Hornsea Three Offshore Wind Farm

Safety Zone Application

Ørsted

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09/05/25	A	Draft	Initial draft
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Glossary

Term	Definition
Allision	Contact between a moving and stationary object.
Collision	The process of colliding, between two moving objects.
Automatic Identification system (AIS)	A system which automatically broadcasts a vessel's location, identity, key information, navigation details, destination, and speed (amongst others). Commercial vessels and European Union (EU) fishing vessels over 15 metres (m) are required to have AIS.
Navigational Risk Assessment (NRA)	A document which assesses the overall impact to shipping and navigation of a proposed Offshore Renewable Energy Installation (OREI) based upon formal risk assessment.
Offshore Renewable Energy Infrastructure (OREI)	In the context of offshore wind development, offshore Wind Turbine Generators (WTG) and the associated electrical infrastructure such as Offshore Converter Stations (OCS).
Radio Detection And Ranging (Radar)	An object-based detection system, in which radio waves are reflected from an object back to the source in order to determine its range, direction, or speed.
Unique Vessel	In order to accurately count the number of vessels in a particular dataset, they are grouped 'per vessel, per day' so that multiple geometries from a single vessel in a single day are counted as one instance for analysis purposes.

Acronyms

Acronym	Definition
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AtoN	Aid to Navigation
BEIS	Department for Business, Energy and Industrial Strategy
CLV	Cable Laying Vessel
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea
CTV	Crew Transfer Vessel
DESNZ	Department for Energy Security and Net Zero
DoL	Depth of Lowering
FIR	Fishing Industry Representative
FLO	Fisheries Liason Officer
HAT	Highest Astronomical Tide
HLV	Heavy Lift Vessel
HSE	Health and Safety Executive
HVDC	High-Voltage Direct Current
IAC	Inter-Array Cable
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organisation
km	Kilometre
LMP	Lighting and Marking Plan
m	Metre
MCA	Maritime and Coastguard Agency
MP	Monopile
MPA	Marine Protection Area
nm	Nautical Mile
nm^2	Squared Nautical Mile
NtM	Notice to Mariners

Acronym	Definition
NUC	Not Under Command
OCS	Offshore Converter Station
OEC	Offshore Export Cable
OECC	Offshore Export Cable Corridor
OREI	Offshore Renewable Energy Installation
OWF	Offshore Wind Farm
PLGR	Pre-Lay Grapnel Run
RAM	Restricted in Ability to Manoeuvre
RYA	Royal Yachting Association
SLoO	Single Lane of Orientation
SOLAS	Safety of Life at Sea
SOV	Service Operation Vessel
SPS	Significant Peripheral Structure
SSCV	Semi Submersible Crane Vessel
UKHO	United Kingdom Hydrographic Office
UXO	Unexploded Ordnance
VHF	Very High Frequency
WTG	Wing Turbine Generator
WtW	Walk to Work

1 Introduction

1.1 Background

1. The Hornsea Three Offshore Wind Farm (hereby referred to as Hornsea Three) is being developed by Ørsted and is the third Offshore Wind Farm (OWF) to be developed within the former Hornsea Zone. The Development Consent Order was granted on the 31st December 2020 and came into effect in February 2021.

1.2 Scope of Application

2. This document represents the primary supporting document to Ørsted's application for safety zones to be implemented for Hornsea Three, noting that separate applications for Hornsea Project One and Hornsea Project Two have already been submitted and accepted previously by the Department for Energy Security and Net Zero (DESNZ) in its previous structure as the Department for Business, Energy and Industrial Strategy (BEIS).

3. The proposed safety zones are intended for the purposes of making clear to passing traffic the areas where Hornsea Three construction and maintenance activities are taking place and therefore which areas should be avoided, with a view to minimising the risk of an incident which may threaten life or the environment.

4. Safety zones are applied for around the Wind Turbine Generators (WTG) and Offshore Converter Stations (OCS) under the circumstances detailed in the following sections.

1.2.1 Plan Objectives

5. As per Section 95 and Schedule 16 of the Energy Act 2004 and Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007 (Electricity Regulations, 2007) respectively, a Safety Zone Application can be made to DESNZ requesting the formal implementation of safety zones around structures associated with an Offshore Renewable Energy Installation (OREI).

6. On this basis, this document presents Hornsea Three's safety case for the implementation of safety zones around the WTGs and OCSs to be installed within Hornsea Three and represents the primary supporting document of the application made to the DESNZ.

7. It is emphasised that the use of safety zones is to support the protection of human life, in addition to the other marine safety and navigation risk mitigation measures that will be implemented. On this basis the proposed safety zones are designed to manage potential interactions between third-party vessels and the construction and maintenance activities undertaken as part of Hornsea Three, with a view to securing the safety of vessels and crews (both those associated with Hornsea Three and those deemed as third-party), and to protect Hornsea Three structures themselves.

8. It is noted that safety zones triggered by Service Operation Vessel (SOV) Walk to Work (WtW) systems are not being included within this application. Ørsted will continue to risk assess, including monitoring of, ongoing activities and traffic patterns and may apply for additional safety zones at a later date.

1.2.2 Construction Phase

9. The safety zones listed below are applied for during the construction phase, noting that additional relevant information is provided in Section 8.

- "Rolling" (i.e., active only where construction is ongoing) 500 metre (m) safety zones established around each structure and/or their foundations whilst construction works are in progress, as indicated by the presence of a construction vessel. The safety zones will be active whenever a vessel is on station at a structure and undertaking construction activities.
- Pre-commissioning 50 m safety zones established around each structure and/or their foundations when construction works have been completed but prior to commissioning or where construction works have only been partially completed. These safety zones will be active at any structure during the construction phase where a construction vessel is not present.

1.2.3 Operation and Maintenance

10. The safety zones listed below are applied for during the operations and maintenance phase, noting that additional relevant information is provided in Section 8.

- 500 m safety zones established around each structure where "major maintenance" work is being undertaken, where major maintenance is as per the definition given in the Electricity Regulations 2007 (see Section 5). The safety zones will be active whenever a major maintenance vessel is at the structure during the operational phase.

11. For clarity, no permanent operational safety zones are being applied for around any structure.

1.2.4 Decommissioning Phase

12. Safety zones for the decommissioning phase of Hornsea Three shall be applied for within a separate application, which will be submitted at a future date but prior to any decommissioning operations taking place.

1.2.5 Legislation Compliance

13. This document has been drafted in compliance with the following legislation and guidance to ensure all necessary information required is included within this safety zone application:

- Section 95 and Schedule 16 of the Energy Act 2004;
- Electricity (Offshore Generation Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007; and
- Guidance Notes: Applying for Safety Zones around Offshore Renewable Energy Installations (Department of Energy and Climate Change (DECC), 2011).

