Offshore Wind Leasing Round 4

THE CROWN ESTATE | NIRAS

Offshore Wind Leasing Round 4

Dogger Bank Strategic Compensation Plan

The Crown Estate

Date: 25th April 2024

43569_NIRAS_REP_007_v2.6

Rev.no.	Date	Description	Prepared by	Verified by	Approved by
1	26/10/23	First draft	PCAU/IGP	SPAC	TNO
1.1	17/11/23	Revision following TCE review	PCAU/IGP	TNO	SPAC
1.2	01/12/23	Revision following TCE / TL review	PCAU/IGP	SPAC	TNO
2.0	28/02/24	Revision following EWG / SG review, Defra advice on site designation/extension & SGDM11 and SGDM12	PCAU/IGP	SPAC	TNO
2.1	08/03/24	Revision following TCE / TL review	PCAU	SPAC	TNO
2.2	05/04/24	Revision following SG review	PCAU	MCLA/SPAC	IGP
2.3	12/04/24	Revision following TCE / TL review	IGP	SPAC	TNO
2.4	19/04/24	Review following SG review	IGP	SPAC	TNO
2.5	23/04/24	Revised following further feedback	IGP	SPAC	SPAC
2.6	25/04/24	Revision including finalised agreement log & signatories section	IGP	SPAC	SPAC

Contents

1 Introduction

1.1 Round 4 Plan HRA

1.1.1 The Crown Estate adopted the Offshore Wind Leasing Round 4 Plan ("Round 4 Plan") in January 2023 with the objective of generating between 7 to 8.5GW of additional offshore wind farm capacity. As a competent authority, The Crown Estate was required to undertake a plan level Habitats Regulations Assessment (the "Round 4 Plan Level HRA") to meet its obligations under the Conservation of Habitats and Species Regulations 2017 (as amended), and the Conservation of Offshore Habitats and Species Regulations 2017 (as amended) (collectively referred to as the "Habitats Regulations" within this document). The Crown Estate adopted the Round 4 Plan when it decided to proceed with entry into agreements for lease for the six projects comprised in Round 4.

1.1.2 NIRAS Group (UK) Ltd ("NIRAS") was commissioned as technical adviser to The Crown Estate on the Round 4 Plan Level HRA. In this capacity, NIRAS also completed the Report to Inform Appropriate Assessment ("RIAA") (NIRAS, 2021). The RIAA recommended that The Crown Estate's "Appropriate Assessment" (The Crown Estate, 2022) conclude that the Round 4 Plan alone and in-combination will not have an adverse effect on the site integrity ("AEOSI") of the majority of Protected Sites[1] considered. However, in the case of Annex I sandbanks slightly covered by seawater all of the time (hereafter "sandbank") as a feature of Dogger Bank Special Area of Conservation ("SAC") and black-legged kittiwake *Rissa tridactyla* as a feature of Flamborough and Filey Coast ("FFC") Special Protection Area ("SPA"), it was not possible to recommend a finding of no AEOSI, in view of the impacts assessed for those sites.

1.1.3 This report relates to the sandbank feature of Dogger Bank SAC and two Round 4 projects which contribute towards the conclusion of AEOSI for this Protected Site: Dogger Bank South West ("DBSW") and Dogger Bank South East ("DBSE") in Figure 1.1.

1.1.4 Based on this recommendation, The Crown Estate's Appropriate Assessment concluded that an AEOSI of the sandbank feature of the Dogger Bank SAC could not be excluded due to the effects of the Round 4 Plan and specifically the two Round 4 projects shown in Figure 1.1 alone or in-combination with other plans and projects. Although mitigation was identified (Table 1.1), and is secured in obligations within the agreements for lease with DBSW and DBSE, to reduce the effects of the Round 4 Plan, this was not considered sufficient to avoid an adverse effect in light of the site's unfavourable status with respect to sandbank habitat. Under the derogation provisions of the Habitats Regulations, the Round 4 Plan can still go ahead notwithstanding a finding that there will or could be an AEOSI of a Protected Site. This only applies where: (a) there is no alternative solution which would be less damaging or avoid damage to the Protected Site; (b) there are imperative reasons of overriding public

[1] In accordance with the Habitat Regulations, "Protected Sites" include European sites and European offshore marine sites which comprise the following designations: Special Areas of Conservation ("SAC"), candidate SAC ("cSAC"), Special Protection Areas ("SPA"), potential SPA ("pSPA") and Sites of Community importance ("SCI"). As a matter of government policy, Ramsar sites (designated under the Convention on Wetlands of International Importance) are also treated as Protected Sites, as are areas secured as sites compensating for damage to a Protected Site. This list aligns with recent HRA guidance published by DEFRA (DEFRA, 2021).

interest ("IROPI") to proceed with the Round 4 Plan; and (c) any necessary compensatory measures can be secured (to ensure the overall coherence of the UK National Site Network).

Table 1.1 Mitigation measures and related impacts relevant to Dogger Bank SAC identified through The Crown Estate's Appropriate Assessment

Protected site	Feature	Impact(s)	Mitigation
All Protected Sites	All features	Climate change effects	Prioritise sustainable practices. Ensure efficient movements of marine vessels.
All Protected Sites screened into the Export Cable Risk Assessment ("ECRA")	Applicable to all Protected Site features assessed within the ECRA	Multiple potential impacts as described in the ECRA, including habitat loss, damage and both direct and indirect effects.	Preparation of a cable route selection and burial feasibility studies including consideration of alternatives and explicit justification where there is interaction with protected feature(s). Development of focused mitigation where required, e.g. limitation on the use of specific methods such as cable protection.
Dogger Bank SAC	Sandbanks which are slightly covered by sea water all the time (extent and distribution)	Habitat Loss	Conditions on limiting the extent of infrastructure and the provision of specific information to The Crown Estate on infrastructure characteristics.

1.1.5 A "Derogation Case" in support of the Round 4 Plan was produced alongside the Appropriate Assessment (Chapter 8 of The Crown Estate, 2022). This demonstrated that there were no feasible alternative solutions to the Round 4 Plan which would meet the Round 4 objectives and be less damaging or avoid damage to Dogger Bank SAC, there were clear IROPI to proceed and that a robust framework for the delivery of the necessary compensatory measures to offset the adverse effect would be secured. These compensatory measures only apply to DBSW and DBSE which the Round 4 Plan Level HRA identified as a source of potential additional habitat loss and direct physical damage.

1.1.6 The Crown Estate's Derogation Case included a commitment to develop a Dogger Bank Strategic Compensation Plan ("DBSCP", this document) which must be adhered to by the DBSW and DBSE projects, secured through their seabed lease agreements. The overall objective of this DBSCP is to detail the development and delivery of strategic compensation to ensure the overall coherence of the UK National Site Network. Strategic compensation for the purposes of the Round 4 Plan is defined here as compensatory measures delivered collectively to address the AEOSI of Dogger Bank SAC from the Round 4 Plan.

1.1.7 This document sets out the DBSCP associated with the Dogger Bank SAC. It describes the proposed strategic compensation for the effects on the sandbank feature of Dogger Bank SAC and how this can be secured, delivered, monitored and adapted.

1.1.8 Further details on the precise delivery method for the measures included in this DBSCP will be provided in a Dogger Bank Strategic Implementation and Monitoring Plan ("DBSIMP") submitted to the Secretary of State at the Department for Energy Security and Net Zero ("DESNZ") prior to the

operation of any wind turbine generator at DBSW and DBSE. The DBSIMP would be approved by the Secretary of State (DESNZ) in consultation with the Department for Environment, Food and Rural affairs ("Defra"), the Marine Management Organisation ("MMO") and/or local planning authority and Natural England ("NE") or the Joint Nature Conservation Committee ("JNCC") as the relevant Statutory Nature Conservation Body ("SNCB"). An outline version of the DBSIMP (which details its proposed content) is presented in Appendix A.

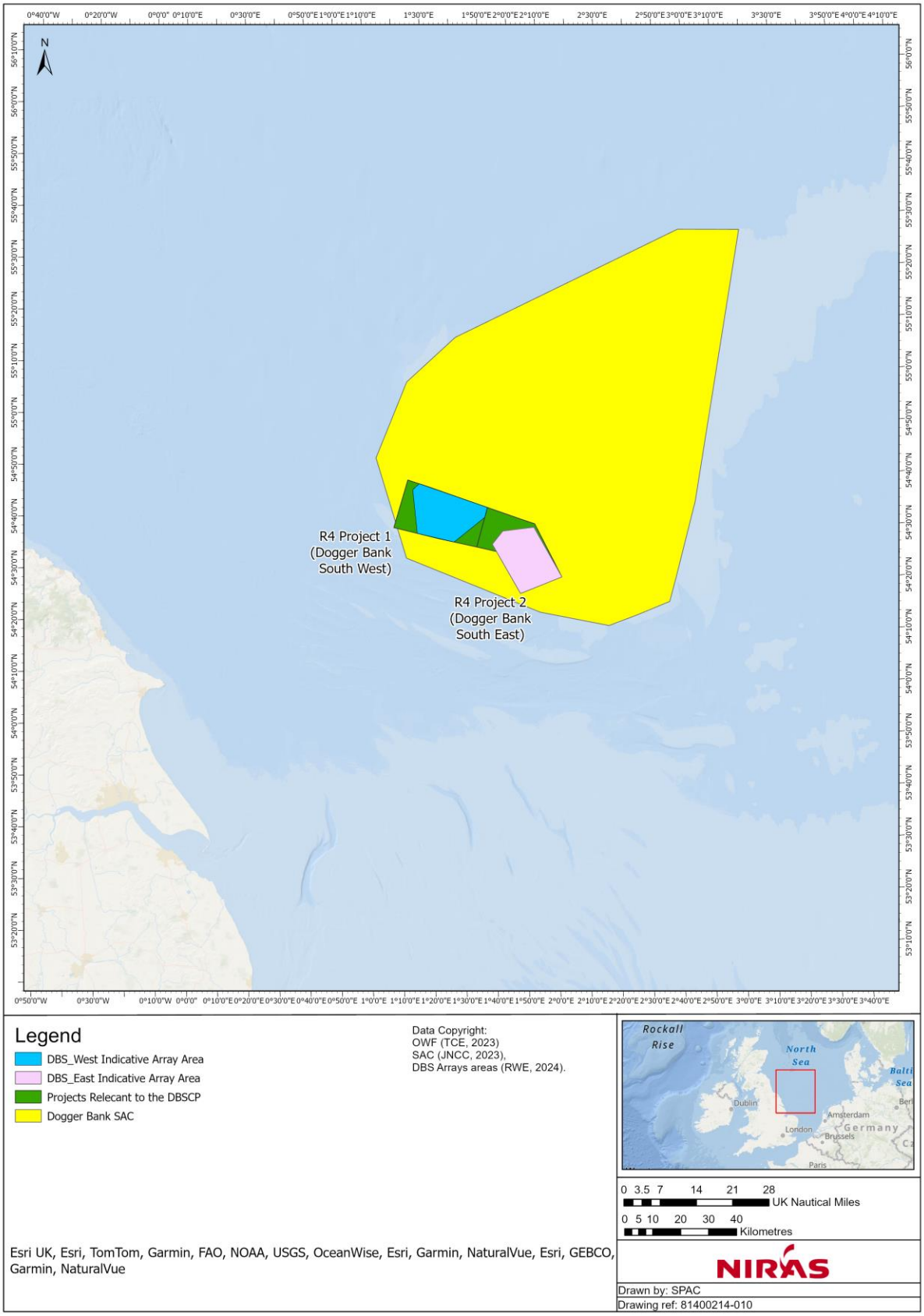

Figure 1.1 Dogger Bank SAC in relation to the two relevant Round 4 projects to the DBSCP.

1.2 Secretary of State Letter of Acceptance

1.2.1 On the 15th July 2022, the Secretary of State for Business, Energy & Industrial Strategy ("BEIS") issued a letter of acceptance of The Crown Estate's Notice of Derogation (Appendix B). This letter stipulated a number of key factors which must be attained by the Round 4 compensation required as a result of the Round 4 Plan, and obligated The Crown Estate to comply with the commitments made within its Derogation Case.

1.2.2 Of particular note is the Secretary of State for BEIS' request that *"agreement of the compensation plan within each Steering Group is required before submission of DCO applications*". This has been achieved by the steering group established for the DBSCP (see Section 2) and is demonstrated within the Agreement Log (see Section 4 and Appendix C). The letter of acceptance (Appendix B) also outlined the importance of monitoring and adaptive management associated with the Round 4 compensatory measures. These aspects are considered in detail in Section 10 and Section 11 respectively.

1.2.3 A key purpose of this DBSCP is to demonstrate that compensatory measures can be implemented, with confidence, to offset the potential impacts to the sandbank feature of Dogger Bank SAC as a result of the Round 4 Plan.

2 Steering Group Engagement Process

2.1.1 A Round 4 Plan Strategic Steering Group for habitat compensation (hereafter referred to as the "Steering Group") was formed by The Crown Estate in accordance with agreed Terms of Reference. The Steering Group has overseen the development of this DBSCP.

2.1.2 The Steering Group consists of a nominated representative from the following organisations:

- The Crown Estate, with NIRAS as its technical advisor
- NE;
- JNCC;
- Defra;
- DESNZ; and
- Developer of DBSW and DBSE – RWE Renewables.

2.1.3 Steering Group meetings have also been attended by Offshore Wind Industry Council, as a guest in an observation capacity, to tie in with their parallel work on strategic compensation through the Collaboration on Offshore Wind Strategic Compensation workstreams. The Wildlife Trusts have also attended from meeting 11 in an observational capacity.

