DOGGER BANK D WIND FARM

Artificial Nesting Structure Compensation Measure

Preliminary Environmental Information Report

Appendix B Marine Conservation Zone Assessment: Screening Report

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Glossary

Term	Definition
Area(s) of Search	Broad geographical areas considered during the site selection process for the Artificial Nesting Structures.
Artificial Nesting Structure	A structure designed to provide safe and secure large scale nesting compartments for targeted 'by design' bird species, in this case black legged kittiwake.
Associated Development	Associated developments are infrastructure that support the development or operation of the principal development (the Project) or improve its sustainability given wider development or environmental needs. This supportive function extends to the mitigation (and compensation) of impacts of the development or operation of the principal development.
Automatic Identification System	A system by which vessels automatically broadcast their identity, key statistics including location, destination, length, speed and current status, e.g. under power. Most commercial vessels and United Kingdom / European Union fishing vessels over 15m length are required to carry Automatic Identification System.
Baseline	The existing conditions as represented by the latest available survey and other data which is used as a benchmark for making comparisons to assess the impact of the Project.
Commitment	Refers to any mitigation, enhancement or monitoring measures identified through the Environmental Impact Assessment process and any commitments outside the Environmental Impact Assessment process.
Design	All of the decisions that shape a development throughout its design and pre-construction, construction / commissioning, operation and, where relevant, decommissioning phases.
Design Commitments	Design commitments include: • Measures (including mitigation) that form an inherent part of the development design evolution such as modifications to the location or design of the development made during the pre-application phase; and • Measures (including mitigation) that will occur regardless of the Environmental Impact Assessment process as they are imposed by other existing legislative requirements or are considered as standard or best practice to manage commonly occurring environmental impacts. All design commitments adopted for the development are provided in the Commitments Register in ***Appendix C*** of the ***DBD ANS Preliminary Environmental Information Report***.
Development Consent Order	A consent required under the Planning Act 2008 to authorise the development of a Nationally Significant Infrastructure Project, which is granted by the relevant Secretary of State following an application to the Planning Inspectorate.

Term	Definition
Dogger Bank A Wind Farm	This is a consented and operational wind farm, that was originally named Creyke Beck A within the Dogger Bank Zone that was renamed Dogger Bank A.
Dogger Bank B Wind Farm	This is a consented and operational wind farm, that was originally named Creyke Beck B within the Dogger Bank Zone that was renamed as Dogger Bank B.
Dogger Bank C Wind Farm	This is a consented wind farm that is under construction, that was originally named Teesside A within the Dogger Bank Zone that was renamed as Dogger Bank C.
Dogger Bank D Wind Farm	The Dogger Bank D Wind Farm Project including the generation infrastructure and three potential Electrical Connection Opportunities to utilise the energy produced.
Dogger Bank D Array Area	The area within which the wind turbines, inter-array cables and offshore platform(s) for Dogger Bank D are to be located.
Sofia Wind Farm	This is a consented wind farm that is under construction that was originally named Teesside B within the Dogger Bank Zone that was renamed as Dogger Bank Sofia.
Dogger Bank South Wind Farm	This is a wind farm project that is in the pre-consenting phase at the time of compiling this report.
Dogger Bank Zone	The Dogger Bank Zone is the largest of the Round 3 offshore wind zones and includes the offshore wind farm areas of Dogger Bank A, Dogger Bank B, Dogger Bank C, and Sofia.
Effect	An effect is the consequence of an impact when considered in combination with the receptor's sensitivity, defined in terms of significance.
Environmental Impact Assessment Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, which sets out the Environment Impact Assessment process for assessing the likely significant effects of a project on the environment.
Environmental Impact Assessment	A process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information and includes the publication of an Environmental Statement.
Environmental Statement	A document reporting the findings of the Environmental Impact Assessment which describes the measures proposed to mitigate any likely significant effects.
Impact	A change resulting from an activity associated with the Artificial Nesting Structures, defined in terms of magnitude.
Marine and Coastal Access Act	The Marine and Coastal Access Act was signed into force in 2009. It established the legal basis for the designation and protection of Marine Conservation Zones.

Term	Definition
Marine Conservation Zone	Marine Conservation Zones are a protected range of nationally important, rare or threatened habitats and species. Marine Conservation Zones were established by Defra under the Marine and Coastal Access Act 2009. Each Marine Conservation Zone comprises the features being protected within that area and specify the conservation objective or objectives for the Marine Conservation Zone.
Mean High Water Springs	The highest level reached by the sea at high tide during mean high water spiring tide, which is determined by averaging throughout the year, the heights of two successive high waters during a 24-hour period in each month when the range of the tide is at its greatest.
Mitigation	Any action or process designed to avoid, prevent, reduce or, if possible, offset potential risk of a development hindering the achievement of the conservation objectives stated for a Marine Conservation Zone.
Monitoring	Measures to ensure the systematic and ongoing collection, analysis and evaluation of data related to the implementation and performance of a development. Monitoring can be undertaken to monitor conditions in the future to verify any environmental effects identified by the Environmental Impact Assessment, the effectiveness of mitigation or enhancement measures or ensure remedial action are taken should adverse effects above a set threshold occur.
Project Design Envelope	A range of design parameters defined to enable the identification and assessment of the potential risk of a development hindering the achievement of the conservation objectives stated for a Marine Conservation Zone arising from the worst-case scenario. The Project Design Envelope incorporates flexibility where required and will be further refined where possible during the Environmental Impact Assessment process.
Safety Zone	A statutory, temporary marine zone demarcated for safety purposes around a possibly hazardous offshore installation or works / construction area.
Scour Protection	Protective materials used to avoid sediment erosion from the base of the foundation due to water flow.
Statutory Nature Conservation Body	Statutory Nature Conservation Bodies are organisations established by law to protect and manage natural resources and biodiversity in the UK.
The Applicant	SSE Renewables and Equinor acting through 'Doggerbank Offshore wind Farm Project 4 Projco Limited'.
The Project	Dogger Bank D Offshore Wind Farm Project, also referred to as DBD in this document.
Topside	The section of the Artificial Nesting Structure on which the nesting ledges will be situated.
Worst-Case Scenario	The worst-case scenario will be based on considerations of the maximum parameters of infrastructure requirements.

Term	Definition
Zone of Influence	A precautionary buffer used to screen in potential effects which could occur to designated site habitats which indirectly supports qualifying features of sites. This may vary depending on the qualifying feature of focus.

1 Introduction

1.1 Project Background

1. As part of its third offshore wind leasing round in 2008 (Round 3), The Crown Estate designated the Dogger Bank Zone, located between 125km and 290km off the east coast of Yorkshire, as one of nine offshore wind farm (OWF) development zones in the United Kingdom (UK). Following the 2008 leasing round, four project areas were identified within the zone to take forward for development consent, namely Creyke Beck A, Creyke Beck B, Teesside A and Teesside B. In 2015, development consent was granted for all four project areas.

2. In 2017, the four project areas were restructured under new ownership. Creyke Beck A, Creyke Beck B, and Teesside A were renamed as Dogger Bank A (DBA), Dogger Bank B (DBB) and Dogger Bank C (DBC), forming three phases of the Dogger Bank Wind Farm, developed as a joint venture between SSE Renewables, Equinor and Vårgrønn. Teesside B was renamed Sofia OWF, progressed separately from the Dogger Bank Wind Farm by RWE.

3. SSE Renewables and Equinor ('the Applicant') have since identified an opportunity to maximise the capacity of the third phase of the Dogger Bank Wind Farm, namely DBC, such that additional capacity of up to 1.5 Gigawatts (GW) of renewable energy could potentially be consented and constructed in the eastern part of the original DBC site. This additional phase is known as Dogger Bank D (DBD) Wind Farm ('the Project').

4. A Preliminary Environmental Information Report (PEIR) for the Project (Dogger Bank D, 2025a) was submitted for statutory consultation between 10 June and 5 August 2025. It included a Report to Inform the Appropriate Assessment (RIAA) (Dogger Bank D, 2025b) which provided an assessment of the Project with respect to its potential to have an Adverse Effect on Site Integrity (AEoSI) on relevant European sites. The RIAA concluded the potential for an AEoSI on the black-legged kittiwake (*Rissa tridactyla*) (hereafter referred to as kittiwake) feature of the Flamborough and Filey Coast Special Protection Area (SPA). Whilst further Project refinement (mitigation through design in ***Appendix C*** of the ***DBD ANS Preliminary Environmental Information Report***) is being undertaken, the Applicant is progressing with an *in-principle* compensation package detailed in the Kittiwake Compensation Roadmap and Evidence document (Dogger Bank D, 2025c), which focuses on the development of a project led artificial nesting structure (ANS).