2 Project Overview

15. Hornsea Three is located within the southern North Sea, approximately 65 nautical miles (nm) north east of the Norfolk coastline. It is approximately 203 square nautical miles (nm^2) and will contain 197 WTGs, two OCSs, a network of 256 nm of Inter-Array Cables (IAC) and the initial sections of the Offshore Export Cables (OECs) running from the OCSs to the Offshore Export Cable Corridor (OECC).

16. The OECC will contain the OECs running between the array area and landfall at Weybourne Beach, Norfolk. This will consist of two HVDC circuits, so four cables overall, with a combined length of approximately 356 nm.

17. The location and extent of Hornsea Three is shown in Figure 2.1. For context, the locations of Hornsea Project One and Hornsea Project Two are also shown in Figure 2.1.

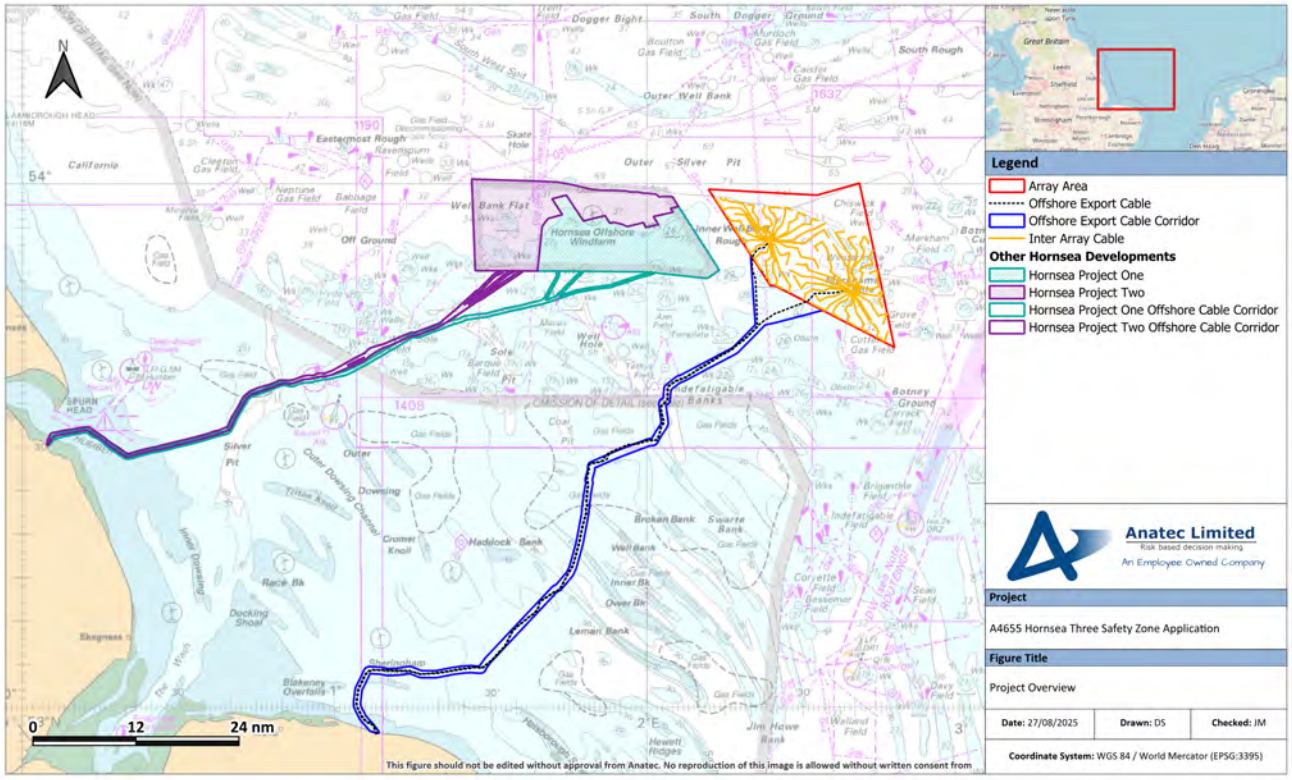

Figure 2.1 Project Overview

2.1 Layout

18. The layout of WTGs and OCSs comprises 197 WTG preferred positions and two OCSs, as presented in Figure 2.2. There are also nine spare positions under consideration; however, regardless of whether these spare positions are used, final structure numbers will not exceed 197 WTGs and two OCSs. Spares positions are included in Figure 2.2 for reference.

19. Further information on the structures is presented in Section 3.

20. The structures are positioned in a Single Lane of Orientation (SLoO) pattern. The minimum spacing between any two structures is 1,000 m measured centre point-to-centre point, or 772 m measured tip-to-tip, prior to any micro-siting. Micro-siting will be approached on a location-by-location basis during installation, with up to 50 m permitted in any direction and up to 100 m from the centre line of internal development lanes. The layout has been formally agreed with the Maritime and Coastguard Agency (MCA) and Trinity House, with the structure coordinates provided in full in Appendix A.