2.1.4 Steering Group meetings have been held in a hybrid manner with attendance in person and via Microsoft Teams. Meetings have been approximately three hours in duration and held once every two months as a minimum (but closer to once every month on average) from December 2022 while this DBSCP has been in development, and will be ongoing at least quarterly throughout the year and otherwise as frequently as monitoring reports are received and as appropriate throughout the delivery of the relevant compensatory measures. Meetings have been and will continue to be chaired by The Crown Estate and facilitated by NIRAS as technical specialists in benthic ecology and compensation. Meeting minutes have been and will continue to be captured, along with the use of an Agreement Log (Appendix C) which outlines key areas of Steering Group agreement and disagreement, to assist

the Secretary of State (DESNZ) in determining the acceptability of the compensation proposed within this DBSCP at the project consenting stage.

2.1.5 This DBSCP is written in accordance with the Terms of Reference and should be read in conjunction with the Agreement Log (Section 1 and Appendix C).

2.1.6 A breakdown of meetings and key areas of discussion is presented in Table 2.1.

Table 2.1 Overview of Round 4 Plan strategic compensation Steering Group meetings

Meeting #	Meeting date	Main focus of Steering Group discussion
1	15th December 2022	Recap of background to the Round 4 Plan compensation process to date including details of the derogation case and potential measures that have been identified. Potential options were discussed and recorded and evidence gaps explored.
2	9th March 2023	Further discussion and refinement of potential options. Exploration of key compensation aspects, including scale & ratio, timing & duration, delivery mechanisms, monitoring, adaptive management and success criteria.
3	28th March 2023	Development of roadmap for refining and agreeing compensation measures. Further discussion of options and key aspects including: • Strategic Compensation Roadmap • What a package may look like • Delivery mechanism • Adaptive management
4	25th April 2023	The delivery mechanism was reviewed, outlining potential compensation packages. The potential of including some measures lower on the hierarchy was discussed. Scale, ratio and potential option locations for the proposed compensation measures were also considered. • Approaches to delivering compensation (the minimum level of compensation required) • Application of compensation ratios • Delivery mechanism
5	24th May 2023	Discussion focused on refining compensation measures lower on the hierarchy in line with guidance.
6	21st June 2023	Proposed compensation measures lower on the hierarchy were reviewed and linked back with compensation objectives. Scale and ratio for the measures were discussed.
7	2nd August 2023	Potential site locations for compensation options were considered. Potential compensation package composition was outlined.
8	30th August 2023	The discussion was around the remaining options under consideration; removal of future activities, site designation / extension, sea grass oyster and non-native invasive species (NNIS) were discussed. The use of alternative metrics, to area, in defining scale in compensation measures for determining scale

		was discussed. Delivery mechanisms including financial support to existing habitat creation / restoration initiatives were outlined. Adaptive management principals were introduced to the group.
9	11th October 2023	The discussion was around some of the remaining options under consideration; site designation / extension, seagrass oyster and NNIS were discussed. Details on the site selection process utilised were outlined and potential metrices to be used to help to inform scale were also considered. Potential delivery mechanisms and monitoring were also discussed.
10	29th November 2023	Discussion focused on the contents and methodology of the proposed compensation packages. It was discussed that the impact of the project could be split into habitat loss & habitat damage – habitat loss will require 100% of the area to be compensated for, but as damaged habitat has scope for recovery, a starting point of 20-25% of the area to be compensated for was initially proposed to the group.
11	23rd January 2024	This meeting was post the first Expert Working Group (EWG) & Steering Group review of the compensation plan. Discussion was focused on key areas of feedback, highlighted in the review and how to resolve them. The group discussed the following topics: New site designation, fishing by-laws, monitoring/adaptive management, compensation measures (in general) & scale/ratio. The DBSCP was revised post meeting as per the groups Steering Group's comments and suggestions.
12	21st February 2024	Following the information in the email provided to the group from Defra on 01/02/2024, site designation/extension has been approved as an appropriate form of strategic compensation. The DBSCP was updated to reflect this, and this was presented to the Steering Group. Other major changes made to the DBSCP, as discussed in meeting 11, were reviewed and agreed with the Steering Group.
13	10th April 2024	This meeting was post the Steering Groups second review of The DBSCP (v2.2). Discussion was focused on key areas of feedback. The group finalised the wording for the justification of why measures were not taken forward. The seagrass restoration potential maps were reviewed and position on subtidal and intertidal seagrass addressed. The group discussed feedback received from DTA Ecology, the implications of the recently published 'Draft Defra MPA Guidance Consultation' and the status of the restriction of future offshore wind options. NIRAS updated The DBSCP based on the discussion and comments.

2.1.7 Engagement with the HRA Expert Working Group ("EWG"), which supported The Crown Estate with the Round 4 HRA process, has also been undertaken. The EWG has been provided with written updates following each Steering Group meeting including a summary of the discussion and high-level programme, a verbal update at a workshop held on 7th June 2023, bi-lateral meetings as requested by EWG members and a draft of this DBSCP for review for consultation held between 1st December 2023 and 12th January 2024. A version of the revised draft was also provided to EWG members on 8th March 2024 for information, with feedback welcomed, considered and incorporated as appropriate. The EWG have not received a copy of the final version of this DBSCP. The role of the EWG (in relation to the DBSCP) is to offer advice to the Steering Group on the process of determining compensation and recommendations on outcomes. The EWG consists of the following organisations:

- NE;
- JNCC;
- DEFRA;
- DESNZ;
- Natural Resources Wales;
- NatureScot;
- Marine Scotland;
- Department of Agriculture, Environment, and Rural Affairs (Northern Ireland);
- MMO;
- The Wildlife Trusts;
- Royal Society for the Protection of Birds ("RSPB"); and
- Whale and Dolphin Conservation.

3 Proposed Compensation Approach

3.1 Overview

3.1.1 The requirement for compensation specifically relates to the predicted loss and damage of Annex I sandbank habitat at Dogger Bank SAC.

3.1.2 The Round 4 Plan Level HRA estimated that up to 2.035 km^2 of Annex I sandbank habitat would be lost and up to 32.209 km^2 damaged through construction and operation of DBSW and DBSE on Dogger Bank SAC (as defined in RIAA Appendix J, (The Crown Estate, 2022)). Habitat loss and damage are further defined in the RIAA; however, briefly, loss is associated with the covering of Annex I sandbank habitat by wind farm infrastructure such as wind turbine foundations and rock armour, damage includes all direct and indirect effects on sandbank habitat, other than habitat loss/change, encompassing a range of pressures such as abrasion, penetration and smothering.

3.1.3 The impact of habitat loss was considered in the RIAA as effectively a permanent impact since it would persist for the lifetime of the Round 4 projects, specifically DBSW and DBSE, which is currently expected to be as long as the impact persists, up to 60 years (the duration of the lease). Recovery from habitat damage would be expected (e.g. BEIS, 2019) but the Round 4 Plan Level HRA recognised that sandy mound sandbanks such as Dogger Bank have limited recovery ability compared to more dynamic current tidal sandbanks. For this reason, habitat damage was included as part of the reason behind the conclusion of AEOSI of the sandbank feature of Dogger Bank SAC, alongside habitat loss.

3.1.4 The habitat damage value represents the seabed area expected to be affected by activities such as

cable burial (where not followed by rock protection, for which habitat loss is assumed), placement of temporary anchors and jack-up barge legs etc. Habitat recovery from damage would be expected (e.g. BEIS, 2019) but the Round 4 Plan Level HRA recognised that sandy mound sandbanks such as Dogger Bank have limited recovery ability compared to more dynamic current tidal sandbanks. Recovery from habitat loss would not occur until decommissioning has been completed, and, may take 10-25 years (based on Natural England's advice). Such impacts would delay restoration which would be contrary to the conservation objectives of this the Dogger Bank SAC. This impact can be reduced with mitigation that limits the extent of infrastructure within the SAC, but not to levels at which an AEOSI can be discounted.

3.1.5 Measures are therefore required to compensate for the impacts of habitat loss and habitat damage.

3.1.6 The Steering Group identified and evaluated a longlist of potential compensatory measures (Appendix D) which represent a range of options that were evaluated as more or less preferred according to the hierarchy of compensatory measures for the marine environment in draft guidance published by DEFRA (2021). This guidance recommends that, in simple terms, the selected compensation will by preference address the same impact (sandbank habitat loss and damage) at the same location (Dogger Bank SAC), but if this is not possible then measures which support the same or comparable ecological function at other locations may need to be considered but could still be regarded as providing adequate compensation.

3.1.7 At the time of writing there is ongoing consultation on policies to inform updated guidance for Marine Protected Area (MPA) assessments, including approaches to compensation. Documentation circulated as part of this consultation includes an updated compensation hierarchy which emphasises the ecological effectiveness of measures (Defra, 2024). Having reviewed this documentation it is considered that the DBSCP aligns with the proposed new hierarchy in prioritising the ecological effectiveness of measures; however, noting that the proposed new hierarchy is contained within a consultation document which may undergo further changes this Plan refers to the Defra (2021) draft guidance.

3.1.8 The measures which are taken forward in this Plan are identified in Table 3.1 which also summarises the principal reasons for not including other measures. In subsequent sections of this document the measures which are taken forward are presented in order of preference according to the evaluation against the Defra (2021) hierarchy.

Table 3.1 Long list of measures considered by the steering group, with reasons for inclusion or exclusion from The Plan.

Measure	**Primary reason(s) for inclusion or exclusion of measure (where applicable)**
New site designation	This measure remains under consideration for this Plan.
Extension of existing site	This measure remains under consideration for this Plan.
Restriction of future activities/licences in existing SAC with sandbank feature	For fishing: This measure remains under consideration for this Plan. For future OWF: The Crown Estate is a public authority for the purposes of subsidy control. A subsidy occurs when a public authority provides financial assistance (which is defined very broadly) to a specific enterprise/group of enterprises that gives them an economic advantage. Were TCE to enter into commitments to sterilise other parts of its estate to enable the Project Companies' projects to proceed, that may be construed as a subsidy. For aggregates: Aggregate extraction is required to be managed to allow recovery. Therefore, it is unclear if restricting this activity would compensate for habitat loss. Analysis indicates that overlap with Annex I sandbank is limited and so it is also the case that the potential to provide compensation is small. For O&G: DESNZ have confirmed that based on the knowledge that geological stores are fixed assets and in light of current energy targets it is unlikely to be possible to deliver this measure within this Plan.
Reduce pressures from other activities in Dogger Bank SAC	There are currently no relevant activities within Dogger Bank SAC that can be feasibly be managed at a suitable scale which are not already being managed.
Reduce pressures from other activities in sites (outside of MPA network) that contain sandbanks	This measure is taken forward for fishing. For future OWF: The Crown Estate is a public authority for the purposes of subsidy control. A subsidy occurs when a public authority provides financial assistance (which is defined very broadly) to a specific enterprise/group of enterprises that gives them an economic advantage. Were TCE to enter into commitments to sterilise other parts of its estate to enable the Project Companies' projects to proceed, that may be construed as a subsidy.
Seagrass restoration	This measure remains under consideration for this Plan.
Lease seabed for the purposes of conservation	Conflicts with obligations under The Crown Estate Act & The Energy Act.
Removal of structures within Dogger Bank SAC	No/not enough structures that could be approved & removed within the timescales of this plan. The practical ability to remove structures is also uncertain and there is a significant cost/difficulty in the removal of rock coupled with risk of damage to existing feature.

Measure	Primary reason(s) for inclusion or exclusion of measure (where applicable)
Removal of structures at other SACs with sandbank feature	As per Removal of structures within Dogger Bank SAC.
Removal of debris	This is not considered as a compensation measure. See Appendix D for further details.
Sandbank recreation/restoration	No sites identified in need restoration other than by management of activities. No evidence that the physical restoration could be successfully delivered.
Invasive species eradication in Dogger Bank SAC	Not understood to be a current risk to the conservation objectives of the site. Uncertainties around ability to deliver and maintain the measure for this Plan.
Invasive species eradication at other SACs with sandbank feature	Uncertainties around ability to deliver and maintain the measure for this Plan.
Reef creation/enhancement	Not considered to provide comparable ecological function to Annex I sandbank. So not an appropriate measure for this Plan.

3.1.9 Much of the discussion by the Steering Group, and supporting work by NIRAS, revolved around a number of key topics which were considered critical to development of the DBSCP:

- Selecting appropriate compensatory measures though a process of identifying the ecologically suitable, rejecting those which would be unsuitable (for whatever reason) and challenging measures where there was uncertainty;
- Relating the function of sandbank habitat to the function of potential compensation measures;
- Developing approaches to allow compensation measures to be scaled, especially in order to provide comparable metrics to area where simple areal comparisons may not represent the best approach, in order to quantify compensation;
- Providing confidence that there are suitable locations for compensation measures to be implemented;
- How the proposed compensation will be delivered, success confirmed through monitoring and, if necessary, the use of adaptive management to ensure success if monitoring raises concerns about delivery.

3.1.10 These key topics are reflected in the structure of this document. The remaining paragraphs in this section summarise the three compensatory measure options selected from the longlist (Appendix D) for further consideration at this time, and which are included in this DBSCP. The measures are shown in order of ecological preference, as considered by the Steering Group.

3.2 New site designation or site extension

3.2.1 It is agreed by the group Steering Group that new site designation or site extension (new areas or features added to existing sites) is the recommended compensation measure of in this DBSCP and this follows advice received from Defra that this is an available strategic compensation measure that can

be used to compensate for habitat loss and damage caused by the Round 4 Plan.

3.2.2 New site designation or extension aims to provide protection to Annex I sandbank habitat outside of the existing marine protected area (MPA) network. In doing so, the integrity of the MPA network can be maintained, despite the loss and damage to sandbank habitat within Dogger Bank SAC as a result of the Round 4 Plan. New sites would be afforded at least the same level of environmental protection as other designated sites. The management and monitoring of a new site(s) is under discussion but is likely to fall to the MMO and SNCBs, with funding from the developers, on a basis to be agreed. Newly designated areas of the marine environment would be subject to nature conservation law and enforcement. This measure could be applied to Annex I Sandbank or other habitats of comparable ecological function.