5. This Marine Conservation Zone Assessment (MCZA) Screening Report identifies whether further assessment will be required for the ANS. If needed, that assessment will be submitted alongside the Environmental Statement (ES) for the ANS as part of the Development Consent Order (DCO) application.

1.2 Purpose of this Document

6. The purpose of this MCZA Screening Report is to provide information to determine whether the proposed DBD Kittiwake Offshore ANS (herein 'the ANS') has the potential to affect the features and conservation objectives of nearby Marine Conservation Zones (MCZs).

7. MCZA is required under Section 126 of the Marine and Coastal Access Act 2009 (MCAA). This legislation places specific duties on the regulating authority - the Marine Management Organisation (MMO) for Marine Licence Applications, and the Secretary of State (SoS) for DCO applications – to consider potential effects on MCZs when determining consent applications. As such, the MMO and SoS have incorporated the need to include a MCZA into their decision-making processes, where any MCZ has the potential to be affected by a marine licensable activity (see **Section 3**).

8. A MCZA includes an initial Screening Stage which can be followed by up to three assessment stages (see **Section 4**). The aim of the MCZA Screening Report is to determine whether or not a proposed activity could, either alone or in combination, hinder the conservation objectives of a MCZ, either directly or indirectly. This enables the competent authority to ensure compliance with the MCAA.

9. Where it is considered that there is no potential to hinder conservation objectives as a result of the Project, it is proposed that the MCZ (or relevant feature of the MCZ) is 'screened out' from further consideration. Where the potential to hinder conservation objectives cannot be discounted, the feature remains 'screened in' and further assessment will be undertaken.

10. This document has been provided to consultees for comment to allow for agreement on the screening conclusions for the MCZA with respect to the proposed ANS in one of three Areas of Search (AoS).

11. A design envelope approach has been taken for the development of the ANS, in line with the approach commonly taken for OWFs (**Section 2.1**). A final detailed design will be confirmed post-consent once a construction contractor has been appointed. Therefore, a worst-case scenario has been used for this stage of the assessment to ensure all potential effects on the MCZ features and their conservation objectives have been considered.

12. This assessment follows the approach set out in MMO (2013) guidance on how such assessments should be undertaken and incorporates advice from the Statutory Nature Conservation Bodies (SNCBs) received during pre-application consultation. The MCZA has been undertaken using the description of the ANS set out in **Section 2**.

13. The structure of this MCZA Screening Report is as follows:

- **Section 1**: Outlines the purpose and structure of the Report and the assessment, and provides background to the ANS and the Applicant;
- **Section 2:** an outline of the ANS with regard to the location of infrastructure and its construction, operation and maintenance (O&M), and decommissioning;
- **Section 3**: Legislative context – Sets out the legislative context, policy and guidance from Government, statutory and industry bodies regarding the MCZA process;
- **Section 4**: Overview of the MCZ Screening process – Describes the MCZA Screening process and the approach taken by SSE Renewables and Equinor ('the Applicant');
- **Section 5**: Screening – Identifies any MCZs within various Zones of Influence (ZoI) of the AoS;
- **Section 6**: Cumulative effects – Consideration of cumulative effects screened with other plans and projects; and
- **Section 7**: Summary – Presents the conclusions of the MCZA with respect to the conservation objectives for both MCZs, and sets out the actions that will follow consultation on this MCZA Screening Report.

2 Description of the ANS Development

2.1 Design Envelope Approach

14. The Applicant is currently appraising three AoS for the locationof the ANS. The final AoS within which the ANS could be located will be confirmed through ongoing site selection work following this Section 42 consultation. The worst-case parameters across these AoS have been used in the development of this MCZA Screening Report.

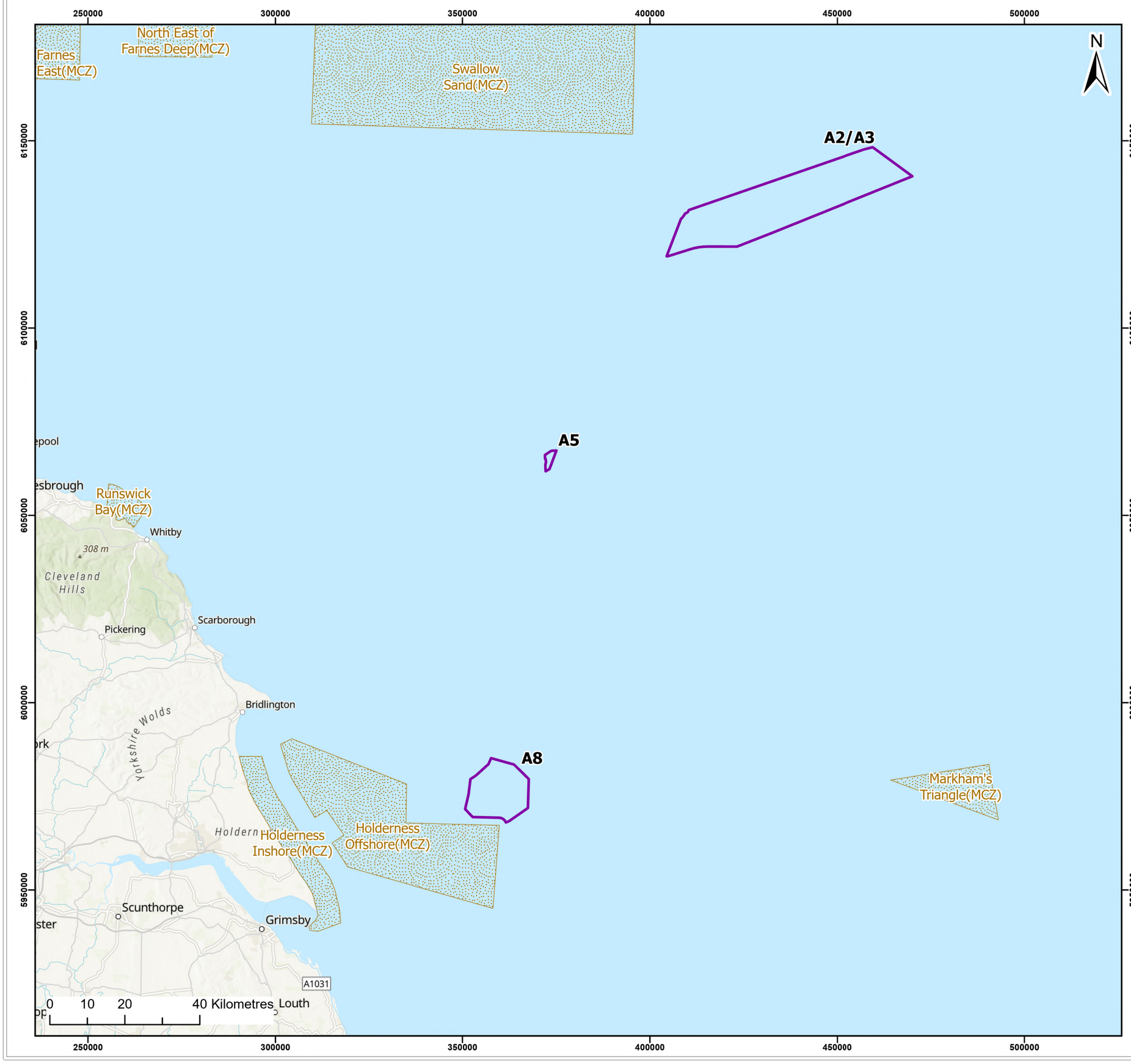
15. **Table 2.1** describes the three AoS carried forward from the ANS site selection process. These reflect the parameters of the three AoS, shown in **Figure 2.1**.