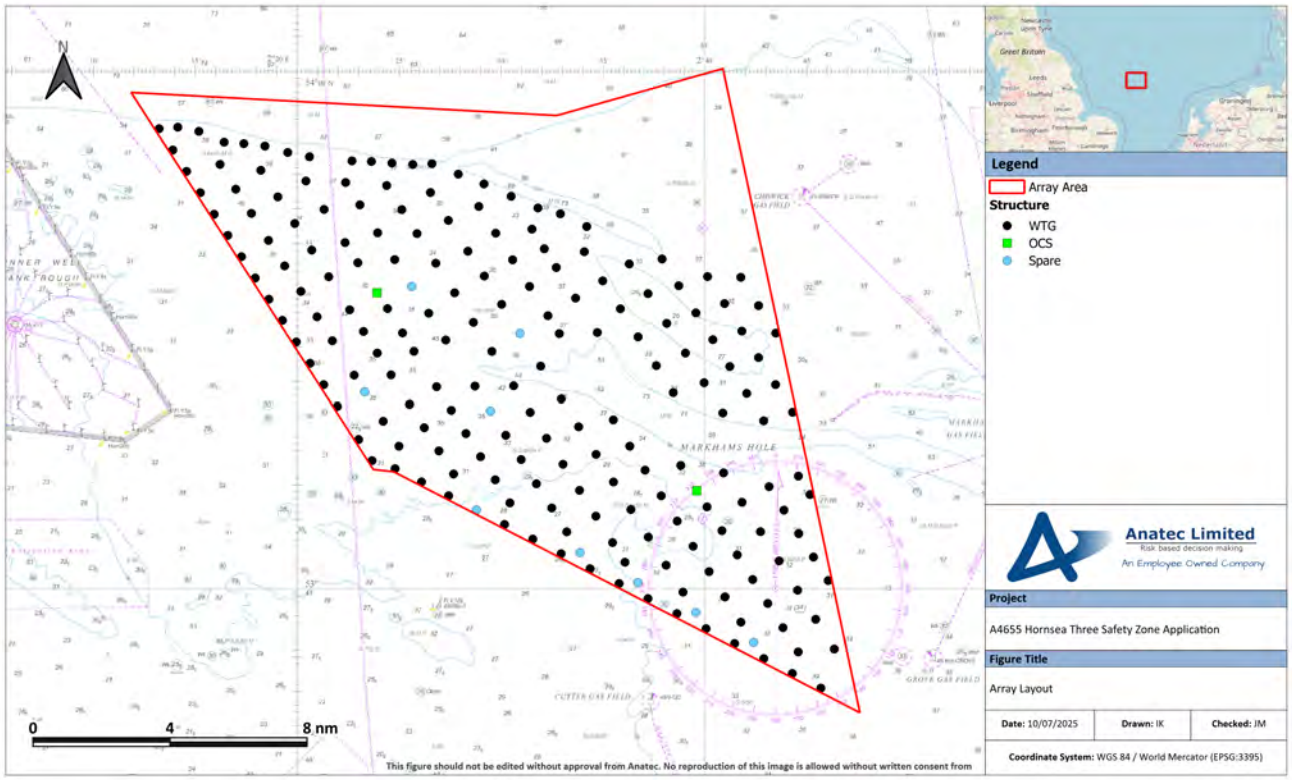

Figure 2.2 Array Layout (Layout Number 240)

2.2 Project Schedule

21. Offshore construction activities are currently underway, as of Q1 2025, in relation to OEC installation. Foundation installation is expected to commence in Q1/Q2 2026 with completion of offshore construction expected in Q4 2027. An indicative construction schedule for the OWF elements is summarised in Table 2.1. The exact schedule will depend on various factors (such as weather, supply, etc.) and therefore the stated dates are subject to change.

Table 2.1 Indicative Offshore Construction Works Schedule

Schedule	Milestone
Q1 2025 – Q4 2026	OEC installation
Q3 2025 – Q1 2026	Scour protection installation
Q1/Q2 2026 – Q1/Q2 2027	Foundation installation
Q1 2026 – Q4 2026	OCS installation
Q3 2026 – Q3 2027	IAC installation
Q4 2026 – Q4 2027	WTG installation
Q4 2027	Final commissioning

3 Project Components

3.1 Wind Turbine Generators

The 197 WTGs are to be installed via monopile (MP) foundations. Key specifications of the WTGs are provided in Table 3.1. Following this, an indicative schematic of the WTG substructure is presented in Figure 3.1.

Table 3.1 WTG Structure Final Design Parameters

Parameter	Design
Maximum Number of WTGs	197
Maximum Rotor Diameter	236 m
Minimum Blade Tip Height (above Lowest Astronomical Tide (LAT))	44.40 m
Hub Height above LAT	160.21 m
Maximum Height of Blade Tip above LAT	278.18 m
Manufacturer / Model	SGRE, SG DD-236
Capacity	14 MW, power boosted to 15 MW

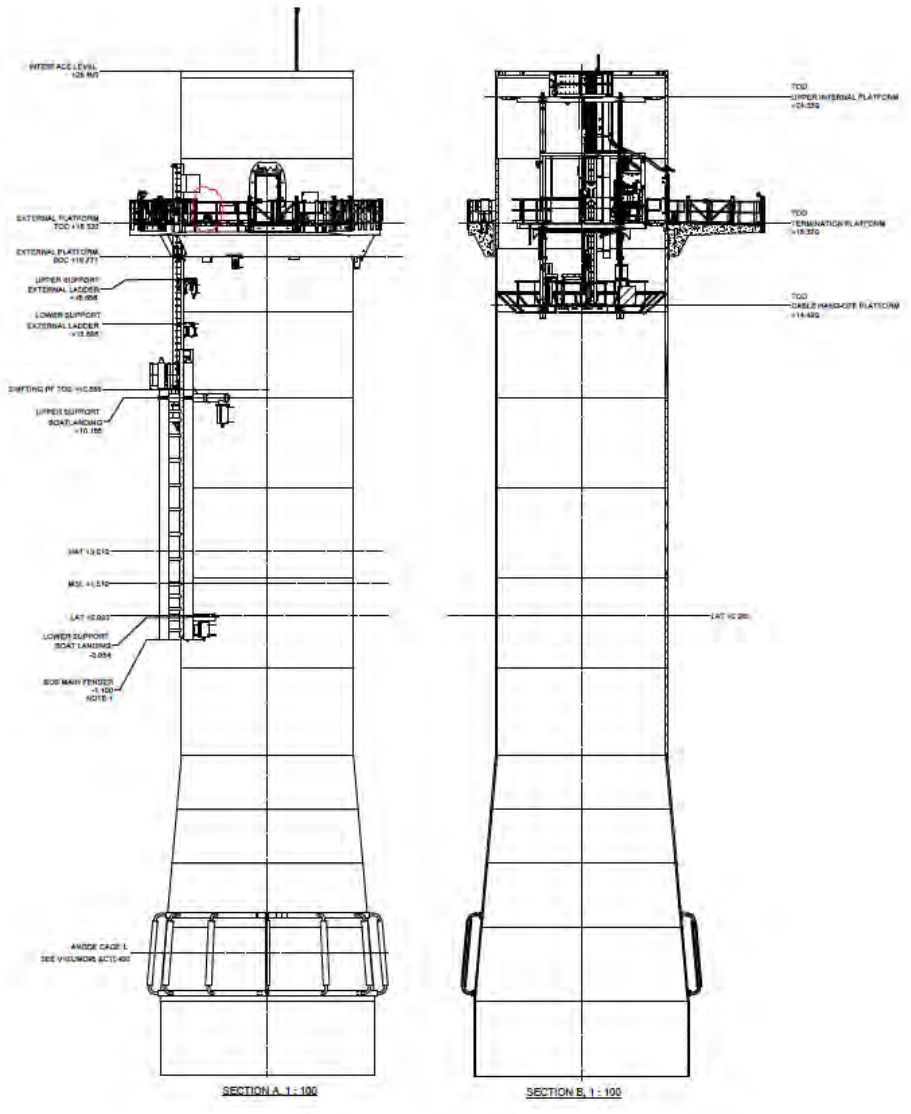

Figure 3.1 WTG Foundation Schematic

3.2 Offshore Converter Stations

22. As detailed in Section 2.1, the Hornsea Three layout comprises two OCSs. Key specifications of the OCSs are provided in Table 3.2, followed by a schematic in Figure 3.2.

