



**RWE Renewables UK Dogger Bank
South (West) Limited**

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South (East) Limited**

**Dogger Bank South Offshore
Wind Farms**

**Project-Level Kittiwake Artificial Nesting
Structure (ANS) Site Selection Report**

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Acronyms

Acronym	Definition
AONB	Areas of Outstanding Natural Beauty
AoS	Area of Search
ANS	Artificial Nesting Structure
BRAG	Black, Red, Amber, Green
DBS	Dogger Bank South offshore wind farms
DCO	Development Consent Order
ETG	Expert Topic Group
KSCP	Kittiwake Strategic Compensation Plan
MPA	Marine Protected Area
MoU	Memorandum of Understanding
ODOW	Outer Dowsing Offshore Wind
OEUK	Offshore Energies UK
OWF	Offshore Wind Farm
SAC	Special Area of Conservation
UK	United Kingdom
UXO	Unexploded Ordnance
ZTV	Zone of Theoretical Visibility

1 Introduction

1.1 Purpose of Document

1. This document sets out the details for the second stage of the Dogger Bank South (DBS) East and DBS West offshore wind farms (hereafter referred to as 'the Projects') project-level site selection work for the location of offshore kittiwake artificial nesting structures (ANS). This report builds on initial site selection work previously undertaken by the Applicants outlined in **Appendix 1 – Project Level Kittiwake Compensation Plan** [APP-052] which expands upon the plan-level approach provided in the **Kittiwake Strategic Compensation Plan (KSCP) (The Crown Estate, 2024)** [APP-053].

1.2 Rationale

2. The first stage of site selection work undertaken by the Applicants to identify suitable locations for project-led offshore ANS was to appraise a longlist of areas of search (AoS) identified by NIRAS and Outer Dowsing Offshore Wind (ODOW) in **Appendix D, Volume 6 KSCP** [APP-053]. One of the primary outcomes of the first stage of site selection work was the exclusion of AoS on the basis that several of those assessed were located in prohibitive water depths for a fixed base structure and / or located in areas of high vessel density (shipping traffic). It was concluded that a shortlist of five AoS would be subject to further investigations to assess site suitability.
3. Following the submission of **Appendix 1 – Project Level Kittiwake Compensation Plan** [APP-052] in June 2024, a review of the shortlisted AoS and data sources was undertaken. It concluded that while the five shortlisted candidate AoS had merit, they remained potentially constrained by physical conditions, soft constraints, as well as technical and logistical challenges, and that the Applicants may have limited options if only these sites were considered. An examination of the wider area of search (English waters of the southern North Sea) suggested that there may have been missed opportunities at locations with good ecological suitability that were not identified previously in **Volume 6, KSCP** [APP-053].

4. As a result, the Applicants have undertaken a second stage of site selection work with the aim of identifying and assessing the suitability of new AoS for the installation of offshore ANS alongside selected AoS presented in Appendix D **Volume 6, KSCP** [App-053]. Prior to additional site selection work being progressed, the Applicants took the opportunity to engage with The Crown Estate and outline plans to identify additional AoS for the delivery of ANS, and no objection was raised. Given the time elapsed since the publication of **Volume 6, KSCP** [App-053], the Applicants have taken the opportunity to utilise updated data sources for hard constraints and integrate additional sources that were not used in the original work by The Crown Estate (2024). The ecological criteria used to identify new potential sites remains unchanged from **Volume 6, KSCP** [APP-053].
5. The Applicants also took the opportunity to incorporate work that was ongoing on installation requirements, methods and logistical matters associated with operation and maintenance of the ANS developed in the post-submission period into the site selection process. Additional work on the physical requirements of the offshore ANS post-submission led to a more specific understanding of site requirements and an update in assessment criteria for AoS. Though the AoS outlined in **Volume 6, KSCP** [APP-053], have previously been subject to assessment, it was considered prudent to reassess the more favourable of these sites alongside newly identified AoS to reflect updated constraints categories. Updates to the constraints included:
 - The recategorization of the logistical constraints to include distance of AoS from established or planned RWE projects, transit routes and Operations & Maintenance (O&M) ports.
 - An adjustment of optimal and sub-optimal depth categories and revision of maximum depth from 60m to 50m based upon updated engineering advice.
6. In addition to identifying new AoS, the Applicants have also assessed the suitability of repurposing offshore infrastructure due to be decommissioned, including oil and gas platforms, as advised by Natural England in the Dogger Bank South Offshore Wind Farms: Natural England Catch-Up Call 27th July 2024. Following an examination of the decommissioning pipeline, the Applicants assessed the potential of several in situ structures and appraised the suitability of two structures theoretically suitable for repurposing as offshore ANS in greater detail: Garrow gas platform and Scroby Sands OWF. This is discussed further in section 2.

2 Assessment of In-situ Structures

7. Following communication on 27th June 2024, Natural England expressed support for the Applicants engaging with oil and gas operators to identify potential opportunities for cross-sector collaboration in the creation of ANS. Natural England stated that there may be potential to repurpose and / or maintain soon to be decommissioned oil and gas platforms as offshore ANS.
8. To identify potential opportunities for repurposing a suitable offshore structure, the Applicants researched expected timelines for decommissioning of North Sea oil and gas platforms and engaged with Offshore Energies UK (OEUK) to discuss ongoing decommissioning research. A review of the oil & gas decommissioning programme revealed which platforms were to be decommissioned within a suitable timeframe for the Projects. Where potentially suitable platforms were identified, the ecological suitability of the location was assessed, and the asset owners were contacted to discuss the decommissioning programme and the presence or absence of kittiwake on the structures. While a single potentially suitable platform was identified (Garrow gas platform), the owner confirmed that there were no kittiwake present on the structure, making it an unsuitable candidate.
9. The Garrow platform was also discounted on the basis of safety issues associated with repurposing structures at the end of their designed lifespan. Consultation with OEUK and Department for Energy Security and Net Zero (DESNZ) also revealed liability issues associated with repurposing decommissioned structures as ANS. These issues are summarised below:
 - Installations would need to be re-classified and regulated by Offshore Renewable Energy Installations (OREI) / Marine Management Organisation (MMO) under s105 of the Energy Act 2004 and it is questionable whether installations could be re-classified to offshore renewable platforms as defined by the Energy Act 2004, especially in the context of creating bird nesting sites for compensatory measures. For example, the re-purposing is not for the direct purpose of electricity generation.
 - The OSPAR Convention prohibits the dumping or leaving in place of any disused offshore installation in the marine environment. OSPAR Decision 98/3 reaffirms the prohibition and provides the provisions for the competent authority of a Contracting Party to permit a disused offshore installation to be dumped or left in place in the maritime area.
 - Under the OSPAR Convention it is possible for a disused offshore installation to be considered for another purpose, subject to authorisation or regulation by the competent authority. A repurposed offshore installation would therefore no longer be considered as an offshore installation (i.e., oil and gas installation).
 - Platforms identified for decommissioning are usually at or near the end of their design life and there have been concerns raised regarding the safety and integrity

of platforms continuing for another purpose. Previous proposals explored the option of replacing the topsides, but concerns remained on the integrity of the foundation and the liabilities that come with that.