Table 2.1 Description of the AoS

Feature	Indicative Parameter
Distance to shore (at its closest point)	A2/3 - 155km A5 - 95km A8 - 46km
Area	A2/3 - 699km^2 A5 - 9km^2 A8 - 298km^2
Water depths	A2/3 - 33m to 49m at Lowest Astronomical Tide (LAT) A5 - 35m to 50m at LAT A8 - 26m to 49m at LAT

16. The ANS MCZA (in line with that of the Project) will be based on a design envelope approach in accordance with National Policy Statement (NPS) EN-3 (paragraph 2.8.64) (Department for Energy Security & Net Zero, 2023) which recognises that: "*Owing to the complex nature of offshore wind farm development, many of the details of a proposed scheme may be unknown to the applicant at the time of the application to the Secretary of State. Such aspects may include:*

- *The precise location and configuration of Associated Development;*
- *The foundation type and size; and*
- *The installation technique or hammer energy.*"



Legend:

- ANS AoS
- Marine Conservation Zone (MCZ)

Project: Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title: ANS Areas of Search

Figure: 2-1

Drawing No: PC6250-HAS-XX-OF-DR-GS-0089

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Co-ordinate system: WGS 1984 UTM Zone 31N

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17. NPS EN-3 (paragraph 2.6.43) further states that:

'*Where details are still to be finalised, applicants should explain in the application which elements of the proposal have yet to be finalised, and the reason why this is the case. Where flexibility is sought in the consent as a result, applicants should, to the best of their knowledge, assess the likely worst case environmental, social and economic effects of the proposed development to ensure that the impacts of the project as it may be constructed have been properly assessed*.

18. The design envelope will therefore provide maximum and minimum parameters where appropriate for the ANS, as well as the maximum spatial extent of the AoS, to ensure that the worst-case scenario can be identified and assessed in the MCZA. This approach has been widely used in the consenting of OWFs and is consistent with Planning Inspectorate Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018) which states that: "*The Rochdale Envelope assessment approach is an acknowledged way of assessing a Proposed Development comprising EIA development where uncertainty exists, and necessary flexibility is sought*".

19. The description of the ANS, including the project design envelope, will continue to be refined during the EIA process, with the final design envelope presented in the ES. This refinement will take into account:

- The Dogger Bank D ANS Preliminary Environmental Information Report (including this document);
- Consultation with a wide range of relevant stakeholders; and
- Further technical and engineering development, alongside environmental assessments.

20. The following sections provide an overview of the current understanding of the potential infrastructure and activities required for the ANS, including indicative parameters.

2.2 Description of the ANS

21. The ANS will be specifically designed to provide nesting spaces for breeding kittiwake, but the Project is retaining flexibility for the structure to support guillemot and razorbill if required. It will comprise a foundation that anchors the structure to the seabed, and the ANS topside which hosts the nesting spaces. The ANS topside will have individual nesting ledges on the exterior of the topside and each successive nesting ledge is offset, resulting in a wall that is inclined away from the main deck. Internal staircases and walkways will provide access to nesting spaces and allow researchers to make observations and ring chicks if required.

22. The ANS topside will measure a maximum of 30m in both width and length, reach up to 40m high, and extend up to 65m above LAT after accounting for required sea surface level clearance (or 80m above LAT inclusive of lighting protection). Dimensions are primarily driven by the number of nesting spaces required as well as embedded design features to maximise ANS success such as inclined walls.

23. Foundation designs will be informed by several factors including environmental characteristics such as ground conditions, water depths, metocean conditions, economic parameters, and supply chain constraints. The findings of the assessment will also be used to refine the foundation design. The following foundation design options for the ANS are currently being considered:

- Monopile; and
- Gravity base.

2.3 ANS Foundation Design

2.3.1 Monopile

24. A monopile foundation typically consists of a single tubular piece, formed out of a number of rolled steel plates welded together, that is driven into the seabed by impact piling or vibro-piling. The assessments of effects from piling for the ANS foundation will be undertaken both with and without the use of noise reduction technology at the ES stage, assuming that monopiles remain within the project design, and a significant effect is predicted on receptor species. The Applicant has committed to applying best endeavours to the use of primary and/or secondary noise reduction measures for the Project, and that commitment also applies for the installation of the ANS, in line with the latest policy from stakeholders. In areas of firmer ground conditions drilling of the seabed may be required prior to piling. This is only considered for the installation of a monopile foundation in the assessment as it provides the worst-case assessment in terms of drill arisings. The drill arisings (spoil) would be disposed of adjacent to the foundation location, from a vessel pipe that would be above or slightly below the sea surface. At the point of disposal, the spoil will be expected to settle onto the seabed in the immediate vicinity of the foundation.

2.3.2 Gravity Base

25. A gravity base foundation is a concrete or steel structure that is floated or transported by barge to the ANS site and then ballasted when in the correct location and deposited onto the seabed or lifted and set down onto the installation location by use of a heavy lift crane vessel. This foundation type is stable by way of its sheer weight. They vary in shape but typically consist of a wide base footprint to provide stability, with a number of columns rising through the water column and splash zone to provide support to the topside at the defined interface level.

2.3.3 Foundation Design Envelope

26. The design envelope for the ANS foundation types is presented in **Table 2.2**.

Table 2.2 Project Design Envelope - ANS Foundation

Parameter	Value
Monopile Foundation	
Number of monopiles	1
Maximum pile diameter at seabed (m)	8
Maximum pile diameter above sea surface (m)	9
Scour protection area (m^2)	1,520
Seabed preparation area (m^2)	1,520
Seabed preparation volume (m^3)	3,040
Maximum hammer energy required for piling (kJ)	6,000
Pile penetration depth below seabed (m)	40
Drill diameter (m) (if required)	9
Volume of drill arisings (m^3) (if required)	2,545
Gravity Base Foundation	
Shaft diameter (m)	12
Diameter of base on seabed (m)	50
Scour protection area (m^2)	8,495
Seabed preparation area (m^2)	11,400
Seabed preparation volume (m^3)	39,820

2.4 Construction and Installation

2.4.1 Pre-Installation Foundation Works

27. Prior to the commencement of installation, surveys will be undertaken to confirm that the seabed is clear of any obstructions (including archaeological, benthic, geotechnical, and unexploded ordnance (UXO)) in order to inform micro-siting of the ANS foundation, clearance operations, and seabed preparation to avoid potentially sensitive (or dangerous) receptors.

28. Depending on the type of foundations selected for the ANS, some degree of seabed preparation (e.g. UXO, boulder and sandwave clearance) may be required to provide a level surface upon which the ANS foundation will be installed, or to deposit scour protection to protect the structural integrity of the ANS foundation. The following sections describe these ancillary works to the ANS foundation in more detail.

2.4.1.1 Unexploded Ordnance

29. It is not possible at this stage to determine if any UXO would be present in the AoS. The results of the geophysical surveys will be analysed by an appropriate UXO contractor or consultant to determine a list of potential UXO targets for investigation. A UXO identification survey (often combined with an archaeological Remotely Operated Vehicle (ROV) survey) will then be undertaken prior to construction to ascertain whether any of the potential UXOs can be confirmed as such. Micro-siting around any UXOs that are confirmed will be the preferred option for the development, but if clearance is deemed necessary a separate Marine Licence application will be made at the time.

2.4.1.2 Dredging

30. Both foundation types may require levelling and dredging of the soft mobile sediments to ensure the stability of the foundation. Worst-case seabed preparation impacts have been identified in **Table 2.2**.

31. Vessels such as a Trailing Suction Hopper Dredger (TSHD) will be used to remove the required amount of sediment to level the seabed. The spoil will likely be side-cast adjacent to the ANS foundation location. In some cases, it may be necessary to place a layer of gravel on the seabed prior to the installation of a gravity base foundation.

2.4.1.3 Scour Protection

32. Scour is a hydrodynamic process which results in seabed erosion and subsequent ‘scour hole’ formation around offshore infrastructure and may compromise the structural integrity of structures over time. Scour protection is the primary mitigative measure to prevent this from occurring and involves the deposit of a material around the ANS foundation to protect the seabed around the structure (see **Table 2.2**).

33. Several types of scour protection exist, including (but not exclusively) mattress protection, sand bags, rock bags, and flow modifiers. However, the most common method is the placement of rock around the foundation base.