Table 3.2 OCS Structure Final Design Parameters

Parameter	Design
Maximum Number of OCSs	2
Maximum Length	63m
Maximum Width	74m
Maximum Height above LAT	71.5m

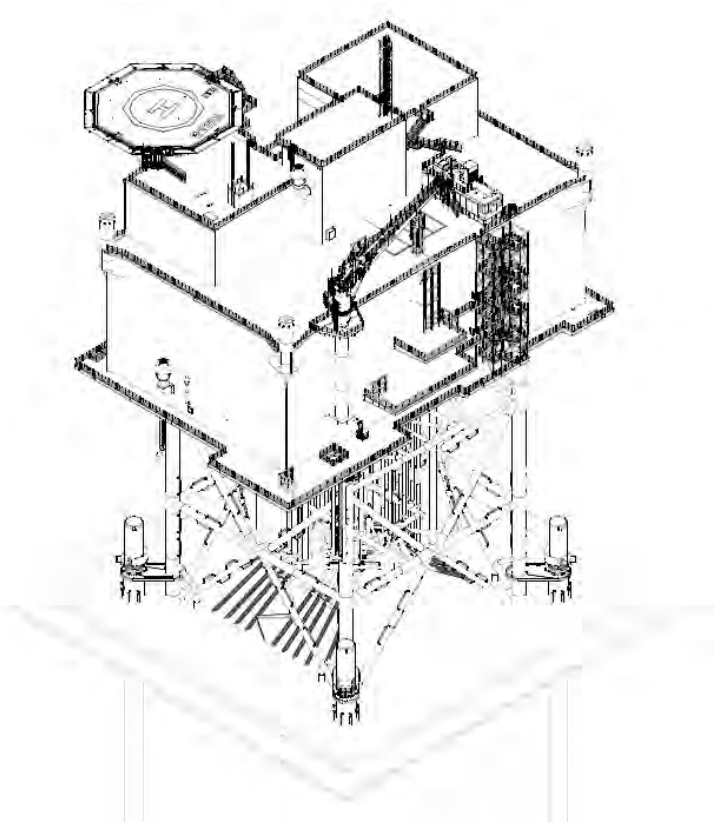

Figure 3.2 OCS Schematic

3.3 Cables

23. The OECs and IACs are shown in Figure 3.3 and Figure 3.4, respectively; these locations are subject to micrositing. The OECC is also included, ending at landfall in Weybourne Beach, Norfolk. Key specifications of the cables as included within the Final Design (subject to micrositing) are provided in Table 3.3.

Table 3.3 Cable Final Design Parameters

Type of Cable	Parameter	Design
IAC	Total Length	256 nm
	Number of Strings	40
	Minimum String Length	3.8 nm
	Maximum String Length	9.3 nm
OEC	Total Length	356 nm
	Number of Cables	4
	Number of Circuits	2
	Transmission Type	High-Voltage Direct Current (HVDC)