- If an installation was to be re-purposed the offshore installation would still need to be decommissioned and 100% of the decommissioning liabilities would also transfer to the wind farm developer, including the full cost of decommissioning the asset (any tax relief (under the Petroleum Act) will not be applicable).
10. The Applicants also gauged the suitability of another in situ structure with potential to be repurposed as ANS at Scroby Sands offshore wind farm (OWF) ahead of decommissioning. However, the decommissioning timeline did not align with the Applicants' ANS installation requirement and as such this structure was discounted as an option.
 11. On the basis of the above, neither of the in situ offshore assets was considered suitable to take forward in the site selection process.

3 Identifying New Areas of Search

3.1 Data Review

12. Prior to the identification of any new AoS, a full review of data used by NIRAS to identify the AoS on behalf of The Crown Estate in **Volume 6, [APP-053]** was undertaken. All hard constraints were re-evaluated to better understand the nature of infrastructure and activities that were considered to represent areas of the seabed unsuitable for development in previous work.
13. A review was also undertaken to ensure that hard constraints were represented by the most up to date and appropriate data sources. Any new hard constraint data were added to the dataset compiled by NIRAS for **Volume 6, KSCP [APP-053]** to minimise the possibility of overlooked hard constraints.

3.2 Identification of AoS

14. In alignment with the site selection work undertaken by The Crown Estate (2024), newly identified AoS were primarily limited to areas characterised by medium to high ecological potential, in water depths suitable for the installation of fixed-base ANS. Ecological suitability was assessed by taking account of the 'ecological suitability' score as outlined in **Volume 6, KSCP [APP-053]** which ranged from -1 to 14. Where possible, AoS were located in areas where medium to high (5 to 14) ecological suitability scores represented the majority, if not all of the site. New AoS are intentionally large to increase coverage of the seabed to ensure that a range of ground conditions are covered by each site and that there are multiple options for consideration should unsuitable conditions be identified.
15. Building on work outlined in section 9 of the **Appendix 1 – Project Level Kittiwake Compensation Plan [APP-052]** and Appendix D of **Volume 6, KSCP [APP-053]**, candidate AoS were also delineated by identifying areas that primarily avoided or minimised interactions with hard constraints and buffers (i.e. were technically deliverable) and had logistical merit.
16. Hard constraints included existing infrastructure or activities and buffers surrounding the areas where the seabed is already occupied and therefore not available, for example oil and gas platforms, cables and pipelines, aggregates, offshore wind farms (OWFs), protected monuments and wrecks, navigational channels, military areas etc. A full list of hard constraints is presented in Appendix D of the **Volume 6, KSCP [APP-053]**. While the same hard constraints were considered as those in **Volume 6, KSCP [APP-053]**, additional datasets were used and updated data sources utilised where possible.

17. In addition to hard and ecological constraints, logistical aspects were also considered when identifying new AoS. Regular monitoring and maintenance of offshore ANS will be required for the duration of the Projects' lifespan. As such, it is important to consider the time, costs, carbon emissions associated with travelling to and from an ANS location for monitoring purposes. It is likely that a structure located in an accessible location will present increased monitoring opportunity and a reduction in monitoring time lost to technical issues associated with remote monitoring in a hostile environment given that equipment repairs can be undertaken more swiftly, resulting in reduce the likelihood of lost monitoring days due to poor weather and sea conditions. Furthermore, ANS sites in accessible locations present a more favourable environmental option, with fewer associated greenhouse gas emissions due to reduced travel times and distances. The distance of potential AoS from existing and future transit routes associated with OWF projects managed by the Applicants as well as preferred operation and maintenance ports and existing project locations were all considered but were not limiting factors when drawing site boundaries.
18. A total of ten new AoS (Sites 1-10) were identified during the second stage of the site selection work and have been progressed for detailed constraints assessment (**Figure 4-1**). These have been assessed along with six sites presented in **Volume 6, KSCP [APP-053]** (of which three offshore AoS previously identified by The Crown Estate (2024) and three AoS previously proposed by ODOW).
19. It is worth noting that one of the AoS (Northwest) overlays the proposed offshore ANS location identified by Hornsea Project Four and while the wider AoS did originally overlie the proposed location being progressed by ODOW in their draft DCO, this section of the AoS was removed so that only the area covering the Hornsea 4 AoS was assessed. While the Applicants plan to deliver kittiwake compensation collaboratively with ODOW, the Applicants do not intend to install the project-led offshore ANS in the same location as that of ODOW.
20. The purpose of including the AoS proposed by ODOW and Ørsted's Hornsea Four Project is to provide information on the potential locations of offshore ANS that could be delivered collaboratively in partnership with the Applicants. The Hornsea Four Project Marine Licence application (MLA/2023/00390) was granted on 23rd October 2024, while provision for a Marine Licence is included within the ODOW draft DCO as a deemed Marine Licence (dML). Geophysical and geotechnical surveys of the final ANS site, and detailed engineering designs have been undertaken by Hornsea Four Project while site investigations, consultation and detailed design work are being progressed for ODOW.
21. Discussions with other developers have included the potential for the Applicants to take on the design and installation works previously undertaken by Hornsea Project Four. Should this be taken forward by the Applicants, it is noted that Hornsea Project Four has progressed the ANS with respect of design, licences and agreements, and has confirmed a willingness to facilitate offshore ANSs where feasible. The Applicants will provide updates on these discussions through the Examination phase.

22. Sites outlined in **Volume 6, KSCP [APP-053]** that were progressed for constraints assessment by the Applicant were selected on the basis of potentially suitable ecological conditions, opportunity around soft constraints (primarily vessel traffic), and physical conditions (suitable water depth).

3.3 Refinement of AoS

23. Following the identification of AoS in areas of seabed that were not prohibited by conflicting hard constraints and suboptimal ecological suitability, where possible, boundaries were reviewed and refined to account for physical site conditions such as extensive areas characterised by suboptimal water depths. As part of the boundary review process, newly identified AoS as well as AoS identified by NIRAS and ODOW during the initial site selection work were adjusted to minimise (where possible) overlaps with constraining factors identified during the earlier site selection work. For example, as shown on **Figure 4-1** the boundary for Site F was cropped to remove an intersection with the North Norfolk Sandbanks and Saturn Reef Special Area of Conservation (SAC) following advice from Natural England.
24. The boundary of Site Northwest was redrawn to exclude the southern half of the area as this is where the ODOW structure is planned to be located (while provision for a Marine Licence is included within the ODOW draft DCO as a deemed Marine Licence (dML)), therefore ensuring that the two ANS are not located too close to each other.

4 Constraints Assessment

4.1 Assessment Approach

25. Following the identification of potentially suitable AoS, a Black, Red, Amber, Green (BRAG) assessment was undertaken to quantify risks associated with both 'hard' and 'soft' constraints within each site, and to determine the potential viability of candidate locations. A total of 16 AoS were subject to investigation, representing a wider geographic spread of sites than in previous site selection work.
26. A list of the AoS progressed for constraints assessment is presented in **Table 4-1**.