34. The final method of scour protection installation will be decided post-consent. However, a typical approach is to deposit a layer of small rocks (the filter layer) at the foundation location, followed by installation of the foundation on or through the filter layer. Afterwards, a layer of larger, higher graded rocks (the armour layer) is deposited on top to protect the seabed at the foundation base. The filter layer can also be laid after the foundation has been installed and it is possible to avoid multiple layers by using a heavier rock material with a wider gradation.

35. The quantity of scour protection required for the ANS will vary depending on the foundation type and hydrodynamic conditions at the selected location, with estimates presented in **Table 2.2**. Note the Gravity Base foundation represents the worst-case scenario in terms of scour protection requirements.

2.4.2 ANS Installation

36. A detailed ANS installation procedure will be provided prior to construction. The installation is expected to follow the standard practice for offshore platform installation:

- The ANS foundation and topside will be fabricated onshore and then be loaded onto a suitable installation vessel or barge at an appropriate marshalling port (likely to be within the UK).
- The installation vessel or barge will transit to the relevant ANS location where the foundation will be installed (typically pile driven for a monopile foundation or sinking a gravity base foundation using ballast).
- The topside will then be lifted via a crane onto the pre-installed foundation. The installation vessel will typically use either jack-up legs or dynamic positioning to maintain stability during the installation.

2.4.3 Aids to Navigation, Lighting and Colour Scheme

37. The ANS will comply with the requirements of the Civil Aviation Authority (CAA), the Maritime and Coastguard Agency (MCA), and Trinity House (the General Lighthouse Authority) in respect to all aids to navigation. This includes the appropriate lighting and marking of any offshore structures that extend above the sea surface. The location of the ANS infrastructure will also be submitted to the UK Hydrographic Office (UKHO) so that Admiralty Charts can be updated accordingly (see Commitment CO4 and CO8 listed in **Appendix C** in the **Dogger Bank D ANS Preliminary Environmental Information Report**).

2.4.4 Construction Vessels

38. During the construction of the ANS, a variety of vessels will be required to support installation activities and the transport of equipment and infrastructure. The exact number and specification of these vessels will be confirmed when nearer the construction period but is likely to comprise the following vessels:

- Site preparation – survey vessel, dredger, boulder clearance vessel, and guard vessel(s);
- Foundation and topside installation – support vessel, crew transfer vessel (CTV), rock placement vessel, installation vessel (jack-up vessel (JUV) or heavy lift vessel (HLV)), and guard vessel(s); and
- ANS commissioning – CTV, installation vessel (JUV / HLV), and guard vessel.

39. Due to construction sequencing, these vessels will not all be on site at the same time, but it is anticipated that a maximum of approximately five will be present at any one time. The maximum anticipated number of trips throughout the entire construction period is 40.

40. Each installation vessel or barge may be assisted by a range of support vessels. These are typically smaller vessels such as tugs, anchor handling vessels, or similar. It is assumed that these vessels will make the same general movements to and from around the ANS as the installation vessels they are supporting.

41. The methodology for the construction phase may involve the use of JUV and/or anchoring. JUVs are installation vessels that lower three or more legs onto the seabed and lift themselves out of the water to provide a stable platform to conduct works. This is particularly useful for the construction of heavy infrastructure, such as craning of the ANS foundation and topside. The legs of the JUV directly impact the seabed through the 'jacking-up' process. The Project Design Envelope for the use of JUVs is provided in **Table 2.3**.

Table 2.3 Project Design Envelope - Jack-Up Vessels

Parameter	Value
Jack-up vessel footprint (m^2)	8,400
Anchoring footprint (m^2)	2,496
Total area impacted by JUVs / HLVs and anchoring over construction period (m^2)	10,896

42. In some instances, anchoring may also be necessary during construction with associated direct impacts on the seabed. Anchoring is now rarely used due to the preference for Dynamic Positioning (DP), however in certain situations the use of vessels without DP may mean that anchoring is required. Anchoring constitutes the worst-case in terms of seabed interaction and therefore has been considered within the assessment set out in this document.

2.4.5 Helicopter Movements

43. It is not currently expected that any helicopter movements would be required for the construction of the ANS, other than under circumstanced deemed *force majeure*.

2.4.6 Safety Zones

44. Safety zones help to ensure a safe distance is maintained between the ANS and vessels. As the ANS is not an Offshore Renewable Energy Installation (OREI) it will not qualify for a Safety Zone under the Energy Act 2004. However, the Applicant intends to propose a 500m safe passing distance during the construction of the ANS to ensure the safety of construction vessels, personnel and infrastructure, as well as for other vessels navigating in the area. In addition, advance warning and location details of operations during construction and operation including the advisory Safety Zones and passing distances will be communicated through Notices to Mariners (NtM) and Kingfisher Bulletins.

45. After construction, a Safety Zone is not expected to be implemented and only returning to 500m when major maintenance activities are underway.

2.4.7 Construction Programme

46. Construction of the ANS is expected to take six months and will be completed a minimum of two breeding seasons prior to operation of the first turbine.

2.5 Operation and Maintenance

47. The O&M phase of the ANS is anticipated to be in excess of 37 years. During the O&M phase a number of routine and potentially unplanned activities will be undertaken. There may also be a number of visits for ecological purposes in order to assess the effectiveness of the structure in achieving its aims. An O&M strategy will be finalised once the technical specification and final location of the ANS is known and the strategy will be developed post-consent with an outline schedule provided within the kittiwake compensation, implementation and monitoring plan submitted with the DCO application. The strategy will ensure that all infrastructure is maintained in safe working order and to maximise operational efficiency throughout the lifetime of the ANS.

48. O&M activities are grouped into two categories:

- Preventative maintenance – planned activities such as scheduled maintenance of the ANS and its foundation, surveys, modifications and retrofit campaigns; and
- Corrective maintenance – activities such as repairs, replacements and remedial works to the ANS and its foundation, and scour protection.

49. An estimated seven JUV / HLV visits are predicted over the lifetime of the ANS. Some JUV footprint disturbance (up to 1,100m^2) would occur on each of these occasions.

2.5.1 Operation and Maintenance Port

50. It is likely that the existing Dogger Bank O&M facility at the Port of Tyne will be used (and expanded if necessary) as the base of operations for the ANS. However, if this is not the case, an alternative port will be selected in the north-east of England.

2.5.2 Vessel Operations

51. In order to perform the O&M activities, a variety of vessels will be required to transport personnel and equipment to enable the execution of the works. These can also be grouped into two categories:

- Routine – CTVs, Service Operation Vessels (SOVs), and Platform Support Vessels (PSVs) / Offshore Support Vessels (OSVs) that are permanently assigned to the ANS or visiting in a planned, routine manner; and
- Ad-hoc – JUVs / HLVs / Offshore Construction Vessels (OCVs), normally specialised in their nature, to perform specific tasks usually linked to corrective maintenance. An estimated 7 JUV / HLV / OCV visits are predicted over the lifetime of the ANS.

52. It is likely that the SOV will be operated from the existing Dogger Bank O&M facility at the Port of Tyne. However, this is subject to a detailed review and the most suitable port will be selected in the north-east of England. All other vessels are unlikely to operate from the Port of Tyne. Instead, they may be deployed from any suitable port within the North Sea basin.

2.6 Decommissioning

53. Decommissioning will typically follow a reverse sequence of the construction methodology and will involve similar numbers of vessels and equipment. The impacts during the decommissioning phase are considered to be equivalent to, or less than, the impacts during construction.

54. The submission of a decommissioning programme will be required pre-construction. This initial programme must be approved by the relevant authority and will be updated throughout the lifetime of the Project. Before decommissioning begins, a final version must be submitted and approved by the MMO.

3 Legislative Context

3.1 Marine and Coastal Access Act (2009)

55. The MCAA introduced a range of measures to manage the marine environment, including the establishment of MCZs. The Marine Conservation Zone Project was founded in 2008 by the Joint Nature Conservation Committee (JNCC) and Natural England to work with regional stakeholder-led projects to identify and recommend MCZs to Government. MCZs were designated in three tranches (2013, 2016, and 2019), and the designation process is now complete.

56. Sections 125 and 126 of the MCAA place specific duties on the MMO relating to MCZs and Marine Licence decision-making. It also places specific duties on the SoS regarding DCO decision-making. Section 126 applies where:

"(a) A public authority has the function of determining an application (whenever made) for authorisation of the doing of an act, and

(b) The act is capable of affecting (other than insignificantly):

(i) *The protected features of an MCZ.*

(ii) Any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent."