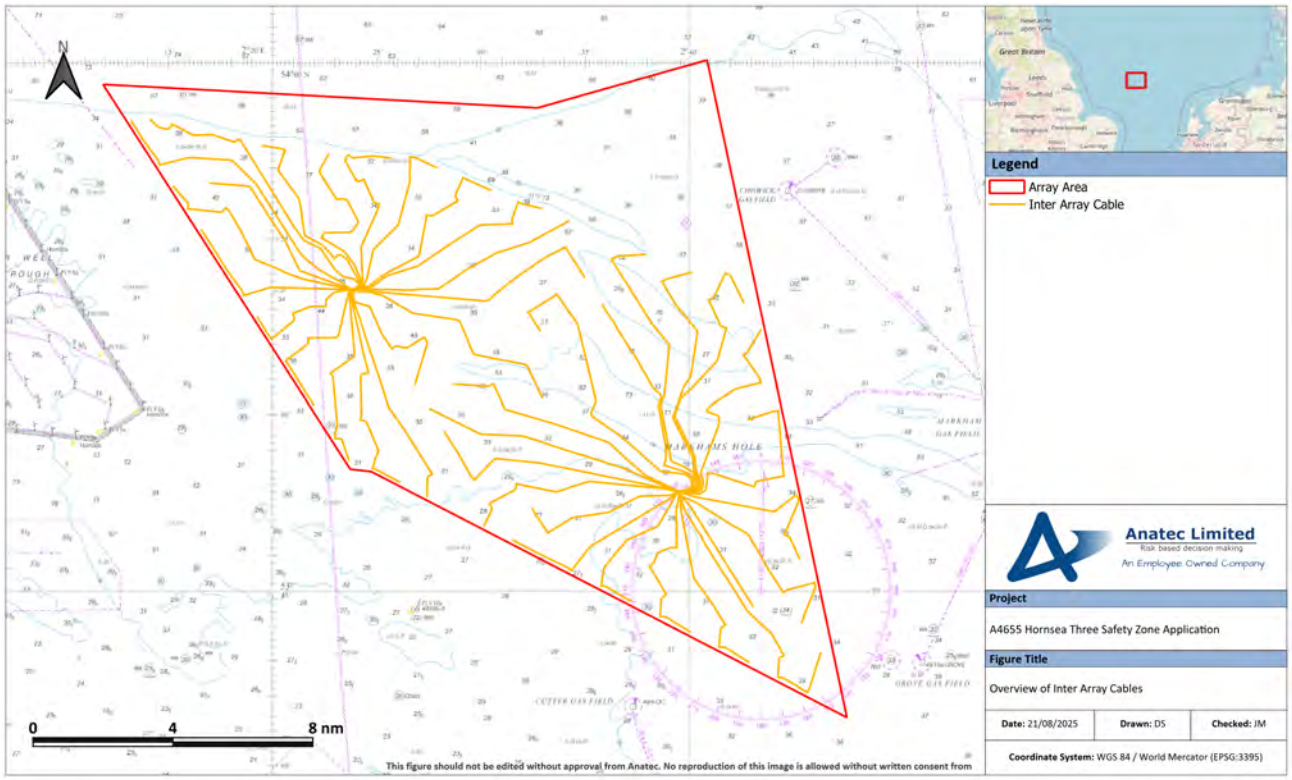

Figure 3.3 Overview of Inter Array Cables

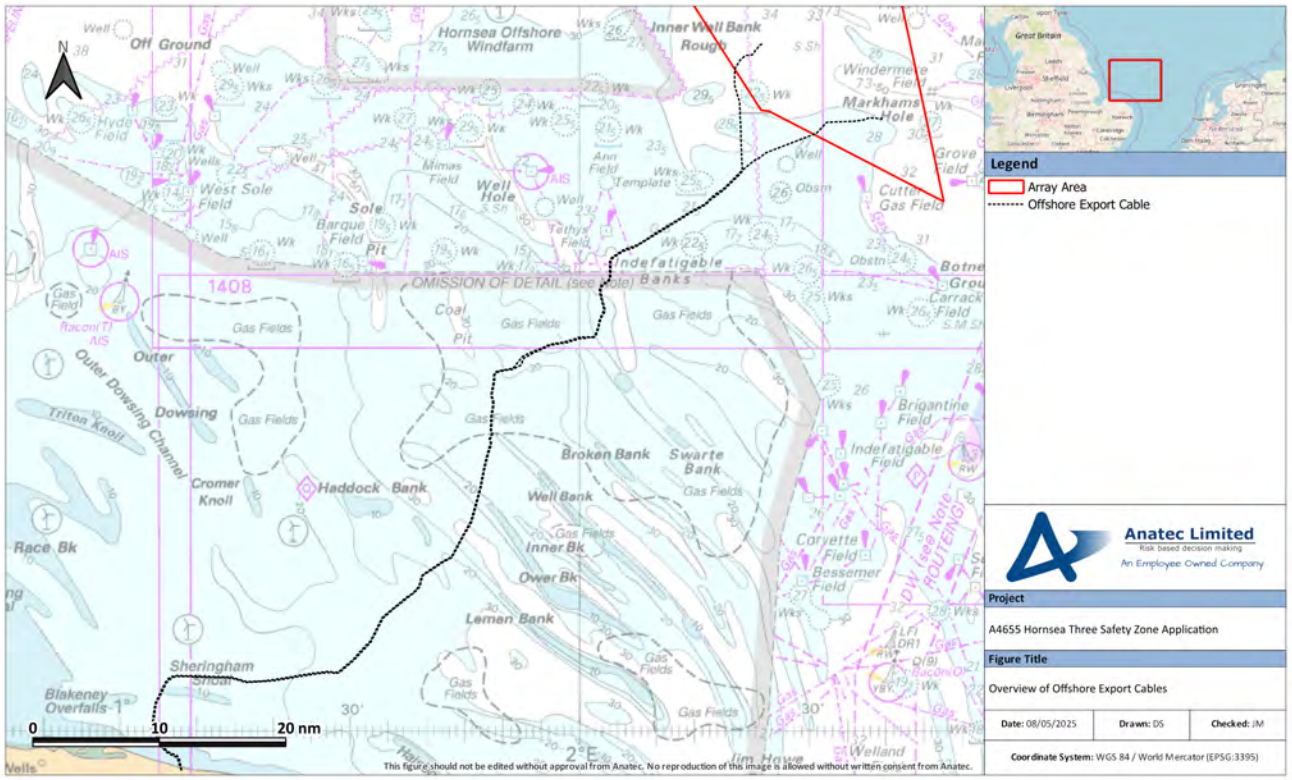

Figure 3.4 Overview of Offshore Export Cables

4 Construction Overview

24. This section summarises the activities to be undertaken during the construction phase which are deemed of relevance to this application. The details provided are based on current understanding and are therefore subject to change.

25. Promulgation of information will be undertaken in advance of and during construction including details of safety zones to maximise third-party awareness of the activities. This will include Notice to Mariners (NtM), the Kingfisher Bulletin, and liaison with the fishing industry via the Fishing Liaison Officer (FLO) and project Fisheries Industry Representatives (FIR).

4.1 Scour Protection

26. It is anticipated that each of the WTGs and OCSs will require scour protection, comprising a single layer rock pad installed prior to the foundation installation. The scour protection will be installed in a single campaign for all structures through use of a fall-pipe vessel.

27. The scour installation for both the WTGs and OCSs is anticipated to occur between Q3 2025 and Q1 2026.

4.2 Wind Turbine Generators

28. Installation of the WTG foundations is anticipated to commence in Q2 2026 and installation of the WTGs on to the foundations is expected to commence in Q4 2026.

4.2.1 WTG Foundations

29. The foundations of the WTGs will be delivered to Hornsea Three by sea transport from Teesport. .

30. The MP installation will be performed from a jack-up vessel. The MPs will be lifted into the pile gripper on the side of the installation vessel. Pile driving will be carried out using a hydraulic hammer.

4.2.2 WTG Tower, Nacelle and Blades

31. Following the installation of the foundations, two vessels will lift, transport and install the main WTG components, with up to six WTGs being transferred per vessel.

32. The load out and installation will make use of a five-lift methodology, consisting of one tower lift, one nacelle lift, and three separate blade lifts. This methodology will be deployed when lifting between the quayside and the vessel, and between the vessel and the MP foundation.

4.3 Offshore Converter Stations

33. The OCSs components will be transferred to the array area on barges.

34. A Semi-Submersible Crane Vessel (SSCV) will arrive on location and perform a seabed survey of the foundation footprint area. while a barges will transport the OCS foundation and jacket.

35. The SSCV will lift , with its own dual crane set up ,the OCS components directly from the barges anchored and moored alongside. Pin piles will be driven by hydraulic hammers from the SSCV prior to final set down of the OCS topside.

4.4 Commissioning

36. WTG commissioning will involve use of an SOV. The OCS commissioning process is expected to include use of a jack-up.

4.5 Cables

37. The installation of export cables commenced in Q1 2025, with inter-array cables anticipated to commence in Q2 2026.

38. Following pre-lay surveys, boulder clearance and seabed preparation, a Pre-Lay Grapnel Run (PLGR) will be undertaken over the cable routes to clear any seabed debris.

39. The cable laying installation will be carried out by a Cable Laying Vessel (CLV) and is divided into five types of operation:

- Cable laying;

- Offshore pull;
- Jointing;
- Temporary laydown; and
- Deployment and recovery.

40. Cable protection will be implemented where the target Depth of Lowering (DoL) is not achieved, and at cable crossings. A constraint on cable protection is noted for any portion of the OECs within Marine Protection Areas (MPAs).