Table 4-1 Areas of Search Progressed for Constraints Assessment

AoS	Identified by
Sites 1-10	DBS
Site D	KSCP (proposed by NIRAS / The Crown Estate)
Site E	KSCP (proposed by NIRAS / The Crown Estate)
Site F	KSCP (proposed by NIRAS / The Crown Estate)
East	KSCP (proposed by ODOW)
Southeast	KSCP (proposed by ODOW)
Northwest	KSCP (proposed by ODOW and Hornsea 4)

27. The Applicants have examined the constraints in **Table 4-2** to determine the suitability of the AoS and identify those suitable to take forward for further in-depth specialist studies.

Table 4-2 Constraints Analysed To Refine Long List Of AoS For Offshore ANS

Constraint category	Constraint sub-topic	Data source
Hard constraints	Infrastructure, licenced seabed activities	The Crown Estate (2024a), EMODnet (2023a; 2023b; 2023c), ESCA/ KIS-ORCA (2024), UKHO (2024), Historic England (2024), NSTA (2024)
Biological constraints	Designated Sites (e.g. SACs, SPAs, Marine Conservation Zones and Highly Protected Marine Areas)	Natural England (2023a; 2023b; 2024), JNCC (2021)
	Annex I habitats (e.g. sandbank and reef habitat)	JNCC (2019; 2021)
	Ecological suitability score	NIRAS (2024)
Physical / Engineering constraints	Bathymetry – water depth Bedform	EMODnet (2021)
Logistical constraints	Distance to RWE Projects / transit routes / O&M ports	N/A
Socio-economic constraints	Proximity to Areas of Outstanding Natural Beauty (AONB)	Natural England (2023c)
	Disposal sites	Cefas (2023)
	Dredging sites	EMODnet (2023b)
	Commercial fishing type and intensity	EMODnet (2023d)
	Shipping activity (vessel density)	EMODnet (2019)

28. Following the collation of spatial data sources, a BRAG assessment was undertaken which subjected each of the constraints to scrutiny using a standardised assessment method. The BRAG scoring system (**Table 4-3**) was used to assess the level of constraint for each of the AoS against the hard, biological, physical/engineering, logistical and socio-economic factors outlined in **Table 4-2**. AoS which scored the highest were deemed to be the most favourable based on the constraints examined.

Table 4-3 BRAG Assessment Scoring System.

Risk Category	Score	Score description
HARD, BIOLOGICAL AND SOCIO-ECONOMIC CONSTRAINTS		
Low (green)	2	No significant risk identified. No consenting risks.
Medium (amber)	1	Less favourable option. Some risks identified but there is potential to overcome / mitigate risks with relative ease.
High (red)	0	Significant risks identified. Mitigating / overcoming risks challenging. Least preferred option. Potential for option elimination.
Showstopper (black)	-1	Significant risks identified. Mitigating risks not possible. Option cannot be progressed.
PHYSICAL / ENGINEERING CONSTRAINTS – WATER DEPTH		
Low (green)	2	20-35m
Medium (amber)	1	35-45m
High (red)	0	18-20m, 45-50m
Showstopper (black)	-1	<18m, >50m
LOGISTICAL CONSTRAINTS		
Low (green)	2	Within transit route and buffer (10km)
Medium (amber)	1	<20km
High (red)	0	20km -50km
Showstopper (black)	-1	>50km

29. An initial 'pre-mitigation' BRAG score was given to each constraint for each of the AoS examined. Any mitigation which could be applied to lower any risks identified for each constraint was then considered, following which a second 'post-mitigation' score was given. This allowed for the identification of possible mitigation strategies that could lower the risks associated with the hard, biological, logistical, physical/engineering, and socio-economic constraints. For example, if a proportion of an AoS was characterised in part by high density vessel traffic, then mitigation to avoid areas of high traffic was applied. This would enable the post-mitigation BRAG rating to be reduced (e.g. from 'medium' to 'low') and the score being increased (e.g. from '1' to '2').
30. Following the scoring of individual constraints, the combined score for each constraint category within each site was calculated. The scores for each constraint category for each of the AoS were then ranked and combined which enabled the identification of the most favourable AoS based on the constraints examined.
31. The post-mitigation BRAG scores are presented in **Table 4-4**. The key constraints driving differences between the AoS included designated sites, the presence of Annex I habitats, water depths (bathymetry), distance of AoS from project-related infrastructure / transit routes / O&M ports, commercial fishing and shipping activity. These constraints are shown on **Figure 4-1** to **Figure 4-5**.
32. As shown on **Figure 4-3**, the AoS considered were characterised by water depths ranging from approximately <10m to >100m. An initial assessment of engineering feasibility suggested that industry capability in terms of vessel size, foundation design etc., would likely limit offshore ANS installation to water depths of between 18 – 60m, with shallower water depths (20 – 40m) preferred. This depth range was consulted upon during the kittiwake Expert Topic Group (ETG) in April 2024. However, further engineering assessment has confirmed that installation in water depths greater than 50m is unlikely to be practicable. This depth range was presented to the ETG in September 2024.
33. This information has informed the appraisal of the AoS with respect to water depths with shallower sites (20 – 40m) scoring most favourably. Whilst installation within water depths of 18 – 50m is considered potentially feasible at this stage, further engineering assessment (e.g. of site-specific conditions and the supply chain market) is required to confirm.

34. AoS considered in the BRAG assessment had a wide geographic spread with some sites in accessible locations, and others in isolated areas with fewer reliable access options for maintenance and monitoring vessels. An assessment of the locations of assets owned and planned by the Applicants, established and planned transit routes, and preferred operation and maintenance ports concluded that AoS intersecting or in the vicinity of these features represented more favourable options. ANS sites in accessible locations present a more favourable environmental option, with fewer associated greenhouse gas emissions due to reduced travel times and distances, as well as reduced risk of opportunities being lost. Therefore, AoS within transit routes and buffer (10km) scored most favourably, though sites up to 50km from RWE routes and projects were also considered viable based upon predicted travel times. Given the widespread nature of OWF assets owned by the Applicants within the wider search area, and the number of ports from which project related vessels may mobilise, the categorisation of this constraint was not considered to be an overly limiting factor in the identification of a suitable ANS site.

4.2 Results

35. Following the BRAG assessment, the following AoS were discounted and have not been progressed for further consideration due to constraints present within each site as outlined in detail in **Table 4-4**:
- Sites 1-2, 3, 8-10
 - Site E
 - East
 - Southeast
36. All remaining AoS have been taken forward for further consideration.
37. Sites 1 – 2 and Site E were primarily discounted due to interactions with protected sites designated for sensitive benthic features (North Norfolk and Saturn Reef SAC) (**Figure 4-2**) while Sites 8, 9 and 10 were discounted due to high marine traffic density within site boundaries (**Figure 4-5**). 'East', 'Southeast' and Site 3 were discounted on the basis of low ecological suitability scores and their isolated locations which would make accessing any ANS challenging and time consuming for monitoring and maintenance purposes (**Figure 4-1**), especially in the early years of monitoring when surveys may be as frequent as several times per breeding season.

Table 4-4 Post-Mitigation BRAG Assessment Scores and Descriptions. AoS Ranked in Order of BRAG score. Options Not Progressed Shown in Grey.