3.2.3 Several forms of site designation or extension have been explored:

- Extension of Dogger Bank SAC;
- Designation of a new SAC or extension to an existing SAC (other than Dogger Bank SAC) for the protection of sandbank feature;
- Designation of a new MCZ for the protection of a sandbank feature; and,
- Amending SAC citation to protect or enhance associated habitat (e.g. troughs between sand-banks).

3.3 Restriction of future activities (Fishing byelaws)

3.3.1 Using byelaws to reduce fishing activities that damage the seabed is a potential compensatory measure that is currently being explored by workstreams within the Collaboration on Offshore Wind Strategic Compensation ("COWSC"). While this measure shows potential promise to compensate for benthic impacts there are still evidence gaps and uncertainties to work through. This measure would also need to be agreed by Defra's Secretary of State and can only be delivered by Defra in conjunction with the MMO or Inshore Fisheries and Conservation Authorities (IFCA's). Defra has not committed to implementing this measure at this stage. Fishing restrictions are already in place to protect the Dogger Bank SAC so, if taken forward, this measure would need to be delivered elsewhere to protect an area of Annex I Sandbank that is not currently protected in this way (i.e. it is also the case that any such restrictions at other sites would need to be additional to existing statutory management).

3.4 Seagrass meadow restoration

3.4.1 Seagrass meadows have an important role in supporting biodiversity (Attrill *et al*, 2000; Lee *et al*, 2001; Barnes, 2017), nutrient cycling (Welsh 2010; Tarquinio *et al*. 2018) and sequestering atmospheric carbon (Röhr *et al*., 2018; Johannessen, 2022). It has been estimated that, owing to disease and direct (e.g. anchoring boats, fishing, and other recreational and commercial activities) and indirect (e.g. sedimentation and eutrophication) pressures between the 1920s and 2005, 85% of the UK's seagrass had been lost (Hiscock *et al*, 2005; Dunic *et al*. 2021; Potouroglou *et al*., 2021; Turschwell *et al*. 2021). Recent estimates indicate that the UK contains 8,493 ha of mapped seagrass (Green *et al*. 2021), although there is considerable uncertainty as methods used to quantify area, and the definitions of seagrass beds, vary considerably (Potouroglou *et al*., 2021). Furthermore, many spatial mapping data sources lack metadata and many maps are out of date (Potouroglou *et al*., 2021).

3.4.2 Although lower on the compensation hierarchy than the other measures, seagrass meadows do occur on some sandbanks within coastal subtidal and intertidal zones and seagrass is a sub-feature of other

designated Annex I sandbanks, such as those within Fal and Helford SAC and Plymouth Sound and Estuaries SAC (Natural England, 2023a; Natural England, 2023b). Suitability as compensation for sandbank is supported by the listing of seagrass as a flora associated with sandbank in Natura 2000 (now National Sites Network) guidance habitat guidance (European Commission, 2013). Nonetheless, seagrass restoration is a lower preference measure compared to those supporting the same ecological function of the habitat being compensated for.

3.4.3 The Steering Group had significant concerns about the deliverability of seagrass restoration, even on a small scale as there have been no long term successes with seagrass restoration in the UK. Seagrass restoration is included as a potential measure only where it would be a minor part of a wider package in terms of the required compensation. Given the intention to compensate for Annex I sandbank habitat, which is by definition a subtidal habitat, seagrass restoration for the purpose of compensation for DBSW and DBSE projects shall be limited to subtidal seagrass. The measure is retained in the DBSCP as an additional option which could potentially be employed if the Steering Group considered that it was necessary to supplement other measures, or potentially as an adaptive management response.

4 Agreement Log

Table 4.1 Round 4 Compensation Dogger Bank – Steering Group Agreement Log. Table also available as Appendix C.

ID	Topic area	Agreement	Comments	JNCC	NE	DEFRA	BEIS/ DESNEZ	RWE	TCE	Decisions/ response by TCE
1	Site Designation / Extension	The group is in agreement with the recommendation of the plan to propose strategic site designation/extension as the most ecologically beneficial compensation measure.		Agreed but needs to recognise that there are differences between the different types of site designation (KR 27/03/24)	Agreed recognising that it is a sandbank site that should be designated, starting from that which most closely matches the habitat being lost at Dogger Bank (AF 10/4/24)	Agreed, noting and agreeing with SNCB comments (SV 11/4/24)	Agreed RW 22/03/24	Agree 21/3/24	Agreed - BL 06/03/2024	N/A
2	Restriction of future activities - Fishing bye-laws	It is agreed that fishing bye-laws will be included in the plan as a measure - as a high level concept, further details are to be refined if the measure is required at plan level. Fishing restrictions are already in place at Dogger Bank SAC so, if taken forward, this measure would need to be delivered elsewhere to protect an area of Annex I Sandbank (either inside an alternative Marine Protected Area, or an area of Annex 1 sandbank outside a Marine Protected Area) where there are currently no restrictions.		Agreed recognising that any restrictions need to be in addition to those already in place or planned through standard processes (KR 24/4/24)	Agreed recognising that any restrictions need to be in addition to those already in place or planned through standard processes (AF 24/4/24)	Agreed recognising that there are risks and uncertainties around this measure and Defra SoS agreement will be needed before it can be delivered. Any restrictions will need to be in addition to those already in place or planned through standard processes (SV 24/4/24)	Agreed RW 22/03/24 noting and agreeing with Defra comments.	Agree 21/3/24	Agreed - BL 06/03/2024	N/A
3	Strategic compensation measures	It is agreed that new site designation or extension, and restriction of future activities can and should benefit multiple projects. Therefore, as compensation measures, new site designation or extension and restriction of future activities should only be undertaken strategically.		Agreed for designation and extension. Ideally restriction of future activities should be undertaken strategically (even at a site level) but this requires all regulators to be on board with the process (KR 27/03/24)	Agreed for site designation or extension. Not agreed for restriction of future activities as there may be opportunities to do this strategically or at a site level and it requires regulators to be involved. (AF 10/4/24)	Agreed for new site designation or extension. Not agreed for restriction of future activities as it might depend on individual cases (SV 11/4/24)	Agreed RW 22/03/24	Agree 21/3/24	Agreed - BL 06/03/2024	N/A
4	Seagrass restoration	It is agreed by the group that seagrass restoration is considered as a viable option for Round 4 compensation **as a small part of a package, with other measures only**.		Agreed as only a very small part of a package and only for subtidal seagrass (KR 18/04/24)	Agreed as a small part of a package and only for subtidal seagrass (AF 10/4/24)	Agreed as a small part of a package (if necessary) (SV 11/4/24)	Agreed RW 22/03/24	This was included only as contingency if designation failed to deliver sufficient compensation	Agreed - BL 06/03/2024	N/A
5	Oyster reef restoration	The group agree to remove oyster reef restoration from the plan as the measure does not provide suitable compensation for Sandbank.		Agreed (KR 27/03/24)	Agreed (AF 10/4/24)	Agreed (SV 11/4/24)	Agreed RW 22/03/24	Agree 21/3/24	Agreed - BL 06/03/2024	N/A

6	Habitat damage	It is agreed that habitat loss and habitat damage should be viewed differently with respect to the area of compensation required. Loss implies the permanent removal of habitat and the provision of similar compensation measures should seek to replicate the area lost on a direct basis (subject to the further inclusion of any additional compensation ratio). Damage, is agreed to represent a partial and differential alteration of the character of a habitat. Whereas the HRA assumed, simply, that habitat damage occurred uniformly and completely across a buffer zone around seabed works, in practice it is considered that the alteration arising from these works would be observed as a gradient of change from 100% close to the works and reducing to 0% at the extremity of the assumed buffer. Furthermore this change would not be permanent, with some recovery occurring over time.	as discussed in SGDM10 and 12	Agree that these are different things but there is still a need to consider the same things in terms calculating the amount of compensation required as for loss e.g. recoverability, delivery timeframes etc which will determine the amount, as opposed to setting arbitrary amounts or ratios. (KR 27/03/24)	Agreed but further discussion and evidence is needed to understand the impact of damage on Dogger Bank SAC and potential for recovery to inform any reduction in area. The precautionary principle should assume 100% unless otherwise agreed. (AF 10/4/24)	Defer to SNCB advice on this point (SV 11/4/24)	Agreed RW 22/03/24	RWE do not agree that damage should contribute to the AEOI conclusion. SNCBs have not provided evidence of recovery taking 10+ years, RWE believe available evidence (including from the Dogger Bank) indicates effects are short-term. Notwithstanding the above RWE agree that if damage were included, recovery would be along a gradient both spatially and temporally and compensation should reflect this. 18/4/24	Agreed - BL 06/03/2024	The Crown Estate note RWE's position that damage should not contribute to AEOI conclusion. However, The Crown Estate's HRA and Derogation are final and include the consideration of damage to farm part of the AEOI.
7	Habitat damage	It is agreed, however, that, at the present time there is a lack of empirical evidence to appropriately quantify these areal and temporal characteristics of habitat damage in the context of the relic sandbank that forms the Annex I Sandbank feature of Dogger Bank SAC and for the purposes of this Strategic Compensation Plan habitat damage should be treated the same as habitat loss, until more evidence is available to do otherwise.	as discussed in SGDM10 and 12	Agreed (KR 27/03/24)	Agreed (AF 10/4/24)	Defer to SNCB advice on this point (SV 11/4/24)	Agreed RW 22/03/24 DESNZ will defer to SNCB comments, but also note comments from DBS on the consulation log concerning their results on habitat damage and recovery. All evidence must be used in coming to the conclusion on AEOI and amount of compensation required in terms of habitat damage.	RWE do not agree that damage should be treated the same, we believe the conclusion was that the impact would be <100% of habitat loss with no agreement on the quantum	Agreed - BL 06/03/2024	N/A
8	Compensation level	It was agreed that simple area based comparisons between sandbank and dissimilar habitats, such as seagrass, may not be optimal. An alternative approach which sought to use ecosystem function metrics such as production was investigated; whilst this may have merit there was insufficient time to develop this adequately. Should a package be required which includes seagrass restoration, this work should be revisited.	as discussed in SGDM11	Agreed (KR 27/03/24)	Agreed (AF 10/4/24)	Agreed (SV 11/4/24)	Agreed RW 22/03/24	Agree 21/3/24	Agreed - BL 06/03/2024	N/A

9	Seagrass restoration	It is proposed that one potential option for implementation is via existing seagrass restoration funds/ projects to enhance the chance of successful implementation and one option for the implementation is for it to be developer lead. Due to the benefits the group favoured the option to deliver through existing restoration projects/funds so long as it proved to be additional.		Not agreed - the best ecological option should be used to restore subtidal seagrass if this measure is taken forward as a very small part of a package. This may not necessarily be through existing projects. (KR 18/04/2024)	**Not agreed**, should this measure be taken forward for sub tidal seagrass restoration as part of a package then the best ecological option should be identified. This may be contribution to an existing project where the benefits can be show to be additional or restoration of a new area of subtidal seagrass (AF 18/04/24)	Defer to SNCB advice on this point, but if implemented via existing projects, compensation will need to be demonstrated to be truly additional (SV 18/04/24)	As per Defra comments RW 18/04/24	Agree 18/4/24	Agreed - BL 19/04/2024	The views of SNCB's Defra and DESNZ are noted. Both developer led and utilising exsiting seagrass restoration projects are presented as opportunities within the plan, and the Steering Group will have the opportunity to influence the appropriate way forward should this measure be required. The indication that utilising existing projects was 'favoured' was intended to indicate that utilising existing knowledge and expertise would be beneficial where possible, but it is noted and agreed that any seagrass restoration would need to be proved to be 'additional'.
10	Aggregates	This was excluded as a viable measure for this Plan due to the small areas available and the fact that the aggregates industry is managed to ensure sandbank recovery.		Not agreed - this measures has not been discussed in detail and sufficient evidence has not been presented to suggest that it is not viable. This is a measure that could be delivered as part of a package (although outside of DB SAC) to benefit Annex I Sandbank. (KR 18/04/2024)	**Not agreed**. This measure was not explored in detail and there is not sufficient evidence to conclude it is not viable. We consider that this could contribute to a package of measures and that this could help to remove pressure on Annex 1 sandbank. (AF 18/04/24)	Not agreed. This measure was not explored in detail and we don't have the evidence to conclude it is not viable. There could be benefits in some situations, e.g relocating aggregates activities that currently occur within MPAs (SV 18/04/24)	As per Defra comments. Although i agree that the aggregates industry is managed to allow recovery by leaving a minimum of target substrate in place, I take the Defra/SNCB points around removal of pressure in a site which is already under pressure and re-locating activities that currently occur in MPAs. RW 18/04/24	Agree 18/4/24	Agreed - BL 19/04/2024	The view of the the SNCB's and Defra are noted, however, it was discussed during the Steering Group meetings that whilst there may be opportunity to reduce some pressure from aggregates within MPA's the number of aggregates sites within protected sites, and their scale was such that there was limited viability for this measure to be taken forward.
11	Ratio	A ratio of 1:1 has been stated as the compensation value for restriction of future offshore wind as this is a like for like measure. There is no requirement for like for like to be more than 1:1 ratio		Not agreed, this has not been discussed with the steering group and no evidence has been presented on a suitable ratio. (KR 24/4/24)	**Not agreed,** the steering group has not seen potential areas for restriction of future offshore wind and has not had any discussion on what ratio would be required should this measure be taken forward at any stage. Further work is needed to understand how ecologically meaningful the measure is and to enable discussion on appropriate ratios. (AF 24/4/24)	Not agreed. This has not been discussed with the steering group and further work is needed to understand how ecologically meaningful this measure is and therefore appropriate ratios (SV 24/4/24)	Not agreed - while it sounds sensible in principle, it hasn't been discussed/explored/tested with the steering group. There may well be nuances, caveats and exceptions to this. RW 24/04/24	Agree 24/04/2024	Agreed - BL 24/04/2024	The Crown Estate note that this poin t is not agreed accross the Steering Group, but this is based on existing precedent for like for like measures in DCO decisions, and is included to reduce risk of inefficient use of The Crown Estate's assets in the future, whilst noting that this position does not fetter the discretion of the Secretary of State to make a discretion on appropriate compensation.