57. Under the MCAA, Natural England is responsible for providing advice on how to further the conservation objectives for the MCZ, identify the activities that are capable of affecting the designated features and the processes which they are dependent upon.

3.2 Guidance

58. The MCZA gives consideration to the following guidance:

- MMO (2013). Marine Conservation Zones and Marine Licensing guidance;
- Natural England (2019). Guidance on how to use Natural England's Conservation Advice Packages for Environmental Assessments (Draft); and
- Planning Inspectorate (2019). Advice Note Seventeen: Cumulative effects assessment.

4 MCZA Screening Methodology

4.1 Guidance and Approach

59. Guidance published by the MMO (2013) describes how MCZAs should be undertaken in the context of marine licensing decisions (note: there is no PINS guidance or advice on MCZA for DCO applications). To undertake its marine licensing function, the MMO has introduced a three-stage sequential assessment process to evaluate potential impacts on MCZs.

60. Under Section 126 of the MCAA, all public bodies have specific duties when undertaking licensing activities that could hinder the conservation objectives of an MCZ. The MCZA process is similar to, but distinct from, the Habitats Regulations Assessment (HRA) process. The MCZA Screening Process is presented in **Plate 4-1**.

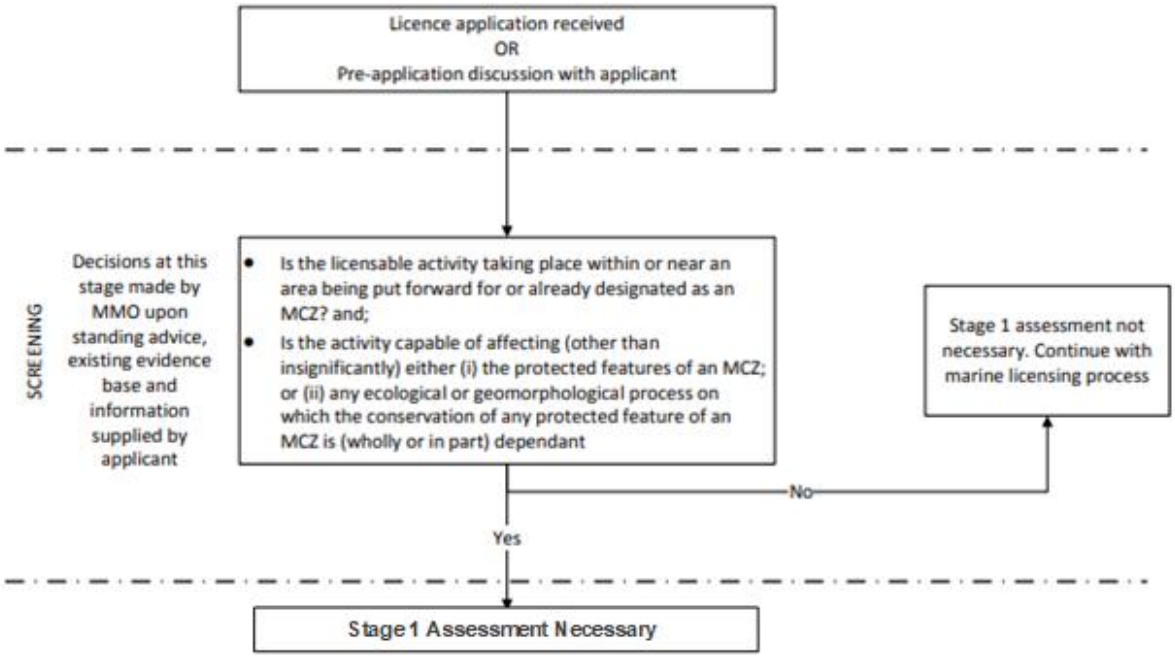


Plate 4-1 MCZA Screening Process - Adapted from MMO (2013)

61. The screening process is required to determine whether Section 126 of the MCAA (2009) should apply to the application. All applications go through an initial screening stage to determine whether:

- The plan, project or activity is within or near to a MCZ; and
- The plan, project or activity is capable of hindering conservation objectives (without mitigation):
  - The protected features of a MCZ; or

- Any ecological or geomorphological processes on which the conservation of any protected feature of a MCZ depends (wholly or in part).

62. Where it has been determined through screening that Section 126 applies, the application is assessed further to determine which subsections of Section 126 should apply through and into Stage 1 Assessment and, where required, into Stage 2 Assessment (see **Section 5** to **Section 6**).

4.2 Cumulative Effects

63. The MCAA does not provide any legislative requirement for explicit consideration of cumulative effects on the protected features of MCZs. However, the MMO guidelines (MMO, 2013) state that in order to fully discharge its duties under section 69 (1) of the MCAA, cumulative effects must be considered. These duties include:

- The need to protect the environment;
- The need to protect human health; and
- The need to prevent interference with legitimate uses of the sea.

64. The Planning Inspectorate's Advice Note Seventeen (Planning Inspectorate, 2019) provides guidance on plans and projects that should be considered in a Cumulative Effects Assessment (CEA). These include:

- Projects under construction;
- Permitted applications, not yet implemented;
- Submitted applications not yet determined;
- Projects on the Planning Inspectorate's programme of projects where a scoping report has been submitted;
- Projects on the Planning Inspectorate's programme of projects where a scoping report has not been submitted;
- Development identified in relevant development plans, with weight being given as they move closer to adoption and recognising that much information on any relevant proposals will be limited; and
- Sites identified in other policy documents as development reasonably likely to come forward.

65. Only projects which are well enough described and sufficiently advanced to allow a meaningful and robust assessment should be included in the CEA.

66. Plans and projects that existed at the time of the relevant MCZ designation or the latest status reports, undertaken every six years (whichever is most recent) are considered to be part of the baseline environment. The assessment presents relevant cumulative effects of projects based on their stage of development using the tiered approach as defined by Natural England (Parker *et al.*, 2022). Further information on the tiers is provided in **Table 4.1**.

Table 4.1 Cumulative Effects Tiered Approach (Parker et al., 2022)

Tier	Development Stage	Data Availability
1	Built and operational projects should be included within the cumulative assessment where they have not been included within the environmental characterisation survey, i.e. they were not operational when baseline surveys were undertaken, and/or any residual impact may not have yet fed through to and been captured in estimates of "baseline" conditions, such as "background" distribution or mortality rate for birds[1].	Pre-construction (and possibly post-construction) survey data from the built project(s) and environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the project).
2	Tier 1 + projects under construction.	As Tier 1 but not including post-construction survey data.
3	Tier 2 + projects that have been consented (but construction has not yet commenced).	Environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the project) and possibly pre-construction survey data from built project.
4	Tier 3 + projects that have an application submitted to the appropriate regulatory body that have not yet been determined.	Environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the project).
5	Tier 4 + projects that have produced a PEIR and have characterisation data within the public domain.	Environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the project) as well as information provided within the PEIR.
6	Tier 5 + projects that the regulatory body are expecting an application to be submitted for determination (e.g. projects listed under the Planning Inspectorate programme of projects).	Possibly environmental characterisation survey data (but strong likelihood that this data will not be publicly available at this stage).

[1] Or if there are ongoing impacts that are greater than predicted where there is evidence that the impacts will dissipate over the lifetime of the project, e.g. displacement of red-throated diver.

Tier	Development Stage	Data Availability
7	Tier 6 + projects that have been identified in relevant strategic plans or programmes.	Historic survey data collected for other purposes/by other projects or industries or at a strategic level.

67. Projects that are operational at the time of the latest MCZ status report are considered as part of the baseline. Offshore cumulative effects may arise from interactions with the following activities and industries:

- Other OWFs;
- Other renewable energy developments;
- Aquaculture;
- Aggregate extraction and dredging;
- Licensed disposal sites;
- Navigation and shipping;
- Subsea cables and pipelines;
- Potential port / harbour development;
- Oil and gas activities;
- Fisheries management areas;
- Unexploded Ordnance (UXO) clearance; and
- Carbon capture developments.

68. Should other plans and projects be screened into the cumulative MCZA a tiered approach applies, in accordance with Natural England guidance (Parker *et al.*, 2022).

