26/07/2024 - No comments.	26/07/2024- Agreed.
By-catch Monitoring				
1. Monitoring				

Mon1.1	-	-	28/03/2024 [Email] - Natural England Suggested contribution to advancing detection and monitoring of seabird bycatch would be beneficial if the intention is to investigate bycatch rates of species that may be bycaught in very low numbers (if at all) in fisheries that have previously not been subject to much monitoring. Natural England advocated for the consideration of REM deployment as there may be opportunities to ground truth or test approaches/technology.	03/04/2024- Comment noted. SPR will consider the use of electronic monitoring, and monitoring techniques will be discussed with the working group during the second working ground meeting (June 2024). The Consideration of electronic monitoring vs observers will be considered within the Delivery Plan (see Mon1.2 below).
Mon1.2	Electronic monitoring vs onboard observers	Discussed at 26/07/2024 Working Group #2- After reviewing the pros and cons of each method and talking to fisheries it has been decided onboard observers will be used during monitoring.	26/07/2024 - Natural England noted that there is no preference for EM or observers	26/07/2024 - Agreed that either observers or EM are suitable for this Project
2. Success Criteria				
SC1.1	Agreement on the iterative decision tree approach as included in the Delivery Plan	Discussed at 26/07/2024 Working Group #2	26/07/2024 - In-principle agreement on the decision tree process (noting inclusion of all seabird species in working group discussion post monitoring). To await written feedback.	26/07/2024- ACTION- Natural England and MMO to provide written agreement to the iterative decision tree approach as included in the Delivery Plan.
By-catch Mitigation				
1. Lessons Learnt				

Mit1.1	-	-	28/03/2024 [Email]- Natural England noted the potential for unintended consequences, specifically for trailing mitigation technique. Stated risks around fishers gear switching or otherwise adapting their fishing to make themselves eligible for financial incentives should be considered as this could lead to more fishers engaged in high bycatch risk methods or areas, increased overall bycatch (and not just of seabirds).	03/04/2024- Comment noted. To be discussed with the working group during the development of the mitigation trials.
Ornithological By-Catch Reduction Delivery Plan Review				
1. Ornithological By-Catch Reduction Delivery Plan Review				
R1.1	Provide written confirmation that you have received and agree to changes made to the Ornithological By-Catch Reduction Delivery Plan Review.	22/10/2024-[Email]- SPR provided the Working Group Members with the Version 3 of the Lesser Black-Backed Gull Implementation and Monitoring plan which included details of the by-catch measures within Appendix A - Ornithology By-Catch Reduction Delivery Plan.	28/10/2024- [Email]- RSPB were consulted but did not have time to provide a response 04/11/2024-[Email]- Natural England have no further comments on the Ornithology By-Catch Reduction Delivery Plan. 06/11/2024-[Email]- MMO have no further comments on the Ornithology By-Catch Reduction Delivery Plan.	06/11/2024- Agreed

Table A 2 SPR comments to consultation responses received by the MMO Marine Licensing team the MMO Strategic Renewables Unit (SRU) and Natural England.

Topic	Comment Raised	Formal Response
MMO		
Methodology	The MMO to defer to Natural England ornithologists to advise on methodology matters relating to the Ornithological By-Catch Reduction Implementation and Monitoring Plan [Ornithological By-Catch Reduction Delivery Plan].	SPR note the MMOs decision. Natural England comments and SPR responses are detailed below.
Definition of Thresholds	The MMO alongside SRU recommend that it would be useful to quantify and therefore better define the threshold of what constitutes 'very low by catch'. This should be qualified by number of vessels participants and time at sea etc. The MMO and SRU would expect UK bycatch programmes to inform expectations. The MMO and SRU notes that the lack of certainty around the additional data collected appears unusual. The MMO and SRU would expect collecting location data of fishing activity at a greater resolution than ICES rectangles to be a necessary. Additionally, the MMO and SRU recommend that it would be useful to collect target species for each fishing trip, climatic conditions, vessel transit routes.	SPR note the uncertainty surrounding the use of 'little to no' by-catch, however based on a combination of the 'patchy' nature of by-catch (it is unlikely to be ubiquitous through space and time) and the variation of fishing effort annually (as discussed in the By-catch Working Group #2), SPR feel it is necessary to allow for flexibility in the terming of thresholds at this stage of the project. To provide further clarity on this issue going forward, SPR will discuss with Allen Kingston (manager of the UK Bycatch Monitoring Programme (UK BMP)) and Yann Rouxel (Bycatch Programme Manager for the Royal Society for the Protection of Birds (RSPB)) for further information on expectations of by-catch levels in comparison to other by-catch studies to help better define thresholds. SPR can confirm that the post monitoring analysis and report will be submitted to the core working group members (and additional members as deemed necessary) to enable in depth discussions on the level of by-catch in comparison to fishing effort. The decision trees have therefore been updated to reflect the inclusion of the By-catch Working Group in making decisions based on levels of by-catch observed (**Figure 12**, **Figure 13** and **Figure 14**). SPR note that prior to monitoring, the data available has been only ICES rectangles as the vessels the Projects are focused on are smaller vessels (<10m), which are not required to have AIS (Automatic Identification Systems). SPR can confirm that specific GPS locations will be used for by-catch monitoring. SPR can confirm that detail regarding the additional data to be collected during Action 2 (by-catch monitoring) will be provided; SPR will forward the observer monitoring sheet which will detail the information that will be collected per trip. SPR can confirm that the following data will be collected:

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		• GPS for locations of hauls; • Sea state; • Wind direction / speed; • Water depth; • Soak time; • Target species; and • Relevant gear information (e.g. net/line length and mesh size). SPR wish to discuss with the MMO their recommendation for including vessel transit routes as a variable in relation to seabird by-catch, as this is not a variable typically included in by-catch studies to SPRs knowledge.
The Fishers Fund	Assuming there is currently some knowledge about technology well suited to reducing by catch, the MMO and SRU ask if there is value in trialling a control and test groups within the monitoring year? This would effectively bring part of the £500k of fishing funding forward (to provide fishers with new replacement gear designed to reduce by catch) and might support comparative analysis through a field trial. The MMO and SRU acknowledge this would require a minimum threshold of vessel numbers to yield useful results. The MMO and SRU recommend that Scottish Power Renewables (SPR) provide commitment to publishing the fund to fishers and making the route to apply clear and accessible for all. It should be made clear to fishers that participation in the monitoring year provides increased change to benefit from the fund. The MMO and SRU suggest collaboration with IFCA and the MMO to improve uptake. SPR should commit to reporting all applicants and the proportion of successful applicants to the working group to ensure transparency and build trust. The MMO and SRU recommend that SPR consider if a commitment to pay monies timely needs to be made, and if funds will be directed to the wider UK fishing activities should low by catch be evidence. The MMO and SRU request clarification in how and where this will be determined and if it will be by the working group. If funds are directed outside of East Anglia clarity on delivery of the funds will be necessary and important. The MMO and SRU advice that the reporting commitment for by catch does not seem strong enough to meet what is set out in the DCO (Development Consent Order), 'Each annual report will detail the actions undertaken in the previous year and the outcomes of these actions'. Statutory Nature Conservation Bodies (SNCBs) will likely	SPR note the MMOs request to bring forward the trialling of technology into the Year 1 of monitoring, however, the discussions on identifying a suitable gear change (Action 3) has not yet been undertaken and cannot be undertaken until there is more robust data available on which gear types are currently being used in the region by the target vessels and whether and to what extend there are seabirds being caught. The baseline data gathered during the first year of monitoring will be crucial to direct the Actions 3, 4 and 5. As per the Without Prejudice Compensation Measures document, Action 3 is to be undertaken alongside Action 2 (monitoring), commencing in Q1 2025. SPR note that there is not currently known by-catch mitigation for some gear types (e.g. gillnets), and identifying a suitable technique to trial will be dependent on gear and bird species of interest. SPR will therefore continue to peruse the delivery of compensation as per the Without Prejudice Compensation Measures to allow for in-depth workshops with relevant stakeholders to identify the most suitable technique to trial. SPRs can confirm that the fisheries liaisons (Brown and May Marine) will discuss with fishers that participation in the monitoring year will increase fund application success. As discussed within the Without Prejudice Compensation Measures, SPR can confirm that the £500,000 fund will be made available to fishers. Ideally, this fund will be available for fishers in East Anglia with priority given to those who participated in the year 1 monitoring project, however,