12	Monitoring	It was agreed that the monitoring requirements for a new or extended designated site should be appropriate to the purpose of monitoring. It is understood that monitoring for site designated as part of compensation are yet to be agreed and may differ to current monitoring, but we recommend they are appropriate to the requirement and purpose of the monitoring in relation to this Plan. This follows discussion in M9 to ensure the developers and the SNCB's concerns are adequately and fairly addressed.	SGDM9 Paolo Pizzolla - evaluating success in this instance would have to be with a long-term watching brief. This would need to be factored into the ongoing adaptive management of the group. Monitoring proposal would have to be in line with the monitoring process in the existing MPA network and should be proportionate to what is currently undertaken for the existing network.	Agree that any monitoring of the designated site as compensation should be appropriate for understanding the condition of the site and it's contribution to the MPA network in terms of success and management (KR 24/5/24).	Agree that any monitoring of the designated site as compensation should be appropriate for understanding the condition of the site and it's contribution to the MPA network in terms of success and management. Monitoring would be designed for compensation sites alongside the rest of the MPA network by the relevant SNCB(s). Monitoring requirements have not been discussed yet and more time is needed to work through the details. (AF 24/4/24)	Agree that any monitoring of the designated site as compensation should be appropriate for understanding the condition of the site and its contribution to the MPA network in terms of success and management. Monitoring requirements have not been discussed yet and more time is needed to work through the details (SV 24/4/24).	Agreed - RW 24/04/24	Agree 24/04/2024	Agreed - BL 24/04/2024	N/A
13	Questions at DCO	It was agreed that The Crown Estate will continue to chair the Steering Group following the submission of DCO applications for DBSW and DBSE. Examiners' Questions related to **this DBSCP** during the DCO process following the submission of the DBSCP should be directed to the relevant project applicant who will then provide those questions to The Crown Estate to ensure consistent alignment of responses which take account of Steering Group discussions and responses. The Terms of Reference for the DBSCP Steering Group still apply following DCO submission and until the Steering Group is dissolved in accordance with those Terms of Reference.	This follows discussions in earlier meetings relating to questions on the strategic Plan level compensation and is in keeping with the aims of the ToRs	Not agreed. As site leads for Dogger Banks SAC JNCC will be providing statutory nature conservation advice on the project via the delegation agreement with Natural England. For this reason it would not be appropriate for us to be involved in formulating response to questions posed to TCE on the plan (KR 24/4/24).	**Not agreed.** As NE will be providing statutory nature conservation advice on the project into examinations, we do not consider it appropriate for us to also be involved in formulating responses to any input requests regarding the R4 Plan Level compensation. The plan would be clearer if 9.5.3 reflected this. We hope to continue to provide steering group advice on other matters during the DCO processes subject to availability. (AF 24/4/24)	We are content that examiners questions are directed at the project applicant and agree with the points made by SNCBs. The ability to provide statutory advice shouldn't be compromised. We would be open to a discussion on the role of the steering group during DCO examination. (SV 24/4/24)	Not agreed. Given the quasi judicial nature of the DESNZ SoS decision on each consent, DESNZ will need to take a decision on any involvement during the examination.	Not agreed. Although DBS ,as the applicant, will respond to Examiners questions where appropriate and possible to do so there is frequently a fast turnaround on written questions and instant answers expected at hearings. Waiting on the SG to meet and respond will not be a workable solution during Examination. We also note that JNCC and NE do not plan on being involved in the SG during Examination. Agreement on the appropriate parties to be involved and how questions on the SCP can be resolved during the Examination will be required. CM 24/04/2024	Agreed - BL 24/04/2024	It is noted that there is not agreement across members of the Steering Group as to the continuation of the Steering Group during project Examination, namely due to capacity issues during a very busy process, and potential for conflicting advice to be submitted in response to Examiners Questions on the DBSCP and in individual organisations statutory roles in the process. It should be noted that all members have signed the Terms of Reference that describe the role of the Steering Group and that it will remain vested until post consent to consider monitoring and adaptive management requirements. The Examining Authority will have the right to ask questions of the DBSCP and it is appropriate that the Steering Group, being responsible for the development of the plan, respond to these questions and The Crown Estate will provide opportunity for members to feed into any response. Noting the individual organisations concerns, it will be for individual organisations to determine if and how they engage with the Steering Group during Examination. The Crown Estate are open to further discussions with Steering Group members regarding process during Examination.

5 Ecological Function

5.1.1 Compensatory measures targeted at sandbank habitat will closely offset the lost or impaired ecological function and supporting processes provided by the impacted habitat at Dogger Bank SAC, as defined in its conservation objectives. For measures based on other habitats, e.g. seagrass restoration, it is important to consider their ecological function to understand how this can be related to sandbank function and hence the contribution to offsetting impacts which they could result in loss of function. Furthermore, if elements of function which are common between sandbank and other habitats can be quantified this may offer a mechanism to scale compensation. This section provides a summary of the conservation objectives for Dogger Bank SAC, focused on ecological function, with a view to developing such approaches to scale compensation.

5.1.2 The compensatory measures described in this DBSCP are aimed at offsetting the AEOSI of the sandbank feature of the Dogger Bank SAC. The Dogger Bank SAC, proposed as a draft SAC in 2008 and formally designated in 2017, is located in the Southern North Sea, approximately 150km north-east of the Humber Estuary. The SAC comprises the majority of the extent of the sandbank feature in UK waters, a calculated area of 12,331km^2, and is the largest continuous expanse of shallow sandbank in UK waters. Water depth ranges from under 20m at the crest of the sandbank to 35-40m within the SAC, with the bank structure extending down to over 50m in UK, Dutch and German waters.

5.1.3 The sandbank feature within the Dogger Bank SAC provides a range of ecosystem services, with examples including: nutrition, by functioning as a feeding ground for multiple species of commercial importance; supporting local wildlife tourism, by contributing to the conservation of charismatic bird and cetacean species; and climate regulation, by deposition and storage of carbon in seabed sediments (JNCC, 2022).

5.2 Conservation objectives

5.2.1 The conservation objectives for Dogger Bank SAC are for the feature to be in favourable condition thus ensuring site integrity in the long term and contribution to Favourable Conservation Status of Annex I Sandbanks which are slightly covered by seawater all the time, by maintaining or restoring, subject to natural change the following three attributes:

- The extent and distribution of the qualifying habitat in the site;
- The structure and function of the qualifying habitat in the site; and
- The supporting processes on which the qualifying habitat feature relies.

5.2.2 Supplementary advice on the conservation objectives was updated in late 2022, following the closure of the SAC to bottom tower fishing gear (JNCC, 2022). This advice is considered in the following paragraphs, addressing each objective in turn.

5.2.3 With respect to the extent and distribution of the feature, an objective of 'restore' was advised, due to the continued subjection of the site to activities resulting in a change to the extent and distribution of the sandbank feature within the SAC. This has previously included bottom trawling, although this no longer occurs within the site, and currently includes offshore wind farms, cabling, and oil and gas industry activities. The report advises that activities must look to minimise changes in substratum within the site as far as is practicable, in order to minimise further impact.

5.2.4 With respect to the structure and function of the site, an objective of 'restore' was also advised. Both ongoing and historical activities are understood to have resulted in a change to the finer topography, sediment composition and distribution, and characteristic communities of the feature within the SAC, and may have ongoing effects. As above, where practicable, activities must look to minimise disturbance and changes to the finer scale topography, sediment composition and biological communities within the site.

5.2.5 Within this objective, the following sub-attributes were considered, and an objective of 'restore' advised:

- Finer scale topography of the feature. Given the relatively static nature of the sand waves, recovery is expected to be slow, and JNCC does not provide advice on the timescale for full recovery;
- Sediment composition and distribution of the feature;
- Characteristic communities of the feature within the site. The report advises the importance of conserving the natural spatial distribution, composition, diversity and abundance of the main characterising biological communities of the sandbank within the SAC in order to support its health and avoid diminishing biodiversity and ecosystem function; and,
- Function within the site. This objective was based on impacts to the characterising communities and peat deposits from both ongoing and historical activities.

5.2.6 Additionally, JNCC consider that a variety of key and influential species, including bioturbators, predators and grazers, may play a critical role in maintaining the structure and function of the protected habitats, but with insufficient information available to support an understanding of this role and its significance, it was not considered possible to set an objective for this sub-attribute.

5.2.7 With respect to supporting processes, an objective of 'maintain' was advised. Again, as far as practicable, activities must look to avoid impairing the hydrodynamic regime acting upon the site and exceeding Environmental Quality Standards. Within this attribute, 'maintain' objectives were also advised for:

- The hydrodynamic regime within the site;
- Water quality within the site, noting that aqueous contaminants must be restricted to comply with water column annual average (AA_EQS) according to the amended EQSD (2013/39/EU) or levels equating to High/Good Status (according to Annex V of the Water Environment Regulations 2017); and
- Sediment quality within the site, as restoration of contaminants in the water is not currently considered to be feasible.

5.2.8 Considering the three attributes, Biological Structure and Function are expected to be more relevant as potential sources comparators with non-sandbank habitat than physical structure which relates specifically to the sandbank feature (Figure 4.1).

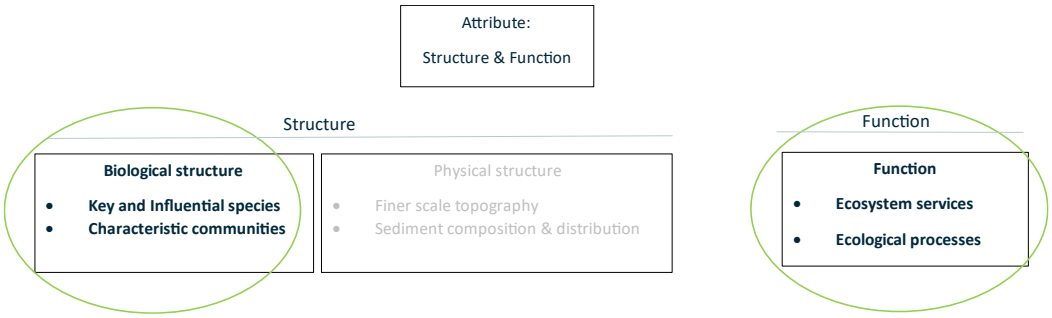

Figure 4.1 Sandbank feature attributes (sub-attributes considered further within this DBSCP are circled)

5.3 Linking compensation measures with the conservation objectives for Dogger Bank SAC

5.3.1 The seagrass restoration measure was explored in terms of its ability to provide similar ecological functions to sandbank, or support ecosystem services, listed within the conservation objectives for Dogger Bank SAC (Table 5.1). It was concluded that seagrass restoration could potentially be related to sandbank in terms of ecological functions and support some ecosystem services provided by sandbank habitat within Dogger Bank SAC; however, there are significant evidence gaps that prevent a robust evaluation of functioning between the habitats from being taken further in the timeframe available.

Table 5.1 Ecological functions and ecosystem services listed in the conservation objectives for Dogger Bank SAC

Ecological functions	Ecosystem services
Biodeposition Bioengineering Nutrient cycling Secondary productivity Supply of recruits	Nutrition (food provision) Bird and whale watching Climate regulation

6 Amount of compensation required

6.1 Background to determining the amount of compensation

6.1.1 The purpose of the DBSCP is to provide a clear, logical structure though which the required compensation can ultimately be delivered. Whilst it is not possible at this stage to prescribe the scale of compensation that will be required for individual measures, or a package of measures, it is considered important that the process through which this will ultimately be determined is established. Risks associated with not doing this include the ultimate compensation solution being arbitrarily scaled to reflect the amount of available resource and while potentially acceptable provided that the scale of impact is more than offset, for strategic (i.e. Plan level) compensation it is important that the quantum which is allocated to individual projects can be clearly understood.

6.1.2 A stepwise approach, as outlined in Figure 6.1, is proposed for determining the amount of compensation required. This is intended to enable an adaptable approach to accommodate the compensation measure(s) that is/are ultimately implemented, and the impact ultimately requiring compensation at project level.

6.1.3 Step 1 (calculate the impact) was estimated at a plan level for the two relevant Round 4 projects (DBSW and DBSE) through the Round 4 Plan Level HRA. This is expressed in area terms (km^2) for habitat loss and damage and values of 2.035km^2 and 32.209km^2 respectively represent current understanding of the Round 4 Plan Level Impact. These values may be revised when more refined project level information is available, currently the project values are predicted to be 2.25km^2 and 30.7km^2 for loss and damage respectfully. Therefore the scale of the impact requiring compensation will be refined by the Steering Group and defined within the DBSIMP once project level impacts have been finalised.

6.1.4 Step 2 (determine the compensation level) and Step 3 (apply the compensation multiplier) are discussed in this section. For the purposes of this DBSCP, the compensation level means the amount of each compensation measure required, either alone or together where there is more than one measure, to offset the impacts of the Round 4 Plan projects on Dogger Bank SAC. A multiplier may then be applied to the compensation level in order to provide confidence that the level of impact can be fully offset.