5 Operation and Maintenance Overview

41. The definition of 'major maintenance' given within the Electricity Regulations 2007 (which details regulations associated with application procedures and control of access related to safety zones) is as follows:

42. *"Works relating to any renewable energy installation which has become operational, requiring the attachment to, or anchoring next to, such an installation of a self-elevating platform, jack-up barge, crane barge or other maintenance vessel."*

43. Under this definition, only vessels that *"anchor next to"* or require *"attachment to"* the operational structures can trigger a 500 m major maintenance safety zone during the operation and maintenance phase. On this basis, vessel types that could trigger a major maintenance safety zone include (but are not limited to):

- WTG installation vessels;
- Floating barges;
- HLVs / SSCVs; and
- Jack-ups.

44. Full details of major maintenance activities that will occur as part of the operation of Hornsea Three are unable to be confirmed at the time of writing based on the information available given this will include unexpected / unplanned operations. However, it is likely that the removal / replacement of components will be required and as such certain activities will be similar to those undertaken in the construction phase (see Section 0).

45. Additional details as to specific activities that could trigger a safety zone are provided in Section 8. However, throughout any periods of major maintenance, details of the work being carried out shall be promulgated through NtM, radio warnings as designated by the UKHO, the Kingfisher Bulletin, and liaison with the fishing industry via the FLO and FIR.

6 Lighting and Marking

46. This section summarises the marine lighting and marking of Hornsea Three which has been agreed in consultation with Trinity House and the MCA via the Lighting and Marking Plan (LMP) (Document No: 08578729_D). Aviation lighting (including Search and Rescue (SAR) lighting) is not considered pertinent to this safety zone application and has therefore not been included.

6.1 Construction Phase

6.1.1 Lighting

47. During construction all fixed surface piercing structures, including partially constructed such as WTG foundations, will be mounted and marked with a Flashing (Fl) Yellow (Y) 2.5 second (s) light (Fl Y 2.5s) visible through 360° with a minimum 2 nm range.

48. These lights should meet International Association of Lighthouse Authorities (IALA) Availability Category 2 (not less than 99.0%) and those on peripheral WTGs will remain in place until the operational lighting has been commissioned and has been accepted as such by Trinity House. For internal WTGs, they will be turned off once the ID (Marker Board) lighting is commissioned.

6.1.2 Buoyage

49. All construction buoyage shall be established at least eight weeks prior to the start of construction and remain in place until the operational marking requirements have been installed, then inspected and approved by Trinity House. Hornsea Three will be marked with 23 buoys during the construction phase, noting that the positions have been agreed with Trinity House:

- 4 × north cardinal marks;
- 3 × east cardinal marks;
- 2 × south cardinal marks;
- 2 × west cardinal marks; and
- 12 × special marks.

6.2 Operation and Maintenance Phase

6.2.1 Lighting

50. During the operation and maintenance phase, in line with requirements under IALA G1162 and O-139 (IALA, 2021), certain peripheral structures will be marked as Significant Peripheral Structures (SPS). Each SPS will be fitted with three marine lights, with criteria of each depending on whether Trinity House has designated it as a Primary or Secondary SPS:

Table 6.1 Specifications for Primary and Secondary SPSs

Category	Specifications	Visibility	IALA Category
Primary	5 nm light Fl Y 5s	360°	2 (>99.0% availability)
Secondary	5 nm light Fl Y 2.5s	360°	2 (>99.0% availability)

51. It is noted that five selected Primary SPS will be required to have synchronized lighting.

6.2.2 Sound Signals

52. Each SPS will be fitted with sound signals, which will activate whenever visibility is less than 2 nm. When activated, the signals will sound a blast lasting 2s every 30s. They will meet IALA Category 3 availability requirements (>97.0%).

6.2.3 AIS

53. Selected periphery structures will be fitted with Automatic Identification System (AIS) Aids to Navigation (AtoN). These will meet IALA Category 3 requirements (>97.0%).

6.2.4 ID Marker Boards

54. All WTGs will possess ID marker boards, which will be lit from low-level baffled lighting. These will consist of black letters on a yellow background, with the structures identified from letters "HC" and individual three-digit sequence.

6.2.5 Paint

55. All WTGs will be painted in 'traffic yellow' (RAL 1023) from Highest Astronomical Tide (HAT) to between 18 and 28 m above HAT, with 'light grey' (RAL 7035) paint used upwards of this.

56. The OCSs will be painted in 'traffic yellow' (RAL 1023) up to 15 m above HAT, with the topside (excluding structures such as work cabins) painted either 'light grey' (RAL 7035), or coated in other non-reflective grey material.

6.2.6 Buoyage

57. No buoyage is planned for deployment during the operation and maintenance phase, as agreed with Trinity House.

7 Vessel Traffic Data

7.1 Introduction

58. In line with DESNZ guidance (DECC, 2011), a vessel traffic assessment has been undertaken based on up-to-date vessel traffic data. The dataset used consists of 28-days of AIS data collected from:

- 22nd to 28th June, and 29th July to 4th August 2024 (summer period); and
- 13th to 19th January, and 31st January to 6th February 2025 (winter period).

59. The periods chosen have been selected to ensure that downtime is minimal, and that coverage of the Hornsea Three area is comprehensive.

60. A 10 nm buffer around Hornsea Three has been defined (hereby referred to as the 'study area') to capture vessel traffic of relevance. This also aligns with the study area used in the NRA (Anatec, 2018).

61. Any traffic deemed to be temporary has been removed from further analysis. This included vessels undertaking survey work and those associated with temporary drilling operations. Additionally, fixed installations broadcasting their location have been removed, as not to impact the AIS analysis.

62. As the dataset covers AIS only, the assessment may be unrepresentative of certain vessel types not required to transmit via AIS (e.g., fishing vessels below 15 m in length, and recreational vessels). Therefore, due consideration has also been given to the non-AIS survey data collected via Radar as part of the NRA (Anatec, 2018). Anatec's ShipRoutes database has also been used as validation of the dataset.

7.2 AIS Assessment

63. The vessel traffic recorded within the study area during the summer period is presented in Figure 7.1, colour-coded by vessel type. Following this, Figure 7.2 presents the vessel traffic recorded within the study area during the winter period, colour-coded by vessel type.