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	want processed data with methodology and analysis. At present no commitment or intent on this is made beyond reporting actions and outcomes.	dependent on the results of the monitoring and the trial, the funding may be made available to fishers registered in the UK who fish beyond the East Anglia region. The decision as to whom the fund will be made available to will be discussed with the core members of the By-catch Working Group as shown in **Figure 13** and **Figure 14**. Delivery of the fund will be clearly discussed within the annual reporting of the compensation measure. SPR note the MMO's suggestion to collaborate with Easter IFCA and the MMO to improve uptake of the fund. This option will be open for discussion with core members during discussions around fund allocation. SPR note the queries raised by the MMO regarding reporting commitments. SPR can confirm that the annual report will include the methodology and analysis, along with the processed data relevant for each action (noting fishers/vessels will be anonymised), which will be sufficient to discharge the DCO condition.
Comments of Figures	With regard to Figure 11, quantifying and qualifying for variable vessels and days at sea, the MMO and SRU request that use of 'substantial and 'little to no' by-catch be discussed with the working group ahead of no trials going ahead. The MMO and SRU advise that these thresholds must be defined, and this decision should be taken collaboratively to ensure it is appropriately informed. Furthermore, Figure 11, and therefore the text of the Delivery Plan where relevant, should build in review within year 1 monitoring to support adaptive management of trials. The MMO and SRU request that this is informed by working group to promote technical trials going ahead. The MMO and SRU recommend this include scope for an adaptive approach lowers risk of little to no by-catch and so helps ensure the value from this work. The MMO and SRU recommend that Figure 13 include adaptive management under Action 2 and monitor to improve resilience of output delivery from the subsequent actions.	SPR note that **Figure 12**, **Figure 13** and **Figure 14** were discussed with the MMO and Natural England at the By-catch Working Group #2 on 26/07/2024. SPR note the uncertainty surrounding the use of 'substantial' and 'little to no' by-catch, however based on a combination of the 'patchy' nature of by-catch (it is unlikely to be ubiquitous through space and time) and the variation of fishing effort annually (as discussed in the By-catch Working Group #2) SPR wish to allow for flexibility in the determination as to whether Action 4 is required (whether for lesser black-backed gull, red-throated diver, or other seabird species). SPR can confirm that this decision will be discussed with the By-catch Working Group to agree the levels of 'substantial' and 'little to no' by-catch after the first year of monitoring and ensure the most value from the project in reducing seabird by-catch is achieved whether that be in East Anglia or elsewhere. The decision trees have therefore been updated in Version 2 of the Delivery Plan to ensure they reflect SPR's intention to use the By-catch Working Group to direct discussions and decisions based on the results of the monitoring work. Prior to discussing with the By-catch Working Group, SPR can confirm that the monitoring data, analysis and report will be submitted to the core working group members (and additional members as

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		deemed necessary) to enable in depth discussions regarding whether Action 4 is of value to proceed in the East Anglia region (i.e. if benefit will be provided from undertaking the mitigation trials in the East Anglia region). SPR wish to deliver as much benefit as possible from this workstream. Adaptive management is built into this secondary compensation measure through Action 5 (the fund). If monitoring results and discussions identifies a lack of value to undertaking further seabird by-catch reduction work in the East Anglia region, the fund will be opened to other location where greater benefit can be achieved. This will be discussed with the By-catch Working Group. Figure 13 has therefore been updated to ensure SPR's intention to discuss results of monitoring with the By-catch Working Group to direct decisions regarding technology trials or the fund is clear (see **Figure 14**).
Clarification of Condition within the Deemed Marine Licence	Furthermore, the MMO wish to note that within the East Anglia 1 North and 2 ornithological by-catch reduction technical working group meeting held on 26th July 2024, the MMO requested confirmation from Scottish Renewables regarding whether the DCO condition Schedule 18, Part 2, Paragraph 3 and 5 is also within the Deemed Marine Licence (DML) or within the DCO only. If the applicant could confirm the above, that would be greatly appreciated.	SPR have since confirmed with the MMO that that the DCO condition Schedule 18, Part 2, Paragraph 3 and 5 is not within the DML (email dated 09/08/2024).
Natural England		
Meeting Minutes (26/07/2024)	Natural England is satisfied with the meeting minutes as written.	SPR welcome Natural England's agreement on the minutes.
DCO condition Schedule 18, Part 2, Paragraph 3 and 5	Natural England was requested by SPR to provide written feedback on the DCO conditions. However, we note that it is for the Secretary of State (SoS) to interpret and enforce the meaning of the wording stated within the DCO and thus our advice below focuses on the ecological aspects of compensation as they relate to the conditions and defer the SoS as the enforcing body with regard to the meaning of the DCO conditions. Therefore, we provide the following comments on the ecology behind the conditions requested during the application process. Compensatory measures that seek to provide breeding habitat through increased provision or protection (e.g., ANS or fenced areas) generate benefits by an increased provision of chicks into the population. Thus, the measure is only compensating directly for estimated breeding adult mortality impacts once those chicks have become adults and have recruited into the breeding population.	SPR welcome the feedback on the DCO condition Schedule 18, Part 2, Paragraph 3 and 5 in relation to the lesser black-backed gull compensation four-year lead-in times. SPR agree that the four-year lead-in period is relevant to those compensatory measures that seek to provide breeding habitat and therefore require a recruitment lead in time whereas by-catch offers an immediate removal of loss of an individual.