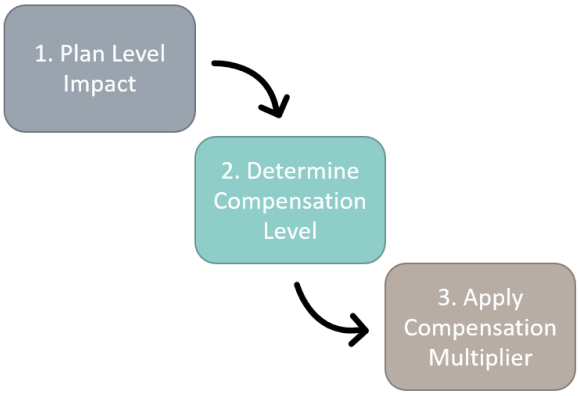

Figure 6.1 Simplified schematic showing the stages of determining the scale of compensation

6.2 Determining the compensation level

6.2.1 The compensation level is the amount of compensation, however measured, necessary to offset the level of impact. A ratio of at least 1:1 (impact to compensation) is the minimum, but in practice it is expected that the amount of compensation will need to be greater than the impact. The higher the position of a measure in the compensation hierarchy the greater the certainty that the measure would provide suitable compensation, and therefore the closer to 1:1 the compensation level is likely to be. Conversely, any compensation provided by measures which are further down the hierarchy, or where there is a risk that delivery of the compensation would have an extended timeline, is likely to require compensation levels substantially greater than 1:1.

6.2.2 Once an appropriate compensation level is established, it is expected to be necessary to plan to deliver above this amount to account for uncertainties and be sure that the required compensation level is met; this will be ensured by use of a compensation multiplier (see below). It is important to distinguish between any ratio(s) used to arrive at the compensation level and the separate compensation multiplier applied subsequently.

6.2.3 For the measures which involve the protection of sandbank habitat (Site Extension/Designation and Restriction of other Activities), area is considered to be the most appropriate metric to describe both impact and compensation levels. Thus for habitat loss the level of compensation that is currently understood to be required is at least 2.035km^2. The ratio applied to this figure may be close to 1:1 if it can be demonstrated that the compensation habitat is very similar and geographically close to that lost at Dogger Bank, but may increase above 1:1 in other circumstances. Larger ratios again would be expected for measures which are lower down the hierarchy.

6.2.4 In relation to habitat damage the Round 4 Plan Level HRA concluded that this would contribute towards the conclusion of AEOSI, but it should also be recognised that recovery over time is expected. Habitat damage is not a binary impact like habitat loss; instead, a range from more to less severe effects on aspects such as ecological function can be expected within the impact area and in this respect a compensation level that is less than 100% of the nominal upper estimate for area of habitat damage is likely to be appropriate.

6.2.5 Although recognising that it may not be necessary to set the compensation level at 100% for habitat damage (notwithstanding any further compensation multiplier which may be necessary), no single value was agreed upon by the Steering Group. It is recognised that an evidence base will need to be developed in order to refine this figure. In the absence of such evidence, it would be necessary to adjust the compensation level for damage conservatively, i.e. closer to 100%.

6.2.6 In summary, the Steering Group do not agree that a simple value (e.g. 25%) to represent required level of compensation for damage can currently be supported. Whilst some value below 100% is likely to be justified, (Natural England indicated during consultation that the habitat recovery time of Dogger Bank is 10 to 25 years), further study to develop a robust figure will be required. In the absence of this the compensation level for habitat damage should be considered as 1:1 in line with the precautionary principle.

6.2.7 For seagrass restoration, which seeks to deliver comparable ecological function, area may not be the most appropriate metric to calculate the level of compensation. Seagrass ecosystems differ from sandbanks, such as Dogger Bank. Consequently, the extent to which relevant ecological functions deliver services may be very different and an arbitrary areal metric could significantly misrepresent the level of compensation in these terms. Alternative metrics could include indicators of biodiversity, biomass, production or carbon sequestration. These were explored by the Steering Group but it was concluded that evidence to support the metrics could not be developed sufficiently within the required timeframe in order to provide a useful alternative to area.

6.2.8 Currently, an area based approach, as assumed for measures relating to sandbank habitat, would be needed if the seagrass restoration measure were to be included as part of a wider package of compensation.

6.3 Compensation multiplier

6.3.1 A compensation multiplier will be applied to ensure that the compensation that is delivered fully meets the compensation level, accounting particularly for uncertainties relating to success of the measure(s). Ratios close to 1:1 are appropriate in circumstances where confidence in delivery is high. Where there is less certainty around the success of a measure higher multipliers are appropriate in order to ensure that the amount of compensation, as determined by the compensation level, is delivered.

6.3.2 A range of ratios have been agreed for compensatory schemes on a case-by-case basis, but the following are recent relevant examples. The Norfolk Boreas project proposed a 2:1 ratio of native oyster habitat creation to *Sabellaria spinulosa* reef habitat (Royal Haskoning DHV, 2021). Hornsea Project Three are required to implement a debris removal campaign which should equate to no less than 41.80 ha at North Norfolk Sandbank and Saturn Reef SAC and 2.77 ha at North Norfolk Coast SAC (Royal Haskoning DHV, 2022) which are understood to match (i.e. 1:1) the predicted spatial extent of habitat loss at these two protected sites (Orsted, 2020). These are not compensation multipliers in the sense used in the DBSCP, where compensation level is implemented as an intermediate step, but are understood to have been applied in that manner.

6.3.3 To compensate for sandbank habitat loss caused by the Round 4 Plan, the final amount of compensation will at least match the compensation level. A compensation multiplier of one (1.0), based on an area metric, may be appropriate for measures targeting Annex I sandbank habitat (site extension/designation and restriction of other activities) where there is high confidence in delivery. If confidence is reduced for any reason then a multiplier of >1 may be required. For any compensation provided by measures delivering compensation through the restoration of other habitats a higher compensation multiplier would be justified. A value of two (2.0) is proposed. This figure is presented here as starting point and is not agreed upon by the Steering Group.

6.3.4 With respect to habitat damage, it may not be appropriate to apply a compensation multiplier since the compensation level will be set using an adjustment to area (e.g. 25% in the unagreed worked example in Section 6.2). The Steering Group will determine if any further multiplier is required.

7 Location

7.1 New Site Designation or Extension of an Existing Site

7.1.1 It is agreed by the group Steering Group that new site designation or site extension (new areas or features added to existing sites) is the recommended compensation measure of in this DBSCP and this follows advice received from Defra that this is an available strategic compensation measure that can be used to compensate for habitat loss and damage caused by the Round 4 Plan. It states that any new site/ site extensions will be determined by Defra and be designated as a strategic compensation measure which will benefit multiple projects. This DBSCP recognises that a team in Defra will work to identify potential areas for designating new sites, or extending existing sites, working closely with Natural England and JNCC. The information presented in this report is included as supporting evidence that the measure is appropriate for the specific purposes of the DBSCP, but without prejudice to the future outcome of the Defra-led process.

7.1.2 To ensure there is confidence in this measure, potential site locations have been identified in this DBSCP, but it is important to note this is not an exhaustive list. Full details are provided in the Site Selection Study (Appendix E), however the approach and current shortlisted sites for each measure are summarised below. It should also be noted that there are uncertainties pertaining to the sites, including the extent and the condition of the feature, and the pressures impacting the feature. There is a need to gather more evidence, which may be undertaken through desk studies and surveys, to aid decision making around site selection for new site designation or extension. In the case of site designation/extension, the locations shortlisted have been shared with Defra to be considered alongside other potential locations.

7.1.3 Figure 7.1 shows potential areas of search (AoS) for a new site designation, or extension to an existing site. The areas were identified by mapping locations of Annex I sandbanks using the JNCC Annex I sandbank data layer (JNCC, 2019). All of these potential AoS are located within the southern North Sea. There is high confidence that they would provide sufficient sandbank area to compensate for more than 100% of the compensation level requirement for the Round 4 projects DBSE and DBSW (worst case of loss and damage combined).

7.1.4 For AoS 19, to the north of Dogger Bank SAC, the shapefile was provided by RWE. The area within the boundary of AoS 19 is 3197.6km^2. Further survey work has been undertaken; the report, provided as Appendix F, indicates that Area 19 contains habitat consistent with Annex I sandbank.. Sand was the dominant sediment type, equivalent to EUNIS Broad Scale Habitats A5.2 Sand and muddy sand or A5.1 Coarse sediments, with little gravel or mud content. Moreover, benthic communities of AoS 19 were shown to be similar to those described as the "North-Eastern Community" of the Dogger Bank SAC (Wieking and Krönke, 2003; Diesing et al., 2009; Eggleton et al., 2016). Based on Appendix F an extension of the SAC to the north may provide equivalent area and comparable functioning of one of the habitats present within Dogger Bank SAC.

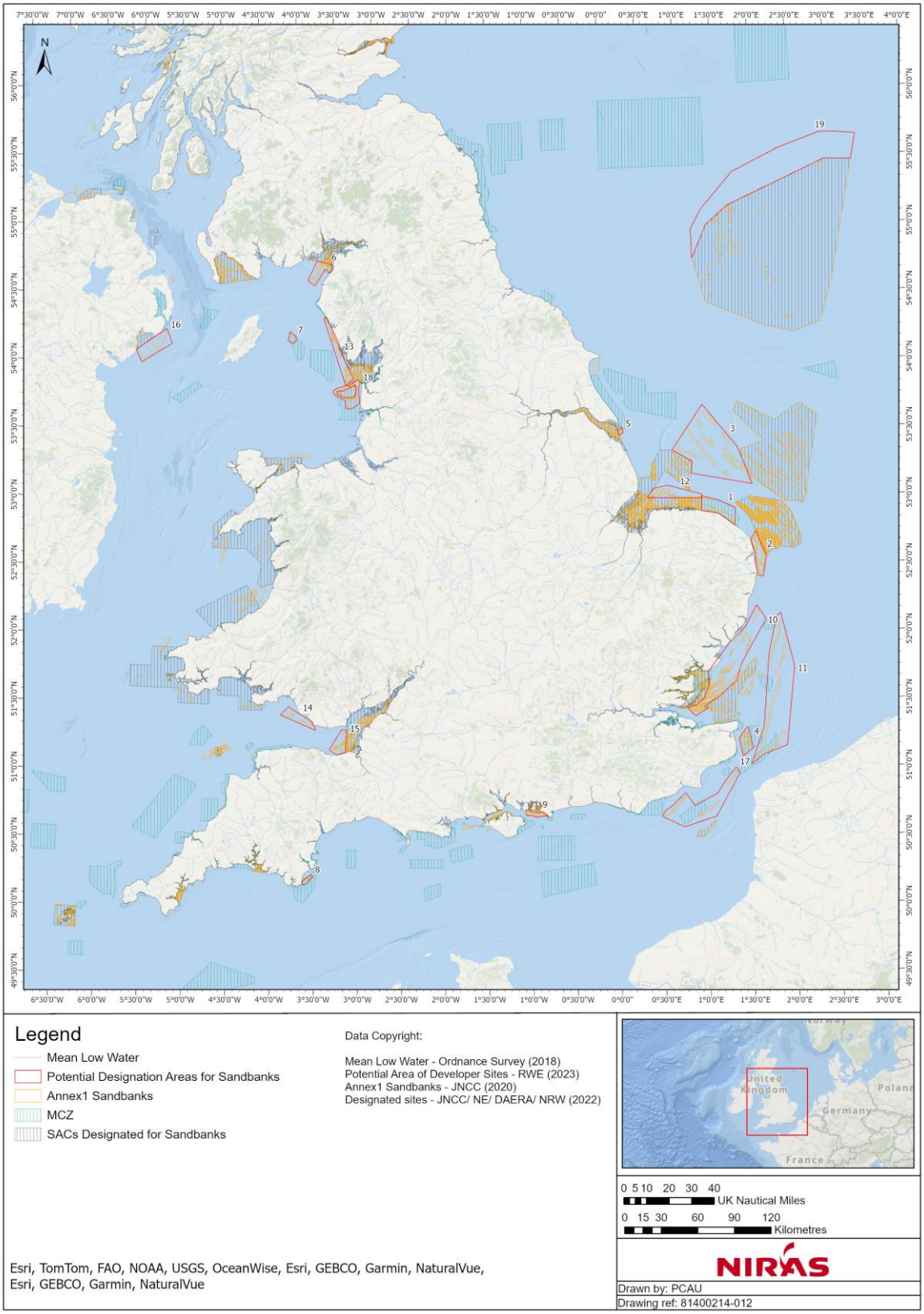

Figure 7.1 Annex I sandbanks with potential sites (red & pink) for New Site Designation/Extension. Pink are discussed further in Appendix E.

7.2 Restriction of activities (Fishing)

7.2.1 As indicated in section 3.3.1, this measure would need to be agreed by Defra's Secretary of State and can only be delivered by Defra in conjunction with the MMO. Fishing restrictions are already in place to protect the Dogger Bank SAC so, if taken forward, this measure would need to be delivered elsewhere to protect an area of Annex I Sandbank that is not currently protected.

7.3 Seagrass

7.3.1 Potential locations for seagrass restoration were mapped using the Environment Agency's 'Potential Seagrass' data layer which has been derived using wave and current energy, elevation and salinity criteria (EA, 2021). Additionally, Natural England's National Seagrass data layer which presents the extent of current areas of subtidal and intertidal seagrass based on monitoring data were mapped alongside the areas with potential for restoration to inform identification of 28 geographically discrete areas (Figure 7.2).

7.3.2 It is not possible, based on information currently available, to confidently distinguish between intertidal and subtidal potential seagrass restoration areas. Based on the position of this data layer relative to mean low water and the proportionate distribution of intertidal versus subtidal seagrass habitat in the National Seagrass data layer it is clear that the majority of potential restoration areas are intertidal, while providing confidence that there are opportunities for subtidal restoration. The recommendation of the Steering Group is for any seagrass restoration included as part of the DBSCP to be subtidal because of the closer relevance to Annex I sandbank in terms of ecological function and position on the compensation hierarchy. Notwithstanding this point, all areas of potential seagrass restoration are currently included and tidal status would need to be considered at a later stage in the DBSIMP.