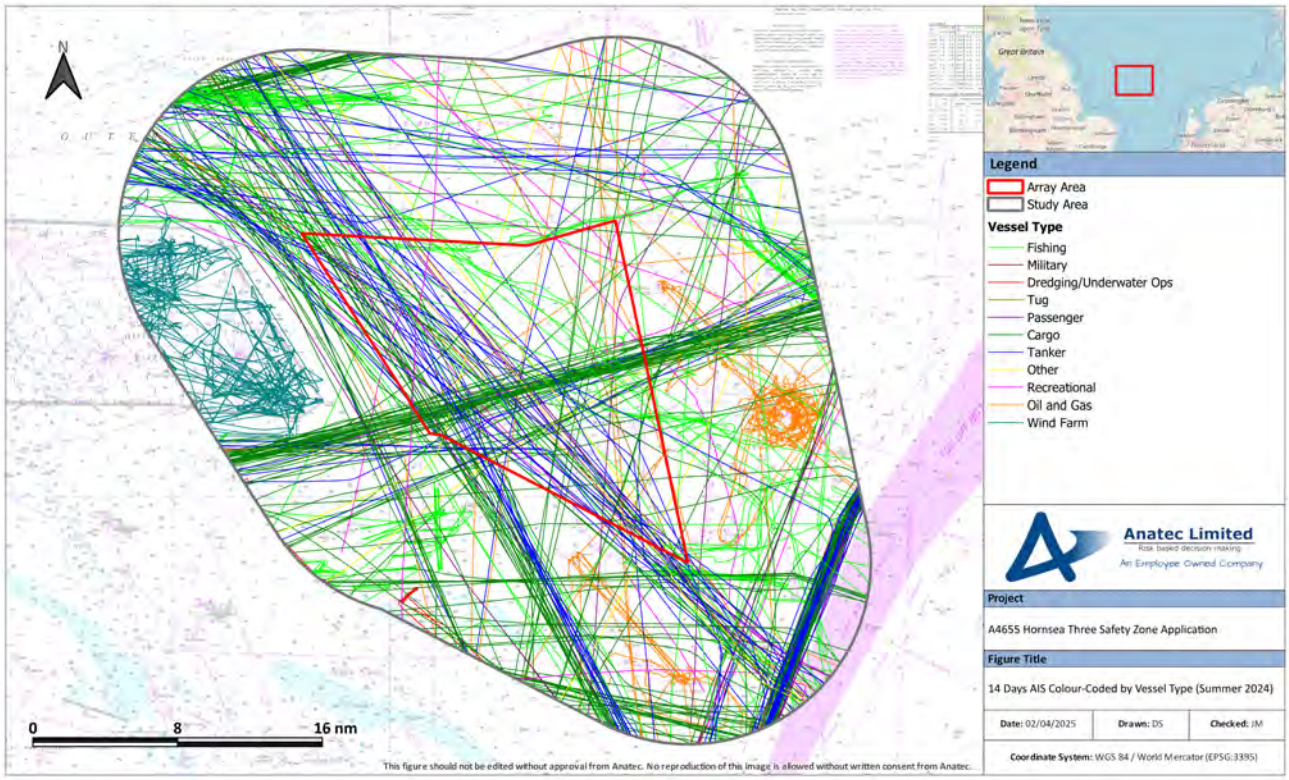

Figure 7.1 14 Days AIS Colour-Coded by Vessel Type (Summer 2024)

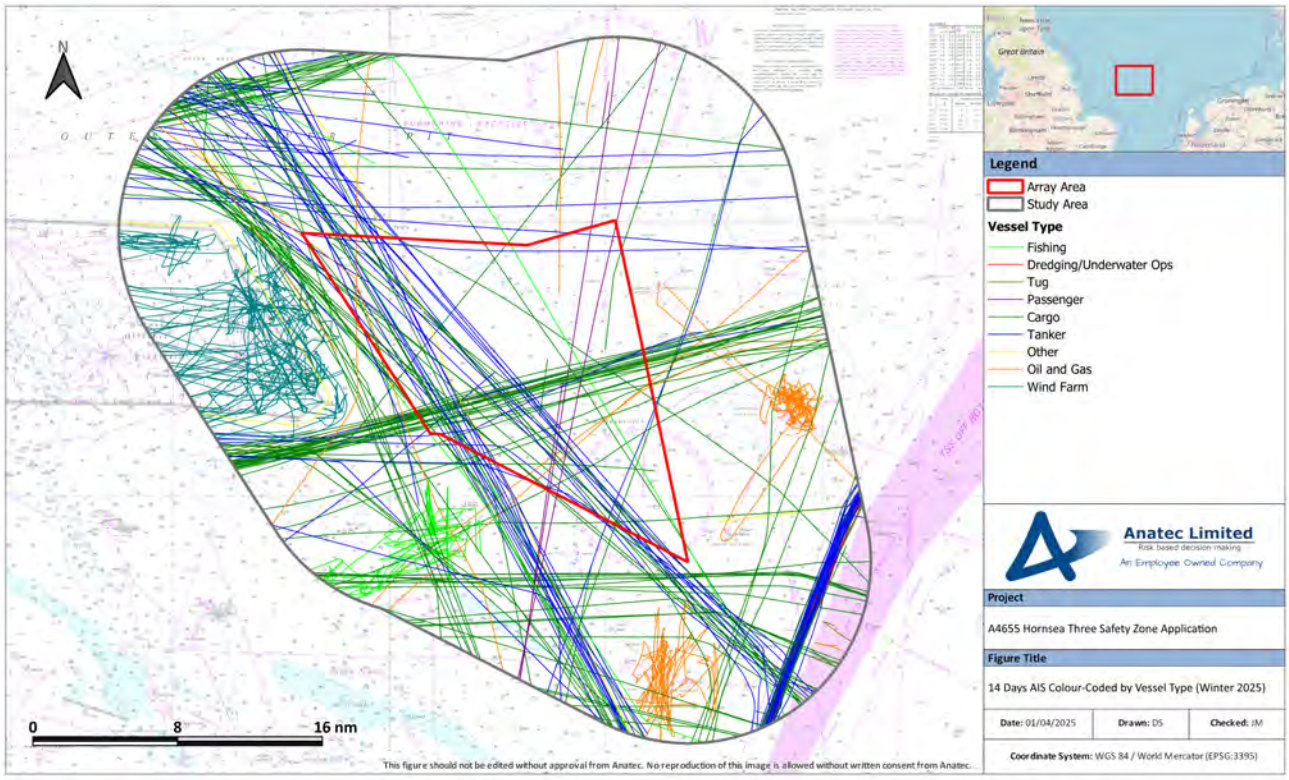

Figure 7.2 14 Days AIS Colour-Coded by Vessel Type (Winter 2025)

7.2.1 Vessel Count

64. During the summer period, there was an average of 36 unique vessels recorded per day within the study area. In terms of vessels intersecting the array area itself, there was an average of 13 unique vessels per day recorded. The vessel counts per day within the study area and array area are during the 14-day summer period are presented in Figure 7.3.