69. Projects classified under Tiers 1 to 4, as well as Tier 5 projects that have submitted a PEIR, should be included in the MCZA. Tier 5 projects that have not yet submitted a PEIR and Tier 6 projects, are considered only when sufficient information is available.

70. For this MCZA Screening Report, the ANS activities and associated pressures are reviewed to determine whether they are capable of hindering the conservation objectives of MCZs when combined with similar activities and associated pressures from other plans and projects. The potential for projects to act cumulatively on MCZs is considered in the context of the likely spatial and temporal extent of pressures.

71. The purpose of this MCZA Screening Report is to identify plans and projects which in-combination with the ANS have the potential to hinder the conservation objectives of nearby MCZs. **Section 6** identifies and presents this information.

5 MCZA Screening

72. The first stage of the screening process is to determine whether the AoS are located within or near to any MCZs. The distances to the nearby MCZs are shown in **Table 5.1**, with the nearest being the Holderness Offshore MCZ (to Zone A8) at 2km away. Therefore, the effects considered in this MCZA Screening Report are indirect effects only as no direct spatial overlap exists.

Table 5.1 MCZs located near the AoS

AoS	Marine Conservation Zone	Distance from the AoS (km)
A2/3	Swallow Sand MCZ	25.2
A5	Swallow Sand MCZ	85.0
A8	Holderness Offshore MCZ	2.0
	Holderness Inshore MCZ	40.6

73. Construction, O&M, and decommissioning activities (see **Section 2**) may result in the disturbance of sediment and its subsequent deposition. Key activities include: seabed preparation; installation of foundations and scour protection; the presence of foundations/scour protection; and vessel anchoring/movement. These activities and associated temporary sediment disturbance can impact receptors at distances far from the source due to the suspension of sediments and their subsequent re-distribution, which will be considered when determining the worst-case ZoI.

5.1 Impacts from Suspended Sediment Concentrations and Sediment Re-distribution

74. Based on evidence from modelling carried out for the DBD PEIR and DBD RIAA (Dogger Bank, 2025b), increased SSC from DBD Array Area activities was noted to be minor and localised. Given that the ANS will be a single structure further modelling has not been considered necessary. In order to consider the potential effect of sediment resuspension and deposition, the use of the tidal ellipse to serve as the ZoI was initially considered at each AoS (6km, 7km and 11km for A2/3, A5 and A8, respectively).

75. Though tidal ellipses determine the theoretical maximum dispersal distances of fine suspended sediments, and the potential distance of travel over a tidal cycle, the range of excursion does not equate with the distance over which this impact may realistically be exerted.

76. This is determined by a combination of factors including sediment particle size, mass, and local hydrology. For the Inner Dowsing OWF in the southern North Sea, it was predicted that 90% of sediments re-suspended during installation re-settled within 1km of the construction corridor (OSPAR, 2023). The amount of re-suspended material was considered insignificant relative to baseline conditions.

77. The findings of a separate study on the environmental impact of subsea trenching operation (Gooding *et al.*, 2012) suggested that the impacts on sediment disturbance vary depending on sediment particle size. Coarser sediments are likely to settle back in the very near-field (~ 100m) while finer particles may travel and are deposited further afield (1km to 2km).

78. The findings from Inner Dowsing (Ospar, 2023) and Gooding *et al.* (2012) are supported by the findings of a review of the evidence base into the physical impacts of marine aggregate dredging on sediment plumes and seabed deposits from a wide number of authors (Whiteside *et al.*, 1995; John *et al.*, 2000; Hiscock and Bell, 2004; Newell *et al.*, 2004; Tillin *et al.*, 2011; Cooper and Brew, 2013). Although aggregate dredging differs from the activities associated with the ANS, the findings are deemed to be similar with the impacts of sediment disturbance, resuspension and deposition arising from the ANS construction due to the limited scale of activities taking place during the construction of the ANS (see **Section 2**). The worst-case sediment disturbance is noted in **Table 2.2** whereby the amounts are deemed similar, if not less, than the disturbance from aggregate dredging mentioned above.

79. Noting that A8 is located the closest to any MCZ designated for benthic features (see **Table 5.1**) it is important to ascertain the seabed sediment (particle) sizing to understand the likely distances sediment deposition will operate over at this location. A recent benthic survey (see **ANS Preliminary Environmental Information Report**) noted that the sediments in A8 included five sediment classes, namely: 'slightly gravelly sand', which typified most of the AoS, followed by; 'muddy sandy gravel'; 'sandy gravel'; 'gravelly muddy sand'; and 'sand' which typified one station. The coarseness of the sediment ranged from 'coarse sand' to 'fine sand', which typified most of the AoS, whereas 'medium sand', 'very coarse sand' and 'granule' each typified a smaller section of the AoS.

80. Of the stations surveyed across A8, a few had bimodal or multimodal sediment distributions, which are indicative of different sources of sediment, likely associated with sediment disturbance in a high energy environment, such as that present at A8. The sediment recorded in A8 is typical of this region of the North Sea. Considering that the majority of the AoS is characterised by a high percentage of coarser sediments, it is expected (in compliance with the previously described evidence) that the sediments are likely to settle back in the very near-field (~ 100m).

81. Given the information presented above regarding the seabed sediment typology (i.e. with a high percentage of coarser sediments), potential suspended sediment travel distances (where there is a large body of consensus around sediment disturbance and redeposition distances) and modelling of increased SSC from DBD Array Area activities (which was noted to be minor and localised) a precautionary ZoI of 2km around the AoS from any MCZ has been used to determine where an impact pathway may be present. All MCZs associated with the ZoI are shown on **Figure 5.1**, with the nearest MCZs to each AoS listed in **Table 5.1**.

82. As all MCZs lie outside the ZoI for the AoS, **no potential pathways for impact from the AoS, either alone or cumulatively with other projects, are deemed to be present and these sites are therefore screened out, and Stage 1 Assessment is not considered to be required.**

5.2 Impacts from Underwater Noise and Vibration

83. Underwater noise generated by piling a monopile for the ANS has the potential to impact fish. Underwater noise modelling undertaken presented in Chapter 11 Fish and Shellfish Ecology of the DBD Project PEIR (Dogger Bank D, 2025b) shows that the maximum effect range from worst-case piling noise for a monopile is 33km (based on cumulative SEL causing temporary threshold shift (TTS) in hearing sensitivity for a stationary fish receptor).