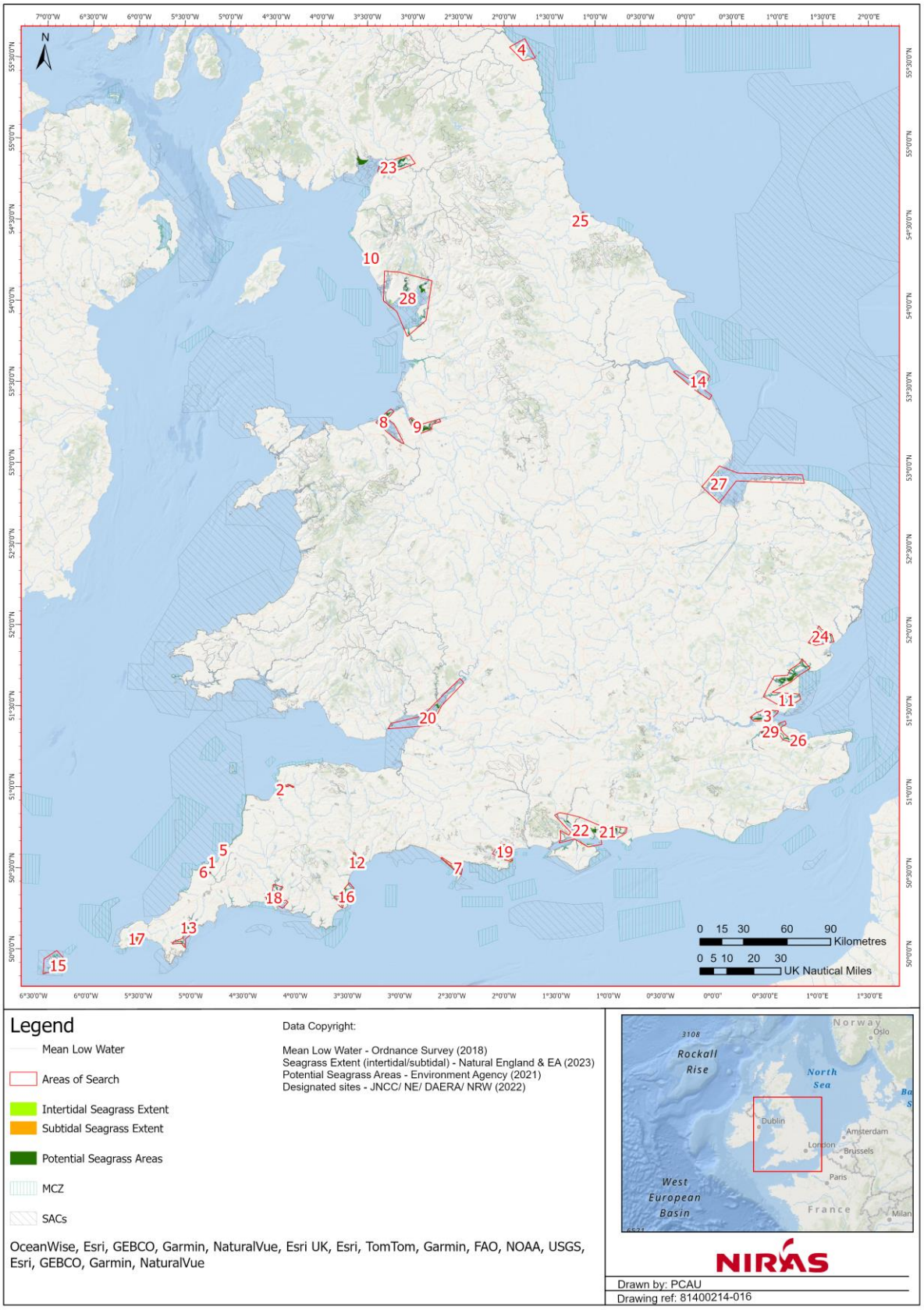

Figure 7.2 Potential sites for seagrass restoration based on the Environment Agency's seagrass potential layer (EA, 2021) and the Natural England's national seagrass layer (NE, 2023).

7.3.3 Notwithstanding the similarities in terms of ecological function between seagrass meadows and sandbanks (outlined in Section 5.3), there are fundamental differences between designating a site and restoring seagrass habitat. As such, site consideration criteria for seagrass were modified from that for site designation/extension. For example, seagrass has never been recorded from Dogger Bank SAC, so a site suitable for seagrass restoration would not be expected to provide a good representation of the habitat lost from Dogger Bank SAC, as a result of construction of DBSE and DBSW. As such 'Degree of representativity of lost or damaged habitat' was dropped from the criteria for seagrass site selection.

7.3.4 Figure 7.3 and Figure 7.4 present examples areas where seagrass restoration could be implemented as part of strategic compensation for Round 4 projects. Although proximity to the area of impact is relevant to the connectivity of the site with the impacted habitat, presently there are no sites where subtidal seagrass occurs on the east coast of England. Based on NE and JNCC advice, restoration for the purpose of compensation should be restricted to subtidal seagrass. It is not yet understood if there are historical records of subtidal seagrass meadows along the east coast of England and whether there is a possibility of restoring such habitat. Should this not be the case, seagrass restoration may be limited to sites outside of the southern North Sea.

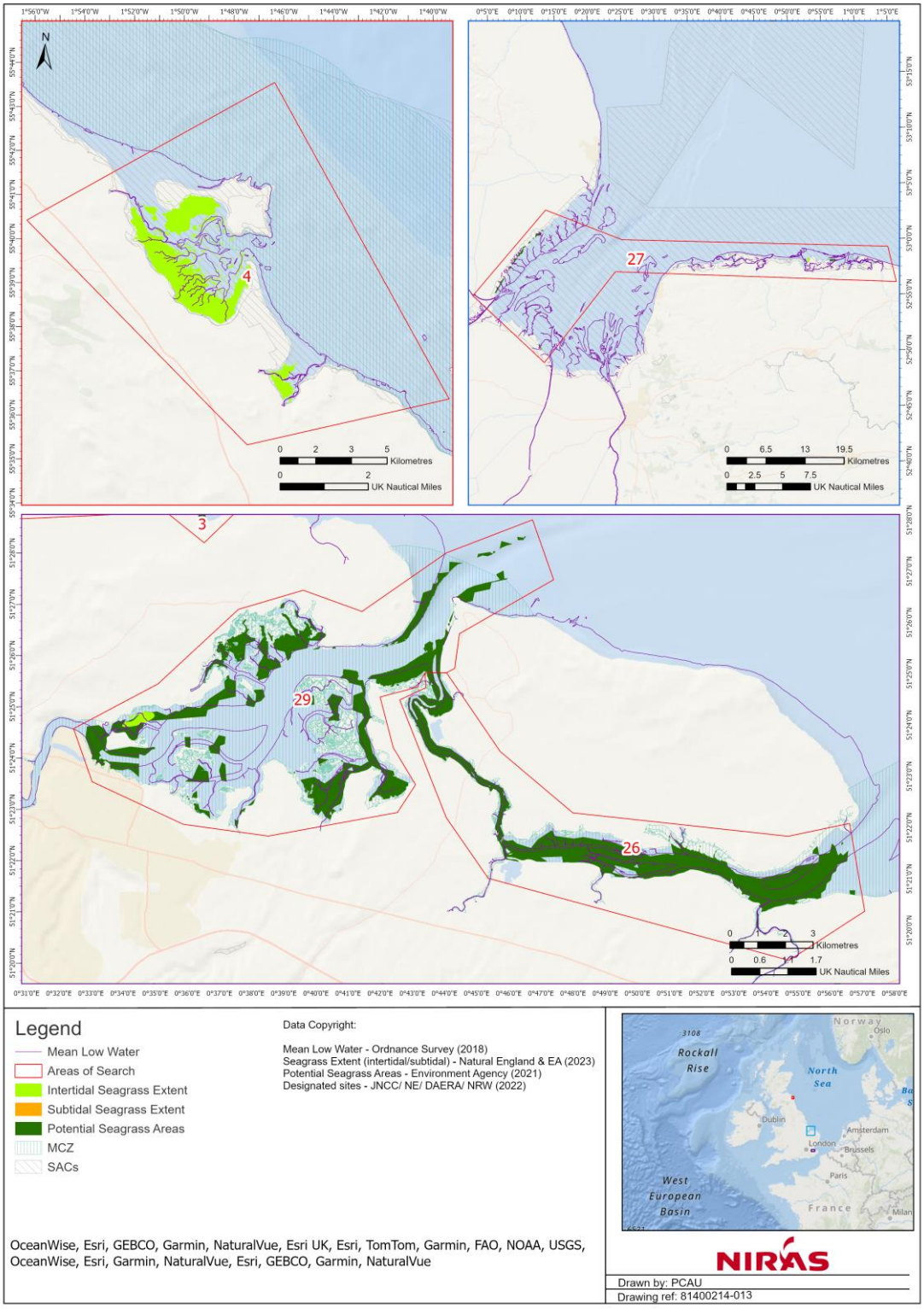

Figure 7.3 Potential sites for seagrass restoration on the east coast of England.

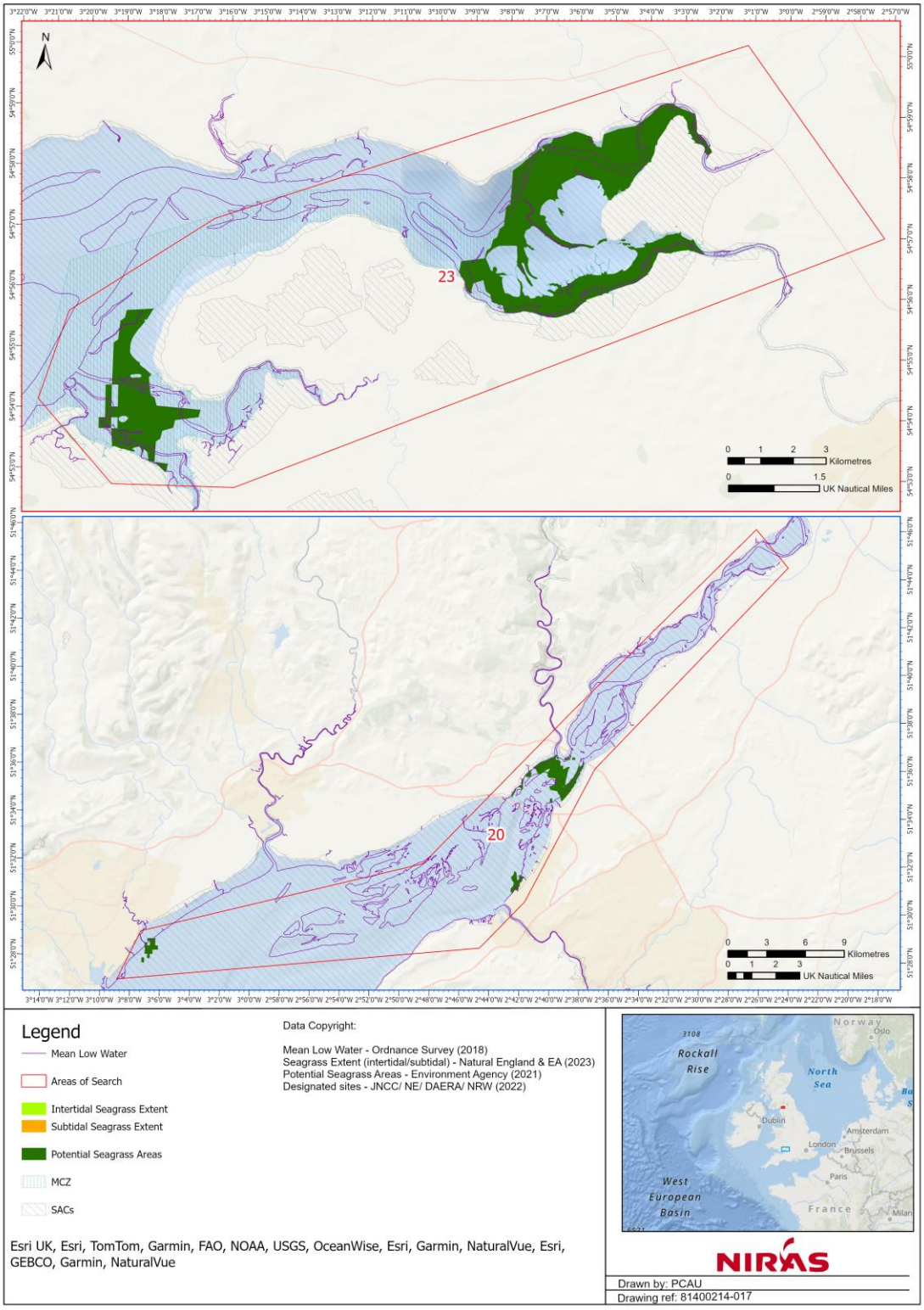

Figure 7.4 Potential sites for seagrass restoration on the west coast of England.

8 Proposed compensation solution

8.1.1 The compensation solution may be comprised of a single measure or a package of measures. It was agreed by the Steering Group that those lower down the hierarchy are only included as part of a package (as indicated in Figure 8.1). Where possible, compensation will be fully delivered by one or more measures high in the compensation hierarchy, the preferred method recommended by the group is designation of a new site or extension of a designated site. Other measures would only be incorporated to provide increased confidence in the overall success of the package and to ensure the package fully compensates for the impacts. This process is indicated in Figure 8.1.

8.1.2 Within each of the three proposed categories of compensatory measure there are a number of alternative delivery routes (schemes). For site designation or extension, all alternatives (namely, extension of Dogger Bank SAC, designation of a new SAC/protected site, extension of an existing SAC/protected site and protection of sandbank trough habitat) will be considered. Should the scale of compensation from this measure fall short of 100% of the required compensation, the DBSCP would seek to include restriction of fishing activity. The Steering Group considered that seagrass restoration could contribute only as a minor part of a wider package.