AoS	Post-mitigation score	Score description
Site 5	21	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Moderate to good ecological suitability score. Limited pockets of optimal depth across AoS; evidence of sandwaves. Low to moderate vessel traffic, low commercial fishing activity. Accessible location for monitoring and maintenance.
Site D	21	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Moderate to good ecological suitability score. Limited pockets of optimal depth across AoS; evidence of sandwaves. Low to moderate vessel traffic, low commercial fishing activity. Accessible location for monitoring and maintenance.
Area 3	20	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Low - moderate ecological suitability score. Optimal depth across majority of site; no sandwaves. Low to moderate vessel traffic, low commercial fishing activity. Inaccessible location for monitoring and maintenance.
Site 4	20	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Moderate ecological suitability score. Small pockets of the AoS optimal depth; no sandwaves. Low to high vessel traffic, low commercial fishing activity. Relatively accessible location for monitoring and maintenance.
Site 6	20	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Good ecological suitability score. Parts of site optimal depth; no sandwaves. Moderate to high vessel traffic, low to medium commercial fishing activity. Accessible location for monitoring and maintenance.
Site 7	20	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Moderate ecological suitability score. Fairly large areas of suboptimal depth but not a showstopper; no sandwaves. Moderate to high vessel traffic, low commercial fishing activity. Relatively accessible location for monitoring and maintenance.

AoS	Post-mitigation score	Score description
Northwest	19	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Moderate ecological suitability score. Location of proposed Hornsea Project 4 ANS. Majority of site optimal depth; no sandwaves. Moderate to high vessel traffic, low commercial fishing activity. Relatively accessible location for monitoring and maintenance.
Site F	19	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present, though reef present to the west. Good ecological suitability score. Optimal depth; no sandwaves. Low to high vessel traffic, moderate to high commercial fishing activity (beam trawling). Relatively accessible location for monitoring and maintenance.
Southeast	19	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitats present. Low ecological suitability score. Optimal water depth; no sandwaves. Moderate to high vessel traffic, low commercial fishing activity. Inaccessible location for monitoring and maintenance.
Site 9	19	Does not overlap with any MPAs designated for benthic features, evidence of Annex I reef within AoS. Moderate ecological suitability score. Optimal depth; no sandwaves. Very high vessel traffic, high commercial fishing activity (beam trawling) in east of site. Relatively accessible location for monitoring and maintenance.
Site 10	19	Does not overlap with any MPAs designated for benthic features, no evidence of Annex I habitat. Moderate ecological suitability score. Majority of site optimal water depth; no sandwaves. Very high vessel traffic, low commercial fishing activity. Relatively close to Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB) – likely within zone of theoretical visibility (ZTV). Accessible location for monitoring and maintenance.
Site 8	18	Does not overlap with any MPAs designated for benthic features, evidence of Annex I sandbank within AoS. Moderate ecological suitability score. Majority of site optimal water depth; no sandwaves. Very high vessel traffic, low commercial fishing activity. Relatively inaccessible for monitoring and maintenance.

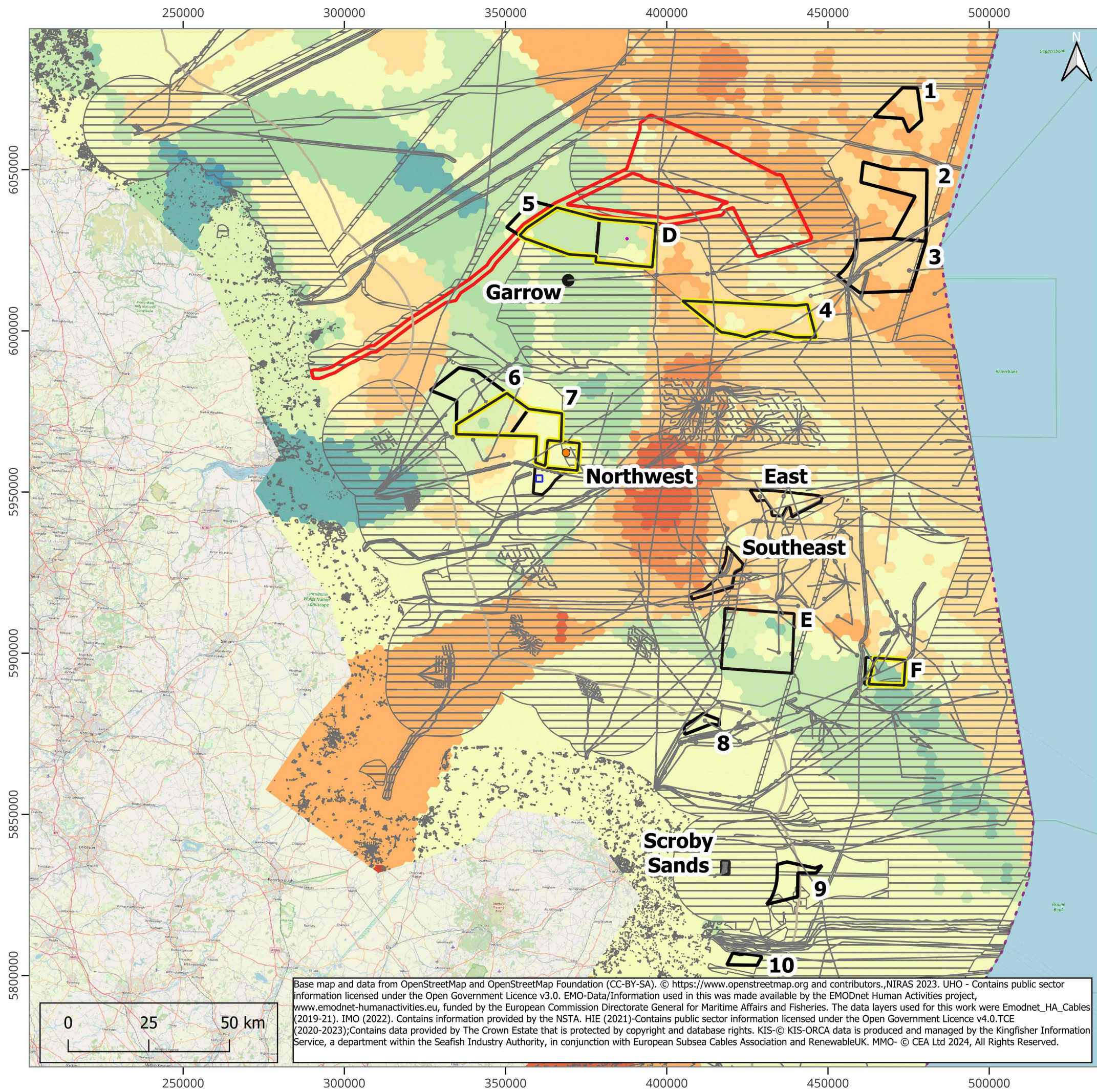
AoS	Post-mitigation score	Score description
East	18	Does not overlap with any MPAs designated for benthic features, no evidence of Annex habitat. Lower ecological suitability score. Optimal water depth; no sandwaves. Low to high vessel traffic, low commercial fishing activity. Inaccessible location for monitoring and maintenance.
Site 1	17	Entirely within Dogger Bank SAC, Annex I sandbank present. Moderate ecological suitability score. Majority of site optimal water depth; no sandwaves present. Low vessel traffic, low commercial fishing activity. Relatively inaccessible location for monitoring and maintenance.
Site 2	17	Entirely within Dogger Bank SAC, Annex I sandbank present. Moderate ecological suitability score. Majority of site optimal water depth; no sandwaves present. Low to high vessel traffic, low commercial fishing activity. Relatively inaccessible location for monitoring and maintenance.
Site E	16	Entirely within North Norfolk Sandbanks and Saturn Reef SAC, Annex I reef present, full extent unknown. Majority of site optimal depth; sandwaves present. Moderate to high vessel traffic, low to high commercial fishing activity (beam trawling). Inaccessible location for monitoring and maintenance.