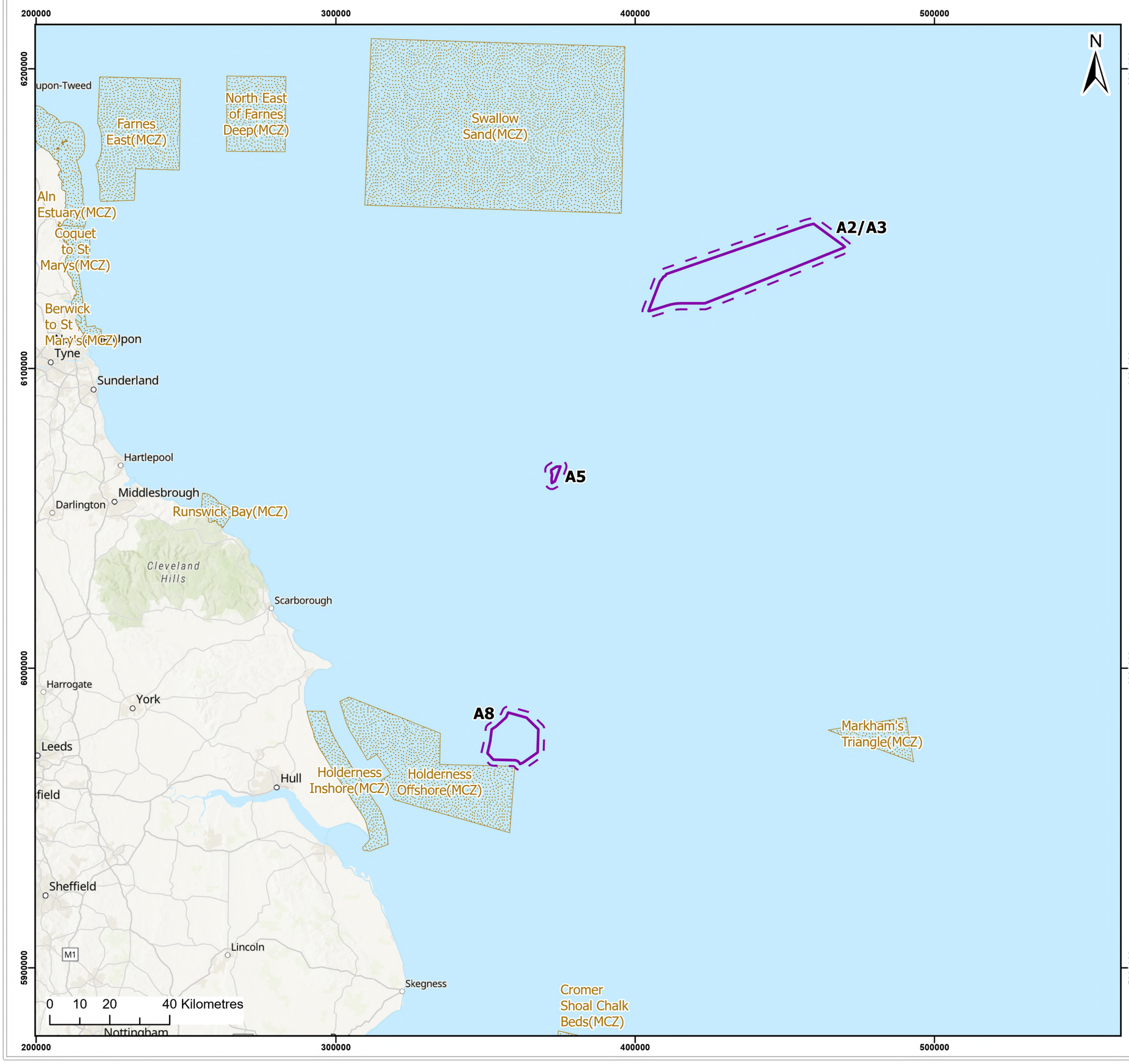
84. In acknowledgement that modelled impact ranges can vary based on site-specific parameters and modelling assumptions, a precautionary and conservative ZoI of 40km has been considered for MCZs which have fish species as a designated feature (see **Figure 5.2**). This is 7km greater than worst-case impact ranges for piling a monopile modelled for the DBD Project, so can be considered to be a conservative screening distance.

85. Only a small number of MCZs on the UK east coast are designated for fish species. The nearest to the AoS is the Medway Estuary MCZ, designated for smelt (*Osmerus eperlanus)*, located approximately 320km to the south.

86. Given there are no MCZs designated for fish within 40km, there is **no potential pathway for impact from the AoS, alone or in-combination with other plans and projects and these sites are screened out, and Stage 1 Assessment is not considered to be required**.

5.3 Summary of Screening

87. Given the nearby MCZs fall outside the relevant ZoI (2km for benthic related MCZs and 40km for fish related MCZs) for each AoS, it has been determined that no pathways for effects are present for any MCZ. All MCZs are therefore screened out, and no additional stages of the MCZA are required.



Legend:

- ANS AoS
- ANS AoS 2km Buffer
- Marine Conservation Zone (MCZ)

Project: Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title: MCZs and Marine Physical Processes ZoI for the AoS

Figure: 5-1

Drawing No: PC6250-HAS-XX-OF-DR-GS-0090

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
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Co-ordinate system: WGS 1984 UTM Zone 31N

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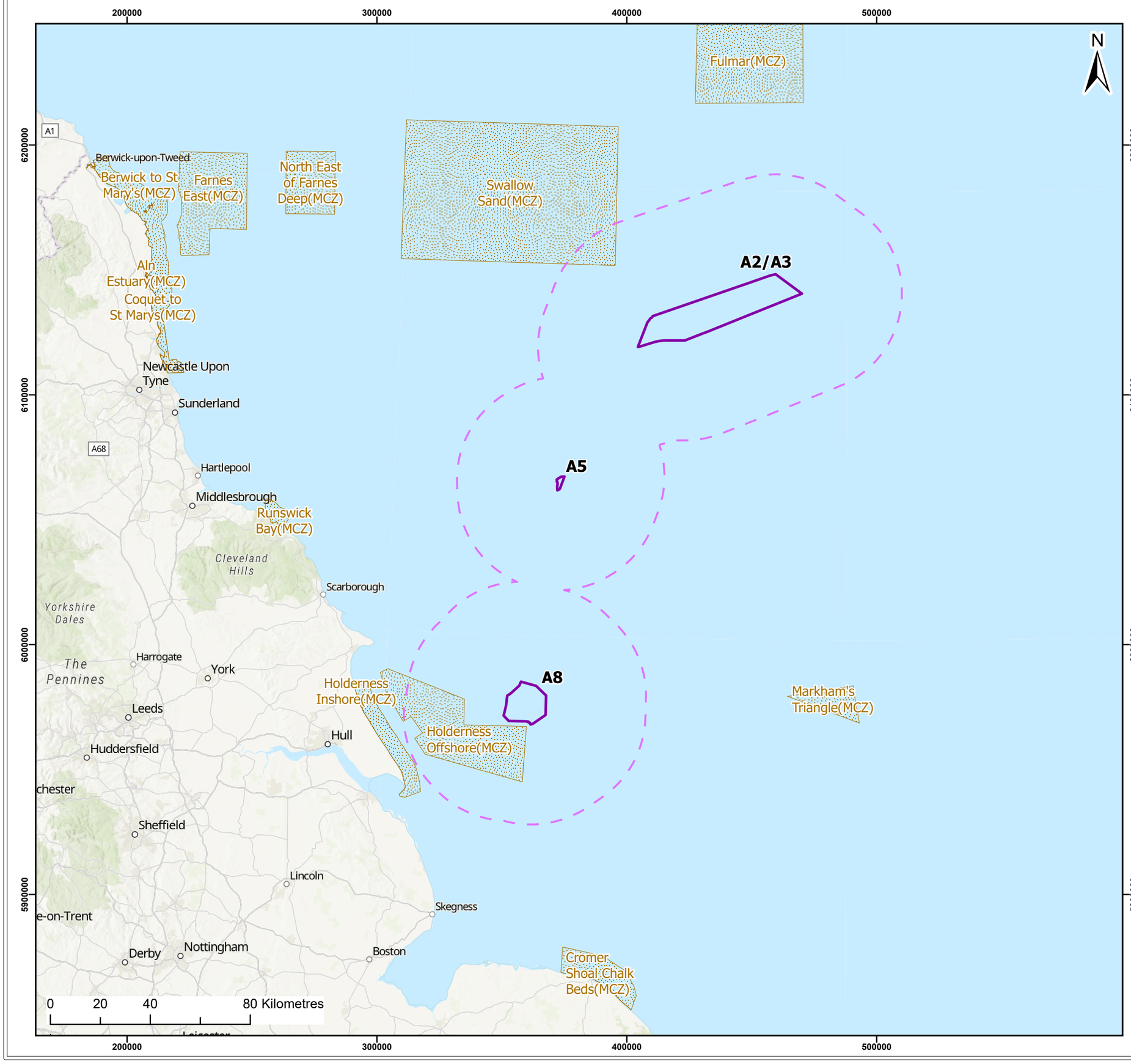

Legend:

- ANS AoS
- ANS AoS 40km Buffer
- Marine Conservation Zone (MCZ)

Project: Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title: MCZs and Underwater Noise ZoI for the AoS

Figure: 5-2

Drawing No: PC6250-HAS-XX-OF-DR-GS-0091

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	17/12/2025	AB	PT	A3	1:1,500,000

Co-ordinate system: WGS 1984 UTM Zone 31N

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6 Cumulative Effects

88. Cumulative effects consider indirect effects in conjunction with potential impacts to the designated features of the relevant MCZ, based on the results of the assessments of other plans and projects. However, as no pathways of effects have been identified between the AoS and nearby MCZs, the ANS is not expected to have cumulative effects with these MCZs.