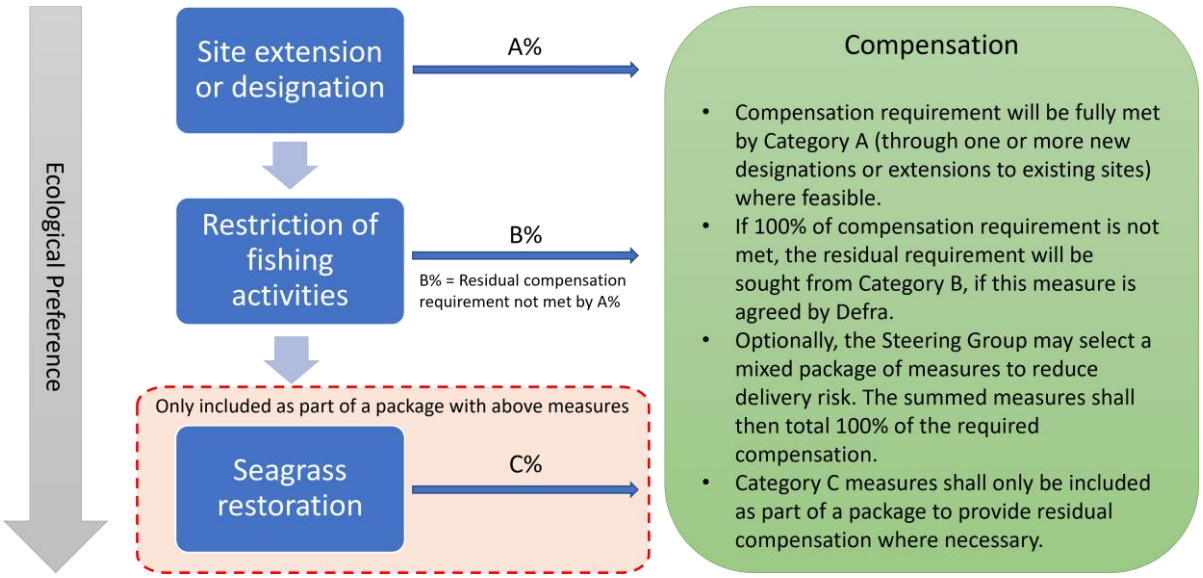

Figure 8.1 Compensation package development process. The option in the red box will only be considered as part of the package.

8.1.3 It should be noted that these measures, and alternative delivery routes for the same measure, are on different levels on the hierarchy of compensatory measures (Table 8.1). For example, should Dogger Bank SAC be extended, this measure would be at Level 1 on the Defra hierarchy, but a new designation elsewhere or an extension of another SAC would be Level 2. Similarly, restricting activities from within Dogger Bank SAC would be at level 1, whereas restricting activities within another SAC designated for the protection of Annex I sandbank would be at level 2. The Steering Group has judged that seagrass restoration to be at Level 4 on the Defra hierarchy. However, were seagrass restoration undertaken at another site designated for the protection of Annex I sandbank habitat, for which seagrass is a sub-feature, a case could be made that seagrass restoration would be at Level 2.

Table 8.1 Compensation hierarchy (Defra, 2021).

Level	Hierarchy of Measures	Description
1	Address same impact, same location	Address the specific impact caused by the permitted activity in the same location (within the site boundary). *e.g. On-site creation, restoration or relocation of feature that will be harmed/lost.*
2	Same ecological function, different location	Provide the same ecological function as the impacted feature; if necessary, in a different location (outside of the site boundary). *e.g. Off-site creation or restoration of feature that will be harmed/lost.*
3	Comparable ecological function, same location	Provide ecological functions and properties that are comparable to those that originally justified the designation in the same location as the impact. *e.g. On-site creation or restoration of a similar feature to the one that will be damaged/lost.*
4	Comparable ecological function, different location	Provide ecological functions and properties that are comparable to those that originally justified designation; if necessary, in a different location (outside of the site boundary). *e.g. Off-site creation or restoration of a similar feature to the one that will be damaged or lost.*

9 Delivery Mechanism

9.1.1 The preferred measures, site designation/extension and restriction of activities, require areas that are large enough to be practically implemented and managed. This is likely to be significantly larger than the area required to provide compensation for the Round 4 Plan. New site designation or extension, and restriction of future activities, can therefore benefit multiple plans and projects.

9.1.2 Both site designation/extension and restriction of activities measures will require implementation to be led by government agencies, which will take time and resources. The Defra Secretary of State has indicated that Defra will only designate sites to provide compensation strategically and benefit multiple projects, not on an individual project basis.

9.2 New site designation or extension of an existing site

9.2.1 The process for designating a new site for the protection of sandbank habitat, or extending an existing site, is outside of the control of the developer. Ultimately, the measure must be delivered by Defra with the support of the Statutory Nature Conservation Bodies (SNCBs) and regulators, as per the current UK practice and guidance. An announcement was made by Defra on 1st February 2024 that sites will be designated and/or extended in English waters to deliver strategic compensation for impacts associated with offshore wind, including for Round 4 projects. Contributions by the developer, e.g. in terms of providing information on area(s) of search and surveying/gathering evidence are still to be agreed. In line with the polluter pays principle, any new site designation or extension delivered for strategic compensation is proposed to be fully funded by the developer throughout the lifetime of the project, including management and monitoring stages. As this measure is a strategic measure with sites selected to cover multiple projects, this will be agreed during the development of the DBSIMP in conjunction with the Marine Recovery Fund and COWSC, who will establish how this cost is shared across the multiple projects benefiting from this compensation solution.

9.2.2 The new sites/extensions designated by Defra will be designed, and be sufficiently large, to fully compensate for multiple offshore wind projects, including those comprised in the Round 4 Plan. This measure is expected to be delivered through the Marine Recovery Fund and will follow the full legal process required for designation, including public consultation.

9.2.3 It is important to note that this measure is not without uncertainties. In the first instance, suitable sites would need to be identified and proposals for site designation would be subject to public consultation. As such, there is a risk of objection from other sea users and there may be a requirement to provide financial compensation to secure the measure.

9.3 Restriction of Activities (Fishing)

9.3.1 This measure has not been agreed by the Defra Secretary of State, but if confirmation were to be given in the future, the MMO would be responsible for producing byelaws, to restrict fishing activity. However, if fishing restrictions are to be put in place in an area <6nm from the coast, the IFCA would lead on producing byelaws with the support of the MMO.

9.3.2 As with new site designation or extension, the area in which fishing activities are to be restricted must also be sufficiently large to be charted. Uncertainties also exist; there is a need to identify suitable sites to impose fishing byelaws for compensation, and any site proposed would be subject to public consultation. Should this measure be implemented there may also be a requirement for financial compensation for other sea users that face restrictions, which would be provided by the developer.

9.4 Seagrass restoration

9.4.1 Efforts to restore seagrass meadows at coastal locations around the UK are in their early stages. There are major challenges which relate to existing pressures, which have led to declines in health and coverage of these habitats, and continue to do so. Although, experience with restoration is growing rapidly, uncertainties remain regarding the restorability of seagrass habitats, including the scale of habitat that can be restored, whether it could become self-sustaining and over what timeframe this could be achieved. It should be noted that, in regard to seagrass restoration as a measure of compensation, uncertainty translates in to risk to successful delivery.

9.4.2 There are two possible routes for the delivery of seagrass restoration as part of a strategic compensation package. Seagrass restoration could be led by the developer. For this option, in the first instance, further investigation of the site conditions and pressures would be required before final site selection. It should be noted that sites with the most suitable conditions may still require further reduction of pressures (e.g. relocating moorings, improving water quality, excluding trawling and dredging) to maximise the chances of successful restoration. This approach would require public consultation and engagement with stakeholders, and may be costly and time consuming.

9.4.3 Another option is to deliver compensation through existing restoration initiatives. Under this scenario the developer would pay into a fund to support existing projects. One example may be Life Recreation ReMEDIES (Save Our Seabed, 2019), however there other projects that could be supported through compensation. By delivering compensation through a wider programme resources will be placed in the hands of those with the greatest knowledge and experience, who have already been through the site selection process and project planning stages. This money will support an additional new or extended area. Furthermore, additional funds should be provided to support activities that can aid success, such as the development of less damaging anchor systems, or activities to improve water quality. However, careful consideration will need to be given as to how to demonstrate the success of

these additions, which can be worked out with the partner organisations as appropriate to the activity being undertaken. Should this approach be implemented we propose that it is included alongside supporting restoration at a new site, and thus this further support would be considered as additional to help the success rate.

9.5 Securing Compensation

9.5.1 The DBSCP will be submitted alongside the project submission to outline the compensation proposals agreed between the Steering Group. The DBSCP provides the relevant information required to show how the compensation will be committed to while also allowing a certain level of flexibility to account for potential changes in scale of impact and subsequent compensation levels. The DBSIMP will be developed post consent and include the necessary details relevant to the final compensation requirement and will detail how the Projects will commit. Once this DBSCP has been agreed, development consent order ("DCO") applications can be submitted by the developers of the Round 4 projects and the compensatory measures identified in those applications will accord with the agreed DBSCP and it can be expected that those measures can be included as requirements of any DCO that is made.

9.5.2 Under the agreements for lease with The Crown Estate, developers of DBSW and DBSE must participate in the processes required by this DBSCP and comply with, undertake and maintain (as necessary) the compensatory measures required to be adopted pursuant to this DBSCP. The DBSIMP (which forms a part of and is a requirement of the DBSCP and will provide further detail on the delivery and implementation of the measures) will dictate which measures will be undertaken, where, how and other specifics. The DBSIMP will secure the funding and ensure the benefits are shared across the Round 4 Plan and do not remain with any individual developer, regardless of who has undertaken the build, for example should ownership of any project change in the future. The DBSIMP will also set out any necessary agreements between The Crown Estate and the developers necessary to deliver the compensation. Costs will be shared between the relevant developers and this will be agreed in advance of commercial agreements being secured. Monitoring will be specified in the DBSIMP and coordinated to ensure consistency across the relevant projects to this DBSCP. It will ensure the data is collated and presented at a plan level and not in piecemeal fashion from each project separately on a project by project basis. The DBSIMP will require developers to comply with the detail set out within the DCO or Deemed Marine Licence (dML) condition.

9.5.3 The Crown Estate will continue to chair the Steering Group following the submission of DCO applications for DBSW and DBSE. Examiners' Questions related to this DBSCP during the DCO process following the submission of the DBSCP should be directed to the relevant project applicant who will then provide those questions to The Crown Estate to ensure consistent alignment of responses which take account of Steering Group discussions and responses. It is requested that due to the requirement of input of the Steering Group the Examiners put forward Written Questions where practicable. The Steering Group will be responsible for providing oversight of delivery, and of the responses related to the DCO process regarding the DBSCP, reviewing monitoring data and if applicable identifying adaptive management measures. The Terms of Reference for the DBSCP Steering Group still apply following DCO submission and until the Steering Group is dissolved in accordance with those Terms of Reference.

10 Monitoring

10.1.1 The primary role of monitoring is to demonstrate the success of the measure and inform potential adaptive management interventions.

10.2 New site designation or extension of an existing site

10.2.1 The process for measuring the success of a new site designation or the extension of an existing site will be determined by Defra. There are no prior examples of site designation or extension for the purpose of compensation, and monitoring requirements have not yet been determined. As the new or extended sites become part of the network monitoring requirements may fall under the responsibility of Natural England or the JNCC as part of statutory condition assessment obligations. Under such a scenario it is expected that funding to support monitoring of the newly designated area will be secured from the developer. Any such additional monitoring, should be appropriate to monitoring of similar habitats within the MPA network. As this measure is a strategic measure with sites selected to cover multiple projects, including but not limited to Round 4, will be agreed during the development of the DBSIMP in conjunction with the Marine Recovery Fund and COWSC, who will establish how this cost is shared across the multiple projects. This will also need to consider how that contribution may change over time if the compensation measure is shared with additional projects.

10.2.2 The measure has a high probability of success. However, the process for designating or extending an SAC can be time consuming, Defra have advised the process may take up to 7 years. Notwithstanding this, it is anticipated that this measure will have been secured when candidate SAC sites or recommended MCZ (cSAC or rMCZ) have been selected (cSAC and rMCZ are afforded the same level of protection through UK policy as fully designated sites) or when the Examining Authority has confidence in their security through another mechanism; at the time of writing Defra are working on providing further comfort on the security of this measure. The measure can be considered to have been successfully implemented once the sites are fully designated and appropriate management measures are in place. Defra has advised that they will be working with DESNZ, The Crown Estate, and others, with the aim that any new or extended sites designated to provide compensation will receive greater protection in future to avoid a need for additional compensation at these new sites.

10.3 Restriction of activities (Fishing)

10.3.1 This measure has not been agreed by the Defra Secretary of State, but if confirmation were to be given in the future, and this measure was taken forward, fishing activity will be monitored to ensure compliance. This will be done through standard government-led processes. The process for measuring the success of the restriction of activities will be determined by Defra in conjunction with the MMO. It is expected that the developers would provide funding to support this monitoring and enforcement of fishing restrictions.

10.4 Seagrass restoration

10.4.1 To determine whether restored seagrass is self-sustaining, indicating the success of the measure, long-term monitoring would be required. If restoration were to take place within an MPA where seagrass was a designated feature or sub-feature, monitoring would fall within the remit of a SNCBs, such as Natural England. However, as part of funding seagrass restoration, funding for monitoring will be secured by the developer, and this will agreed during the development of the DBSIMP.