38. The final stage of the analysis was to combine the post-mitigation BRAG scores with the ecological suitability scores generated by NIRAS to determine which areas may be most favourable ecologically. An approximate average ecological suitability score for each of the AoS was derived from the NIRAS GIS layer. The results of this analysis are presented in **Table 4-5**.

Table 4-5 Final Appraisal Scores For Offshore ANS AoS Taken Forward By The Applicants For Further Consideration.

AoS	Post-mitigation BRAG score	Approximate average ecological suitability score	Total Appraisal Score
4	20	5.0	25
5	21	9.0	30
6	21	8.0	28
7	20	7.0	27
D	21	8	29
F	20	9	29
Northwest	20	7	27

39. AoS to be taken forward for the next stage of desk-based investigations represent a combination of sites identified by the Applicants and by NIRAS and ODOW in Appendix D of **Volume 6, KSCP** [App-053]. Each of these is considered to be a viable option based upon work undertaken to date. However, further assessment is required to ascertain the suitability of each of these sites in terms of ground conditions, other sea users, potential hazards and conflicts.



Legend:

- 12NM Limit
- - - EEZ
- ▭ Project Red Line Boundary
- ▭ AoS Shortlisted By DBS
- ▭ AoS - Second round of constraints assessment
- Garrow Platform
- Hornsea Four OWF ANS Site
- ▭ AoS Taken Forward by ODOW
- ▭ Indicative Area Required For Siting Offshore ANS
- ▭ Hard Constraints
- ▭ Hard Constraints

NIRAS Ecological Suitability Scores (NIRAS, 2024)

-1	7
1	8
2	9
3	10
4	11
5	12
6	14

S2					
S2					
S2	P02	07/10/2024	Suitable for information	JC	EM AN
S2	P01	27/09/2024	Suitable for information	JC	EM AN
SUI	REV	DATE	DESCRIPTION	DRW	CHK APR

Title:
Offshore ANS Areas of Search (AoS)

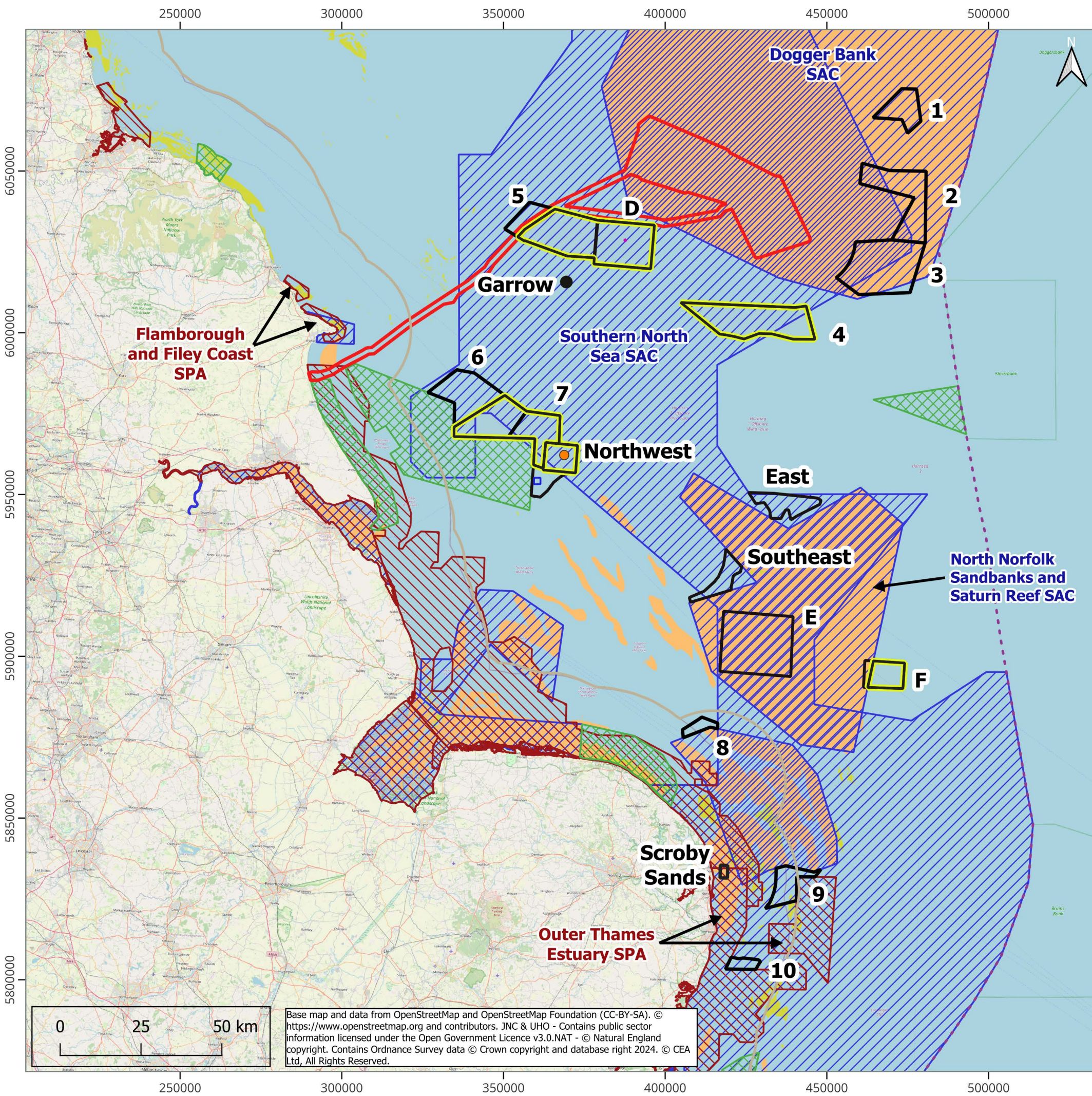
Figure: 4-1 Drawing No: PC2340-CEA-OF-ZZ-DR-Z-0018-OffshoreANSAoS

Co-ordinate system: WGS 84 / UTM zone 31N Page Size: A3 Scale: 1:1,200,000

Project: Dogger Bank South Offshore Wind Farms Title: Project-Level Kittiwake Compensation Plan

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Legend:

- 12NM Limit
- EEZ
- Project Red Line Boundary
- Shortlisted ANS Areas Of Search
- AoS - Second Round Of Constraints Assessment
- Garrow Platform
- Hornsea Four OWF ANS Site
- Indicative Area Required For Siting Offshore ANS
- AoS Taken Forward by ODOV
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Marine Conservation Zone (MCZ)
- Annex I Sandbank
- Annex I Reef

S2	P04					
S2	P03					
S2	P02	07/10/2024	Suitable for information	JC	EM	AN
S2	P01	27/09/2024	Suitable for information	JC	EM	AN
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:
Ecological Constraints