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	This has led to DCO requirements for species-specific lead in times for such measures that consider the age of first breeding. E.g., for lesser black-backed gull a 4-year lead-in time would be required. This aims to ensure that legitimate compensation is being delivered at the point of impact (OWF operation). Similarly, age class survival rates must be considered as some proportion of the chicks produced as a result of the compensatory measure will not survive to recruit into the breeding population. Reducing by-catch mortality seeks to deliver compensatory benefits immediately through retaining birds in the population that may otherwise have been lost. The same requirement for a lead-in time does not apply as some proportion of the birds 'saved' are adults. In this case, the benefit is felt directly with no time-lag as those birds are retained within the breeding population. However, it is important to consider that not all mortality reduction will apply to adults, and thus, some benefits will be subject to a time lag. Furthermore, the survival rates of sub-adult birds must be considered, as not all will go on to recruit into the breeding population. Nonetheless, Natural England considers that a bycatch reduction measure could provide instant benefits. While implementation as soon as possible is clearly preferable, a long lead in time prior to OWF operation is not necessarily required. Consideration of the accrual of benefits to the breeding population could be modelled against any likely mortality debt accumulation to ensure the scale of the measure is sufficient. Alternatively, the measure could be scaled according to adult mortality reduction, ensuring the immediate delivery of like for like compensation. The proportion of birds in relevant age classes could be estimated using modelled stable age structures, although it is possible that bycatch risk is variable by age. Greater certainty could be gained by aging bycaught birds in any monitoring or field trials and reviewing relevant literature. If proven successful we consider that compensation would arise as an immediate and direct population effect, i.e., birds are retained in the population, thus compensating on a like for like basis with due consideration to the age profile of birds that are not bycaught as a result of the intervention.	
Approach to Monitoring	Natural England was requested by SPR to provide written feedback on the approach to monitoring. We provide the following comments. The approach to monitoring is currently very high level. We advise that detailed monitoring plans are submitted for review, and independent expert	SPR are currently progressing more in-depth plans regarding monitoring. SPR understand that the correct data needs to be collected to allow for appropriate analysis and will therefore discuss with key advisory members of the by-catch reduction working group (Allen Kingston (manager of the UK BMP) and Yann Rouxel (Bycatch Programme

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	advice is sought to ensure the plans are robust. Oversights or omissions in monitoring could lead to deficiencies that preclude robust data analysis. Our only outstanding concern at this point is the restriction of monitoring to cover a single year. Inter-annual variation may be pronounced (in relation to several key factors, e.g., environmental conditions, bird densities/distributions, fishing activity). Multi-year monitoring will be required to generate a full understanding of any seabird bycatch. This is especially important if the benefits of compensatory measures are to be estimated/extrapolated from any data.	Manager and the RSPB)) to ensure monitoring data gathered is inclusive of that required for robust data analysis and in line with wider by-catch monitoring work. Following consultation with key members, the monitoring plan and observer data sheets will be circulated to the Working Group for review and comment. SPR note Natural England's concern regarding undertaking one year of monitoring, however SPR note that if deemed suitable, trialling mitigation will provide additional information of seabird by-catch in the region, as committed to within the Without Prejudice Compensation Measures. This data would also be used (if required) to provide information on potential benefits of the secondary compensation measure.
Iterative Decision Tree	Natural England is in agreement with the iterative decision tree approach as detailed in the Delivery Plan.	SPR welcome Natural England's agreement on the iterative decision trees presented in **Figure 12**, **Figure 13** and **Figure 14** of the Delivery Plan.