10.4.2 Ideally the site undergoing restoration would be compared with a minimum of two healthy seagrass meadows at reference sites (other locations with similar physical and environmental characteristics)

(Hendy *et al*., 2021). If in the long-term, the restored seagrass beds meet or exceed the structural, functional and genetic indicators at those reference sites a restoration project can be considered successful (Hendy *et al*., 2021). Indicators would also need to be compared with previous years and the baseline condition to determine trends over time. Table 10.1 lists suggested metrics for indicators and provides an indicative timeline for monitoring (Hendy *et al*, 2021). As noted in Section 7.3, subtidal seagrass beds are absent on the east coast. Should seagrass restoration be implemented as compensation**,** comparisons could be made with the nearest subtidal seagrass beds, which are on the south coast. However, these sites may be subject to different pressures and environmental conditions and it will need to be determined whether comparisons are appropriate.

*Table 10.1 : Suggested timeline and metrics for a seagrass restoration monitoring programme, modified from Hendy et al., 2021 (£ = cheap, ££ = medium expense, and £££ =expensive; * = optional indicators to assess seagrass status). Before year five there will be minimal underground carbon storage. Thus, carbon would be assessed as a functional indicator post year 5. "De-structive" indicates an extractive or damaging activity.*

Structural Indicators				
Timeline	**Year 0**	**Years 1–5**	**Year 6+**	**Note**
Cover/extent	After 1, 3, 6 months	Yearly	Yearly	£
Shoot density and leaf morphology	After 1, 3, 6 months	Yearly	Yearly	£
Biomass*	Once	Yearly	Yearly	££ (destructive)
Epiphyte cover and disease assessment	After 1, 3, 6 months	Yearly	Yearly	£
Functional indicators				
Timeline	**Year 0**	**Years 1–5**	**Year 6+**	**Note**
Biodiversity – epifauna and fish	Before-Once	Year 5	Yearly	£££
Water quality	Once	Yearly	Yearly	£
Sediment structure*	Before-Once	Year 5	Yearly	££
Carbon stock assessment sequestra-tion measurements	Before-Once	Year 5	Yearly	£££ (destructive)

10.4.3 When measuring restoration success, the resistance of the restored habitat to disturbance should also be assessed. An accepted approach is to measure the natural parameter value range of the restored seagrass meadows and compare that of the reference sites. If the natural parameter value ranges of restored seagrass meadows falls within the ranges of the reference seagrass meadows it can be assumed they can resist disturbance (Hendy *et al* 2021). Where annual variability has been recorded, this can be used to define the limits for the natural parameter value range, if not variability across space can be used (Hendy *et al* 2021).

11 Adaptive Management

11.1.1 Adaptive management will be applied after the DBSW and DBSE projects become operational. The Steering Group will remain engaged until its objectives, (as agreed in the Terms of Reference,) have been met, including consideration relating to monitoring and adaptive management, and it is dissolved in accordance with its Terms of Reference..

11.1.2 Adaptive management is an iterative process that combines management measures with ongoing

monitoring to ensure the effectiveness of the measure. It may be needed to rectify unforeseen impacts caused by the introduced compensation measure(s), and should contribute to updating knowledge and improving decision-making over time. It is expected that the detailed approach to developing the compensation measures will minimise the risk that adaptive management would need to be implemented. Nonetheless, adaptive management will play a crucial role in the compensatory measures, serving as a tool to address unexpected issues or deviations from the anticipated outcomes of the compensation.

11.1.3 Adaptive management thresholds (i.e., the point at which adaptive management is actioned) will be developed and detailed in the DBSIMP. Triggering of thresholds will be informed by monitoring of the compensatory measure. The link between specific adaptive management actions and how they will be informed by monitoring has been presented to Steering Group members and it was agreed that ongoing engagement on the need for adaptive management will be undertaken with the Steering Group post Round 4 compensation implementation. Adaptive management thresholds will depend on the final compensation solution. Some factors impacting the success of the measure may be beyond the control of DBSW and DBSE. The Steering Group shall review such cases to determine responsibility for remedial actions.

11.1.4 It is not necessarily appropriate to set quantitative timescales for trigger points in relation to adaptive management due to the complexity of potential issues. At this stage, quantitative trigger points would only permit hypothetical and therefore potentially incorrect timescale estimates. A more appropriate approach, which has been agreed within the Steering Group, is presented in

11.1.5 Figure 11.1. This sets out the process of determining trigger points based on a review of monitoring at a frequency which will be agreed with the Steering Group post-consent. This will also permit the monitoring results to be viewed in the context of baseline monitoring results and that of data and trends at a wider regional or national level, if appropriate.

11.1.6 If necessary, this process will inform the most appropriate response in terms of adaptive management. Potential adaptive management options will be dependent on the final compensation solution. As a result, potential adaptive management options will be determined with Steering Group members post-consent, but may include:

- Extending measure/s to different areas, identified through the site selection process.
- Identifying pressures leading to failure and implementing measure to reduce those pressures.
- Use marine recovery fund or similar strategic route, if available.

11.1.7 If relevant, Steering Group members will be informed, and agenda items will be established for the Steering Group meetings. Final adaptive management options and approach will be refined post-consent following agreement of key specifics of the compensatory measure (such as compensation solution). This information will be agreed with the Steering Group and presented within the DBSIMP (an outline of which is provided within Appendix A). An overview of the adaptive management approach is provided below in Figure 11.1.

11.1.8 Approaches to adaptive management for the Round 4 Plan compensatory measures were presented and discussed during Steering Group meetings. Overall, the Steering Group members agreed that the approach was suitable and appropriate to support the Round 4 Plan compensation solution.

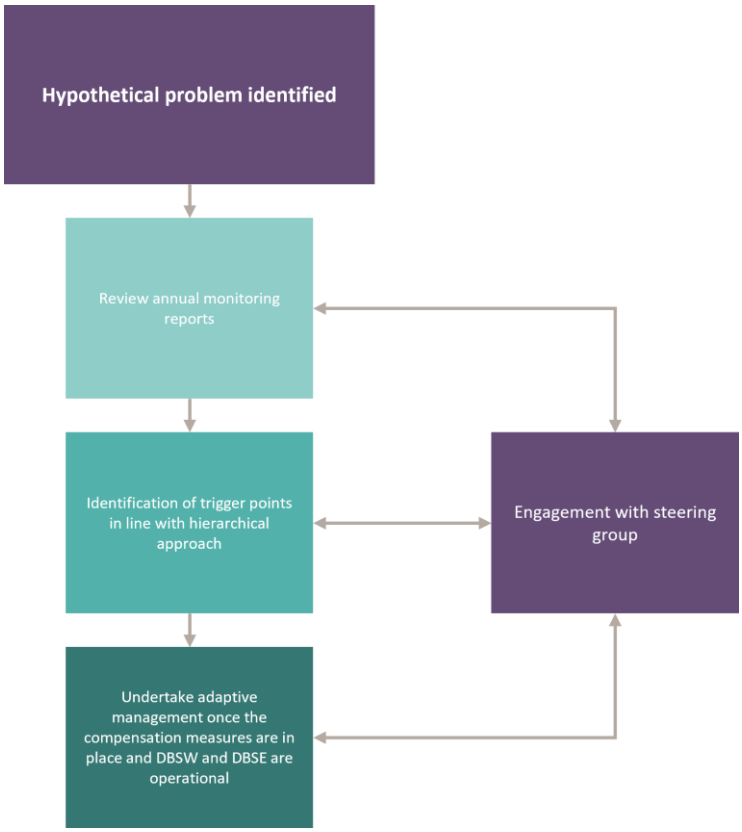

Figure 11.1 Overview of adaptive management approach

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13 Signatories

13.1.1 The below signatories, all members of the Dogger Bank Strategic Compensation Plan Steering Group, confirm that this Dogger Bank Strategic Compensation Plan has been developed in accordance with the agreed Terms of Reference for the Steering Group. Where an individual member does not agree with the content of parts of the Plan, this is documented in the Agreements Log, which should be considered as part of the Plan.

Organisation	Named Signatory	Signature	Date
Steering Group Chair – The Crown Estate	Ed Salter	DocuSigned by: Ed Salter 1735F8780692456...	25 April 2024
The Crown Estate	Ben Lander	DocuSigned by: 1139CD93A8FF4F0...	25 April 2024
Department for Environment, Food and Rural Affairs (Defra)	Sophie Vickery	DocuSigned by: DB50AD4C4FAF447...	25 April 2024
Department for Energy Security and Net Zero	Rebecca Walker	DocuSigned by: Rebecca Walker B40D59D093F2485...	25 April 2024
Natural England	Alex Fawcett	DocuSigned by: 85D9B01728AB43F...	25 April 2024
JNCC	Karema Randall	DocuSigned by: ABFD91A724884F4...	25 April 2024
RWE	Colin McAllister	DocuSigned by: Colin McAllister 9EC6576397034FA...	25 April 2024

Appendices

Appendix A – Outline DBSIMP

Available as a separate document.

Appendix B – Letter of acceptance from the Secretary of State

Available as a separate PDF.

Appendix C – Agreement log

Available as a separate excel document.

Appendix D – Long list

Available as a separate document.

Appendix E – Site selection report

Available as a separate document.

Appendix F – DBS SAC Extension Benthic Survey Technical Report (Supplied by RWE)

Available as a separate document.

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Subject: Complete with DocuSign: 43569-TCE-DOC-069 NIRAS_Dogger Bank_Strategic_Compensation_Plan.pdf
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Document Pages: 55
Signatures: 7
Envelope Originator:
Certificate Pages: 7
Initials: 0
Claire Gorringe
AutoNav: Enabled
Claire.Gorringe@thecrownestate.co.uk
EnvelopeId Stamping: Enabled
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Status: Original
25 April 2024 | 10:46
Holder: Claire Gorringe
Claire.Gorringe@thecrownestate.co.uk
Location: DocuSign

Signer Events	Signature	Timestamp
Alex Fawcett Alexandra.fawcett@naturalengland.org.uk Security Level: Email, Account Authentication (None), Authentication	DocuSigned by:  85D9B01728AB43F...	Sent: 25 April 2024 | 10:53 Viewed: 25 April 2024 | 11:07 Signed: 25 April 2024 | 11:29
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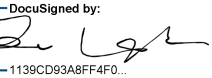
Phone: +44 7826 535185

Electronic Record and Signature Disclosure:
Accepted: 25 April 2024 | 11:07
ID: 0120a03b-4ab5-468e-b421-a6a990af669a

Ben Lander Ben.lander@thecrownestate.co.uk Security Level: Email, Account Authentication (None), Authentication	DocuSigned by:  1139CD93A8FF4F0...	Sent: 25 April 2024 | 10:53 Viewed: 25 April 2024 | 11:15 Signed: 25 April 2024 | 11:35
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Phone: +44 7823 780878

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Vendor ID: TeleSign
Type: SMSAuth
Performed: 25 April 2024 | 11:33
Phone: +44 7823 780878

Signer Events	Signature	Timestamp

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Vendor ID: TeleSign
Type: SMSAuth
Performed: 25 April 2024 | 15:04
Phone: +44 7823 780878

Electronic Record and Signature Disclosure:
Accepted: 25 April 2024 | 11:15
ID: 2fb1ca17-e244-4383-a54d-d54beccf1f90

Colin McAllister
Colin.mcallister@rwe.com
Security Level: Email, Account Authentication (None), Authentication

DocuSigned by:
Colin McAllister
9EC6576397034FA...

Signature Adoption: Pre-selected Style
Using IP Address: 86.190.163.33

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Signed: 25 April 2024 | 11:23

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Vendor ID: TeleSign
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Phone: +44 7989 494337

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Phone: +44 7989 494337

Electronic Record and Signature Disclosure:
Accepted: 25 April 2024 | 11:19
ID: 0e3977f5-78b9-4302-a1b8-8957a3a7d1f4

Karema Randall
karema.randall@jncc.gov.uk
Security Level: Email, Account Authentication (None), Authentication

DocuSigned by:
K. Randall
ABFD91A724884F4...

Signature Adoption: Uploaded Signature Image
Using IP Address: 170.176.242.80

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Signed: 25 April 2024 | 12:05

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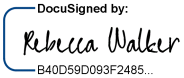
Vendor ID: TeleSign
Type: SMSAuth
Performed: 25 April 2024 | 12:03
Phone: +44 7778 467446

Electronic Record and Signature Disclosure:
Accepted: 25 April 2024 | 12:03
ID: d1321cef-2582-497c-9942-7c1c8d6b96c0

Signer Events	Signature	Timestamp
Rebecca Walker Rebecca.walker@energysecurity.gov.uk Security Level: Email, Account Authentication (None), Authentication	DocuSigned by:  B40D59D093F2485... Signature Adoption: Pre-selected Style Using IP Address: 86.30.7.57	Sent: 25 April 2024 | 10:53 Viewed: 25 April 2024 | 10:55 Signed: 25 April 2024 | 11:12

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Phone: +44 7918 450801

Electronic Record and Signature Disclosure:
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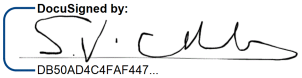
Sophie Vickery Sophie.vickery@defra.gov.uk Security Level: Email, Account Authentication (None), Authentication	DocuSigned by:  DB50AD4C4FAF447... Signature Adoption: Drawn on Device Using IP Address: 84.64.227.74	Sent: 25 April 2024 | 10:53 Viewed: 25 April 2024 | 10:56 Signed: 25 April 2024 | 10:59

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Phone: +44 7973 461119

Electronic Record and Signature Disclosure:
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Ed Salter Ed.salter@thecrownestate.co.uk Mr Security Level: Email, Account Authentication (None), Authentication	DocuSigned by:  1735F8780692456... Signature Adoption: Pre-selected Style Using IP Address: 151.227.155.224	Sent: 25 April 2024 | 12:05 Viewed: 25 April 2024 | 12:19 Signed: 25 April 2024 | 12:20

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Phone: +44 7467 488982

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Editor Delivery Events	Status	Timestamp

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Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp
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Notary Events	**Signature**	**Timestamp**
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