89. Therefore, **all cumulative effects are screened out** and no additional stages of the MCZA are required.

7 Summary and Next Steps

7.1 Summary

90. In summary, none of the MCZs are considered to fall within the relevant ZoIs of the three potential ANS AoS. For benthic-related MCZs, the ZoI is defined as 2km, while a precautionary screening distance of 40km has been applied for fish related MCZs. As such, there is no potential pathway for effects from the ANS development, and all MCZs are screened out, and Stage 1 Assessment is not considered to be required. Therefore, there is no significant risk of hindering the conservation objectives of the nearby MCZs, either alone or cumulatively with other plans and projects.

7.2 Next Steps

91. As set out in **Section 5** to **Section 7**, the MCZA Screening concludes that there is no significant risk of the proposed construction, O&M, and decommissioning of an ANS in any of the AoS hindering the achievement of the conservation objectives for any MCZ. Therefore, it is determined that Section 126 of the MCAA should not apply to the licence application and progressing Stage 1 Assessment is not considered to be necessary.

References

Cooper and Brew (2013). Impacts on the Physical Environment [online]. Available at: https://www.researchgate.net/profile/David-Brew-2/publication/271836605-Impacts-on-the-Physical-Environment/links/54d370560cf28e06972832e4/Impacts-on-the-Physical-Environment.pdf (Accessed November 2025).

Department for Energy Security & Net Zero (2023). National Policy Statement for Renewable Energy Infrastructure (EN-3). London: The Stationery Office. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3 (Accessed November 2025).

Dogger Bank D (2025a). Dogger Bank D Preliminary Environmental Information Report (PEIR) – Project Description. Available at: https://community.engage.stantec.com/doggerbank-staging/peir.html#/. (Accessed November 2025).

Dogger Bank D (2025b). Dogger Bank D Preliminary Environmental Information Report (PEIR) – Report to Inform Appropriate Assessment (Part 1 of 3). Available at: https://community.engage.stantec.com/doggerbank-staging/documents/04%20Reports/Report%20to%20Inform%20Appropriate%20Assessment%20(Part%201%20of%203).pdf. (Accessed November 2025).

Dogger Bank D (2025c). Dogger Bank D Kittiwake Compensation Roadmap & Evidence. Available at: https://community.engage.stantec.com/doggerbank-staging/documents/04%20Reports/Kittiwake%20Compensation-Roadmap%20and%20Evidence.pdf. (Accessed November 2025).

East Anglia ONE North Limited (2019). Environmental Statement – Appendix 11.4: Underwater Noise Assessment. London: Planning Inspectorate. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010077/documents. (Accessed November 2025).

EMODnet (2023). EMODnet broad-scale seabed habitat map for Europe (EUSeaMap). Available from: http://ww.emodnet-sea-bedhabitats.eu/access-data/launch-map-viewer/.

Gooding, S., Black, K., Boyde, P. and Boyes, S., (2012). Environmental impact of subsea trenching operations. *SUT Offshore Site Investigation and Geotechnics*, pp.SUT-OSIG.

Hiscock, D.R. and Bell, S. (2004). Physical impacts of aggregate dredging on sea bed resources in coastal deposits. Journal of Coastal Research, 20 (10), 101-114.

Hornsea Project Four (2021). Environmental Statement: Volume A4, Annex 4.5 – Subsea Noise Technical Report Part 1. Prepared by Subacoustech Environmental Ltd. London: Planning Inspectorate. Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010098-000733-A4.4.5%20ES%20Volume%20A4%20Annex%204.5%20Subsea%20Noise%20Technical%20Report%20Part%201.pdf (Accessed November 2025).

John, S.A., Challinor, S.L., Simpson, M., Burt, T.N. and Spearman, J. (2000). Scoping the assessment of sediment plumes from dredging. CIRIA Publication.

Marine Management Organisation (2013). Marine Conservation Zones and Marine Licensing. April 2013.

Natural England (2019). Conservation Advice for Marine Protected Areas. 02.04.2019 – V2.3.

Newell, R.C., Seiderer, L.J., Robinson, J.E., Simpson, N.M., Pearce, B and Reeds, K.A. (2004). Impacts of overboard screening on sea bed and associated benthic biology community structure in relation to marine aggregate extraction. Technical Report to the Office of the Deputy Prime Minister and Minerals Industry Research Organisation. Project No. SAMP 1.022, Marine Ecological Surveys Ltd, St. Ives, Cornwall.

Norfolk Vanguard Limited (2018). Environmental Statement: Appendix 5.3 – Underwater Noise Modelling. Prepared by Subacoustech Environmental Ltd. London: Planning Inspectorate. Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN010079-001534-Appendix%2005.03%20Underwater%20Noise%20Modelling.pdf (Accessed November 2025).

OSPAR Commission (2023). Offshore Renewables [online]. Available at: https://www.ospar.org/work-areas/eiha/offshore-renewables (Accessed November 2025).

Parker, J., Fawcett, A., Banks, A., Rowson, T., Allen, S., Rowell, H., Harwood, A., Ludgate, C., Humphrey, O., Axelsson, M., Baker, A. and Copley, V. (2022). Offshore Wind Marine Environmental Assessments: Best Practice Advice for Evidence and Data Standards. Phase III: Expectations for data analysis and presentation at examination for offshore wind applications. Natural England. Version 1.2. 140 pp. Available at: Offshore wind – best practice advice to facilitate sustainable development – Natural England. (Accessed November 2025).

Planning Inspectorate (2018). Advice Note Nine: Rochdale Envelope | National Infrastructure Planning. [Online]. Available at: Nationally Significant Infrastructure Projects - Advice Note Nine: Rochdale Envelope - GOV.UK (Accessed November 2025).

Planning Inspectorate (2019). Advice Note 17: Cumulative Effects Assessment [online]. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advicenotes/advice-note-17/ (Accessed November 2025).

Popper, A.N., Hawkins, A.D., Fay, R.R., Mann, D.A., Bartol, S., Carlson, T.J., Coombs, S., Ellison, W.T., Gentry, R.L., Halvorsen, M.B., Løkkeborg, S., Rogers, P.H., Southall, B.L., Zeddies, D.G., and Tavolga, W.N. (2014). Sound exposure guidelines for Fishes and Sea Turtles. Springer Briefs in Oceanography, DOI 10.1007/978-3-319-06659-2.

Tillin, H.M., Houghton, A.J., Saunders, J.E. Drabble, R. and Hull, S.C. (2011). Direct and indirect impacts of aggregate dredging. Science Monograph Series No. 1. MEPF 10/P144.

Whiteside, P.G.D., Ooms, K. and Postma, G.M. (1995). Generation and decay of sediment plumes from sand dredging overflow. Proceedings of the 14th World Dredging Congress. Amsterdam, The Netherlands. World Dredging Association, 877 – 892.

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Acronyms

Acronym	Definition
ANS	Artificial Nesting Structure
AoS	Area of Search / Areas of Search
CAA	Civil Aviation Authority
CEA	Cumulative Effects Assessment
CTV	Crew Transfer Vessel
DBA	Dogger Bank A
DBB	Dogger Bank B
DBC	Dogger Bank C
DBD	Dogger Bank D
DCO	Development Consent Order
DP	Dynamic Positioning
EIA	Environment Impact Assessment
ES	Environmental Statement
GW	Gigawatts
HLV	Heavy Lift Vessel
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
JUV	Jack-Up Vessel
kJ	Kilojoule
km	Kilometre (distance)
LAT	Lowest Astronomical Tide
m	Metre (length)
m^2	Metre squared (area)
m^3	Metre cubed (volume)

Acronym	Definition
MCAA	Marine and Coastal Access Act 2009
MCZ	Marine Conservation Zone
MCZA	Marine Conservation Zone Assessment
MMO	Marine Management Organisation
NPS	National Policy Statement
NtM	Notice to Mariners
O&M	Operation and Maintenance
OCV	Offshore Construction Vessel
OREI	Offshore Renewable Energy Installation
OSPAR	Oslo and Paris Conventions
OSV	Offshore Support Vessel
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PSV	Platform Support Vessels
RIAA	Report to Inform Appropriate Assessment
ROV	Remotely Operated Vehicle
SNCB	Statutory Nature Conservation Bodies
SoS	Secretary of State
SOV	Service Operation Vessel
SPA	Special Protection Area
TSHD	Trailer Suction Hopper Dredger
TTS	Temporary Threshold Shifts
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance

Acronym	Definition
ZoI	Zone of Influence