Figure: 4-2 Drawing No:
PC2340-CEA-OF-ZZ-DR-Z-0020-EcologicalConstraints

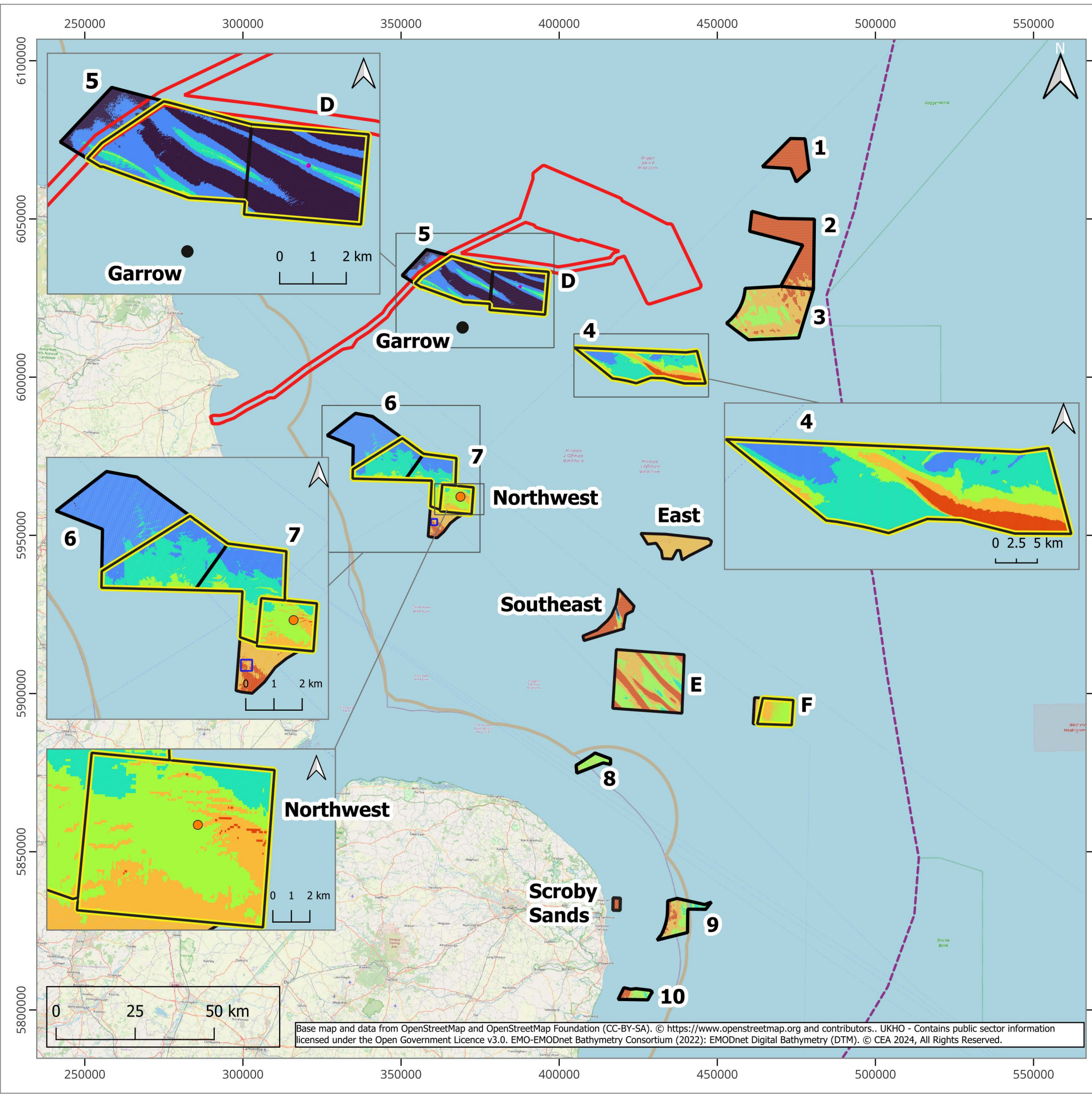
Co-ordinate system: WGS 84 / UTM zone 31N Page Size: A3 Scale: 1:1,200,000

Project: Dogger Bank South Offshore Wind Farms Title: Project-Level Kittiwake Compensation Plan



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Legend:

- 12NM Limit
- EEZ
- Project Red Line Boundary
- Shortlisted ANS Areas of Search
- AoS - Second Round Of Constraints Assessment
- Garrow Platform
- Hornsea Four OWF ANS Site
- AoS Taken Forward by ODOW
- Indicative Area Required for Siting Offshore ANS

Bathymetry (m)

- 18 To -20
- 20 To -25
- 25 To -30
- 30 To -35
- 35 To -40
- 40 To -50
- Below -50

S2	P05					
S2	P04					
S2	P03					
S2	P02	07/10/2024	Suitable for information	JC	EM	AN
S2	P01	27/09/2024	Suitable for information	JC	EM	AN
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title: Bathymetry

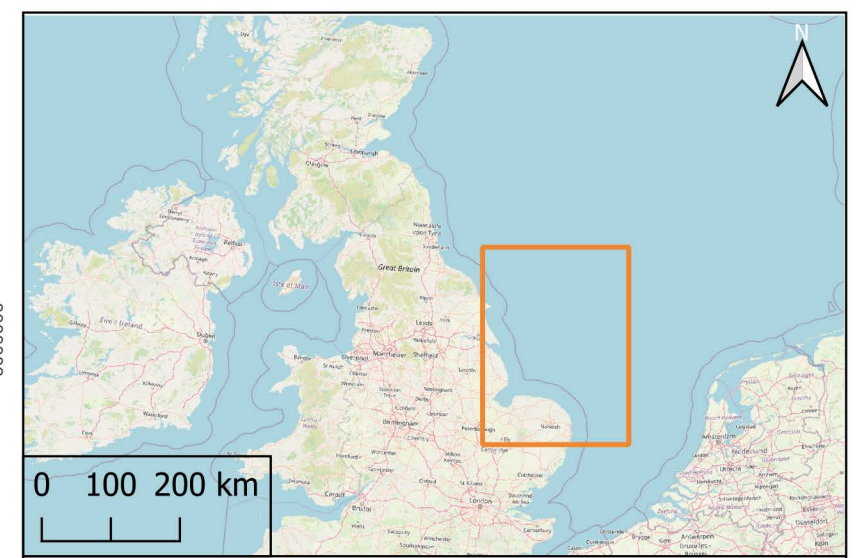
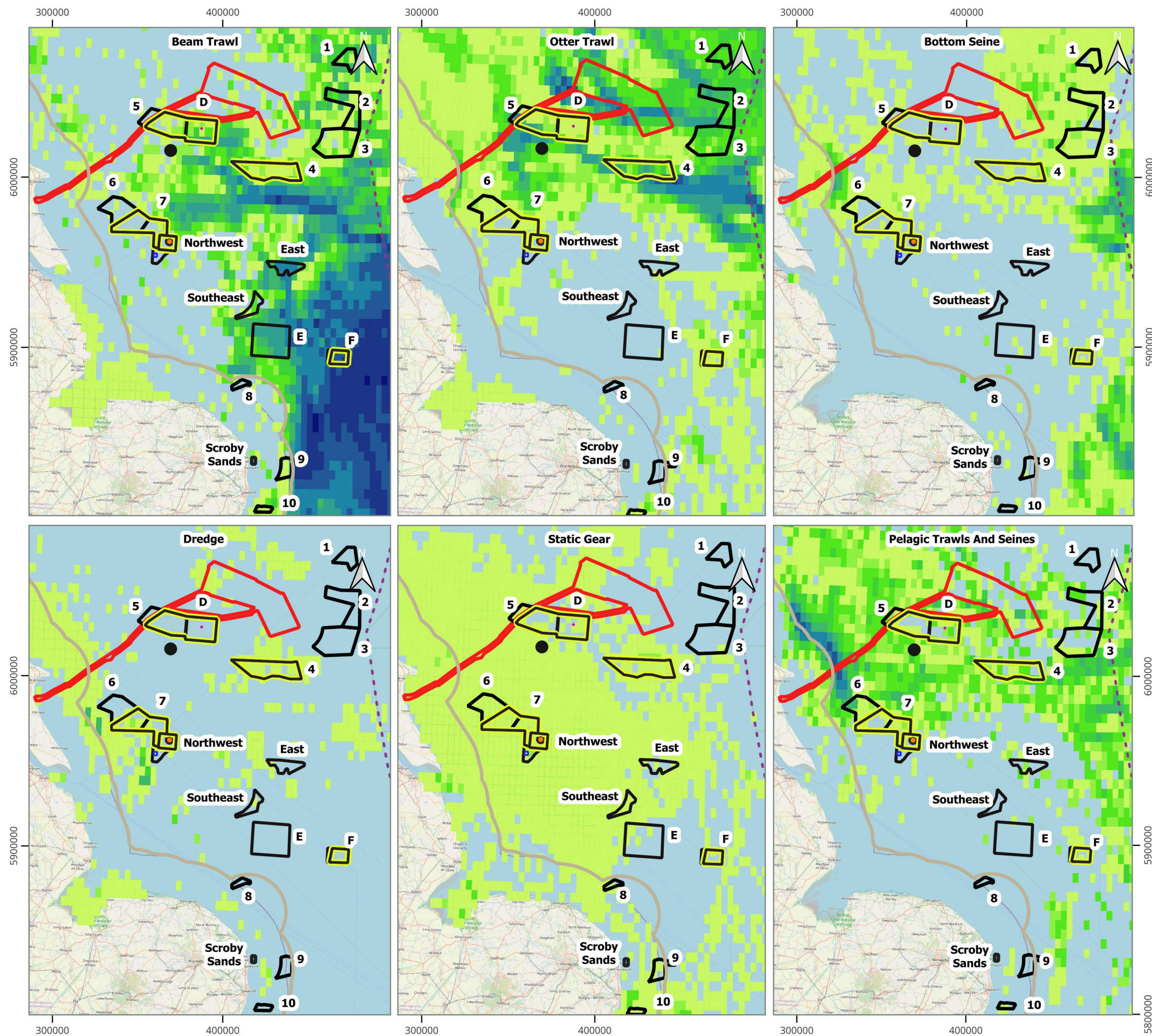
Figure: 4-3 Drawing No: PB2340-CEA-OF-ZZ-DR-Z-0019-Bathymetry

Co-ordinate system: WGS 84 / UTM zone 31N Page Size: A3 Scale: 1:1,200,000

Project: Dogger Bank South Offshore Wind Farms Title: Project-Level Kittiwake Compensation Plan



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Legend:

- 12NM Limit
- EEZ
- Project Red Line Boundary
- Shortlisted ANS areas of search
- AoS - Second Round Of Constraints Assessment
- Garrow Platform
- Hornsea Four OWF ANS Site
- AoS Taken Forward By ODOV
- Indicative Area Required For Siting Offshore ANS

Average MW Fishing Hours

	> 0 <= 1		> 20 <= 50
	> 1 <= 2		> 50 <= 100
	> 2 <= 5		> 100 <= 200
	> 5 <= 10		> 200 <= 500
	> 10 <= 20		> 500

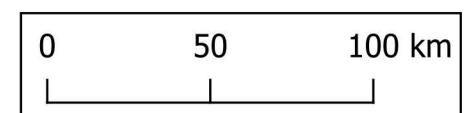
S2	P04				
S2	P03				
S2	P02	07/10/2024	Suitable for information	JC	EM AN
S2	P01	27/09/2024	Suitable for information	JC	EM AN
SUI	REV	DATE	DESCRIPTION	DRW	CHK APR

Title: Average Fishing Hours

Figure: 4-4 Drawing No: PB2340-CEA-OF-ZZ-DR-Z-0022-AvFishingHours

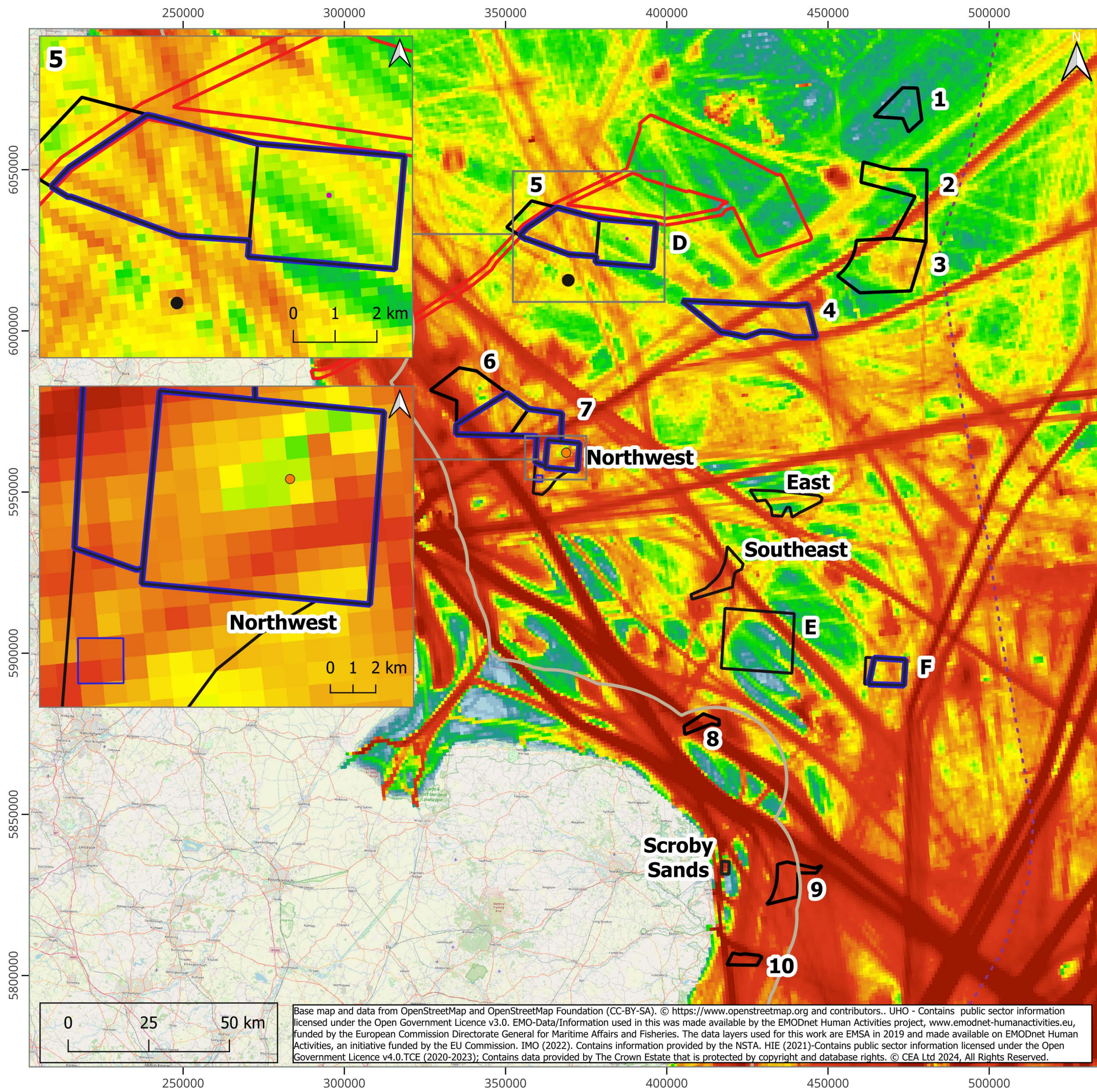
Co-ordinate system: WGS 84 / UTM zone 31N Page Size: A3 Scale: 1:2,318,052

Project: Dogger Bank South Offshore Wind Farms Title: Project-Level Kittiwake Compensation Plan



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Legend:

- 12NM Limit
- EEZ
- Project Red Line Boundary
- AoS Shortlisted By DBS
- AoS - Second Round Of Constraints Assessment
- Garrow Platform
- Hornsea Four OWF ANS Site
- AoS Taken Forward by ODOW
- Indicative Area Required For Siting Offshore ANS

Vessel Route Density
Annual Totals - All Types (Routes per square km/year)

1200+
240
120
60
24
6

S2	P04					
S2	P03					
S2	P02	07/10/2024	Suitable for information	JC	EM AN	
S2	P01	27/09/2024	Suitable for information	JC	EM AN	
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title: Vessel Density

Figure: 4-5 Drawing No: PC2340-CEA-OF-ZZ-DR-Z-0021-VesselDensity

Co-ordinate system: WGS 84 / UTM zone 31N Page Size: A3 Scale: 1:1,200,000

Project: Dogger Bank South Offshore Wind Farms Title: Project-Level Kittiwake Compensation Plan



5 Next Steps

40. To streamline the desk-based assessments, certain shortlisted AoS have been merged with neighbouring AoS which has resulted in five, rather than seven sites being progressed for desk-based assessments. The final five AoS to be progressed are presented in **Table 5-1**.

Table 5-1 Shortlisted AoS To Be Subject To Further Desk-based Assessments and Component Sites.

Shortlisted AoS subject to desk-based assessment	Component AoS
4	4
5	5 & D
6	6 & 7
F	F
Northwest	Northwest

41. The next stage of the site selection process is to undertake a more detailed technical assessment of certain constraints. This exercise is being undertaken in alignment with the programme outlined in **Table 5-2**. Further updates will be provided to the Examining Authority as appropriate during DCO examination.
42. As well as establishing further constraints and stakeholder interactions, desk-based assessments will allow refinement of the AoS by identifying areas with suitable conditions appropriate for ANS development, and eliminating areas where conditions are unfavourable. It should be noted that though these assessments are being undertaken by the Applicants, they are not essential for the identification of final AoS sites to be progressed for advanced site investigation works. It is feasible that each of the studies below could be undertaken following the identification of a final AoS at risk of additional cost to the Applicants should the AoS prove unfavourable.
43. Desk-based assessments include:
- A ground conditions study
 - A shipping and navigation assessment
 - A metocean study
 - Unexploded ordnance (UXO) risk analysis.

44. This next stage of the appraisal process is being undertaken in consultation with key stakeholders including:
- The Crown Estate
 - The Ministry of Defence (MoD).
 - Maritime and Coastguard Agency (MCA).
 - Trinity House.
 - Oil & Gas operators.
 - MMO; and the
 - National Federation of Fishermen’s Organisations (NFFO).
45. Upon the completion of the desk-based assessments, the Applicant will select 1-2 AoS to progress for Site Investigation surveys to confirm the suitability of ground conditions. Additionally, the Applicant will take account of new information from other developers (ODOW and Hornsea 4 projects) as it emerges. For example, the DCO application for ODOW at the time of writing is live and will be subject to examination and determination by the SoS in due course. The duration of this process and outcome may influence the onward delivery programme for ODOW and its offshore ANS proposal. These factors have potential implications for the Projects offshore ANS implementation timescales if delivered in collaboration with ODOW.
46. Proximity checks are being undertaken by The Crown Estate for the five shortlisted ANS being progressed by the Applicants to confirm the site will qualify as suitable for Agreement for Lease (AfL). Engagement with The Crown Estate leasing team will continue, and updates will be provided throughout the DCO examination. A Letter of Comfort from The Crown Estate on this process is provided in Appendix A – **Project Level Kittiwake Compensation Plan** [APP-052].

Table 5-2 Outline Implementation and Delivery Roadmap For Project-Led Offshore ANS

Timing	Indicative date	Activity/milestone	2024	2025	2026	2027	2028	2029
Pre-consent	2024 (Q1 – Q2)	Development of project-led offshore ANS proposal (including AoS appraisal) following publication of Volume 6, KSCP (application ref: 6.2.1.1) and in consultation with Kittiwake ETG.						
Pre-consent	2024 (Q2)	Projects’ DCO application submitted to SoS						
Pre-consent	2024 (Q2) – 2025 (Q1)	Further technical and engineering assessment work undertaken to refine the offshore ANS AoS shortlist. Develop offshore ANS design.						
Pre-consent	2024 (Q4)	Down-selection of shortlisted AoS to final site(s) to be progressed for Site Investigation surveys.						
Pre-consent	2024 (Q2) – 2025 (Q1)	Ongoing stakeholder engagement regarding the design and siting of offshore ANS as well as marine licensing, consents and lease application requirements.						
Pre-consent	2025 (Q1 – Q3)	Secure necessary licences, consents, and seabed lease.						
Year 0	2025 (Q3)	Anticipated DCO consent granted for the Projects.						
Year 0	2025	Fabrication of offshore ANS.						

Timing	Indicative date	Activity/milestone	2024	2025	2026	2027	2028	2029
	(Q3- Q4)							
Year 0	2026 (Q4) – 2027 (Q1)	Installation of offshore ANS.						
Year 1 - 3	2027 - 2029	Kittiwake compensation monitoring – Year 1, 2 & 3						
Year 4	2029 (Q4)	Earliest first power for DBS. Continue compensation and annual monitoring programme as per the Kittiwake CIMP (if required in addition to the KSIMP), and any necessary adaptive management.						

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RWE Renewables UK Dogger Bank
South (West) Limited

RWE Renewables UK Dogger Bank
South (East) Limited

Windmill Business Park
Whitehill Way
Swindon
Wiltshire, SN5 6PB

RWE

MASDAR 