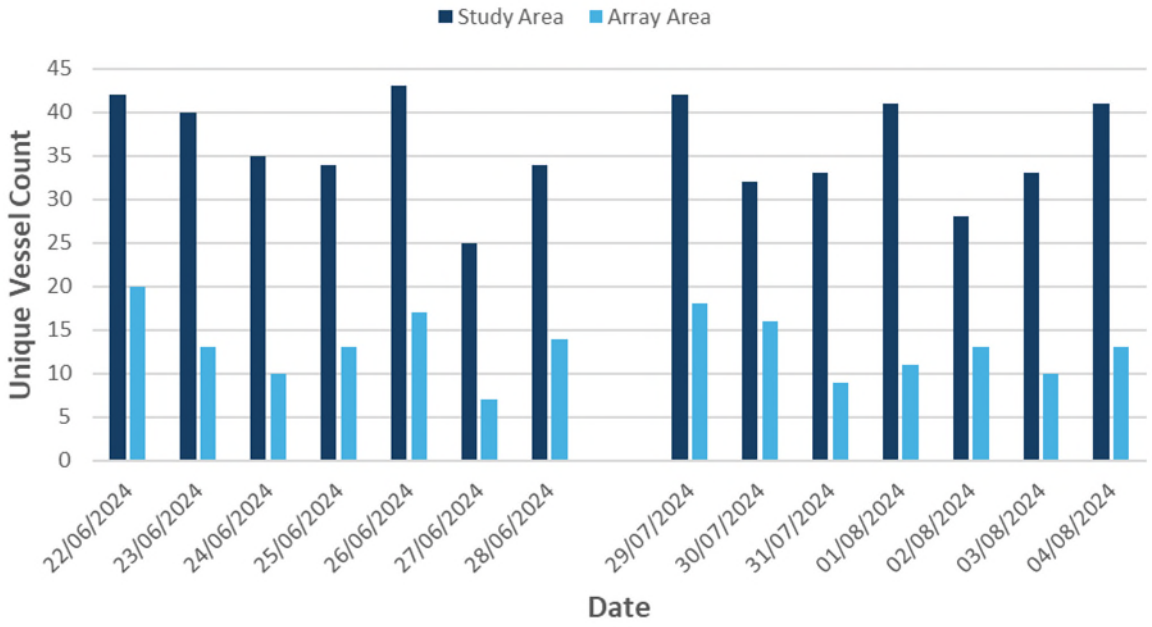

Figure 7.3 Unique Vessel Count per Day (Summer 2024)

65. Throughout the 14-day summer period, approximately 37% of unique vessel tracks recorded within the study area intersected the array area.

66. The busiest day recorded within the study area throughout the summer period was the 26th June 2024, during which 43 unique vessels were recorded. The busiest day recorded within the array area was the 22nd June 2024, on which 20 unique vessels were recorded.

67. The quietest day recorded within the study area throughout the summer period was the 27th June 2024, during which 25 unique vessels were recorded. This was also the quietest day recorded within the array area, on which seven unique vessels were recorded.

68. During the 14-day winter period, there was an average of 22 unique vessels recorded per day within the study area, and an average of seven unique vessels recorded within the array area. The vessel counts per day within the study area and array area are during the 14-day winter period are presented in Figure 7.4.

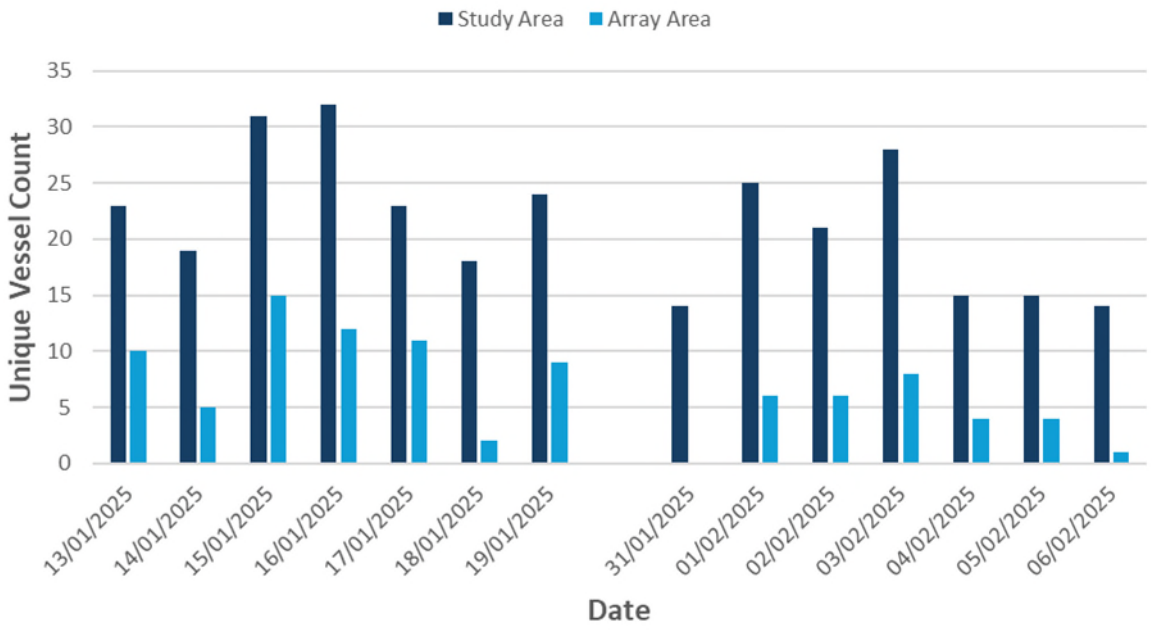

Figure 7.4 Unique Vessel Count per Day (Winter 2025

69. Throughout the 14-day winter period, approximately 31% of unique vessel tracks recorded within the study area intersected the array area.

70. The busiest day recorded within the study area throughout the winter period was the 16th January 2025, during which 32 unique vessels were recorded. The busiest day recorded within the array area was the 15th January 2025, on which 15 unique vessels were recorded.

71. The quietest days recorded within the study area throughout the winter period were the 31st January and 6th February 2025, during which 14 unique vessels were recorded. The 31st January was also the quietest day recorded within the array area, on which no unique vessels were recorded.

7.2.2 Vessel Type

72. The percentage of distribution of the main vessel types recorded passing within the study area during the summer and winter periods is presented in Figure 7.5.

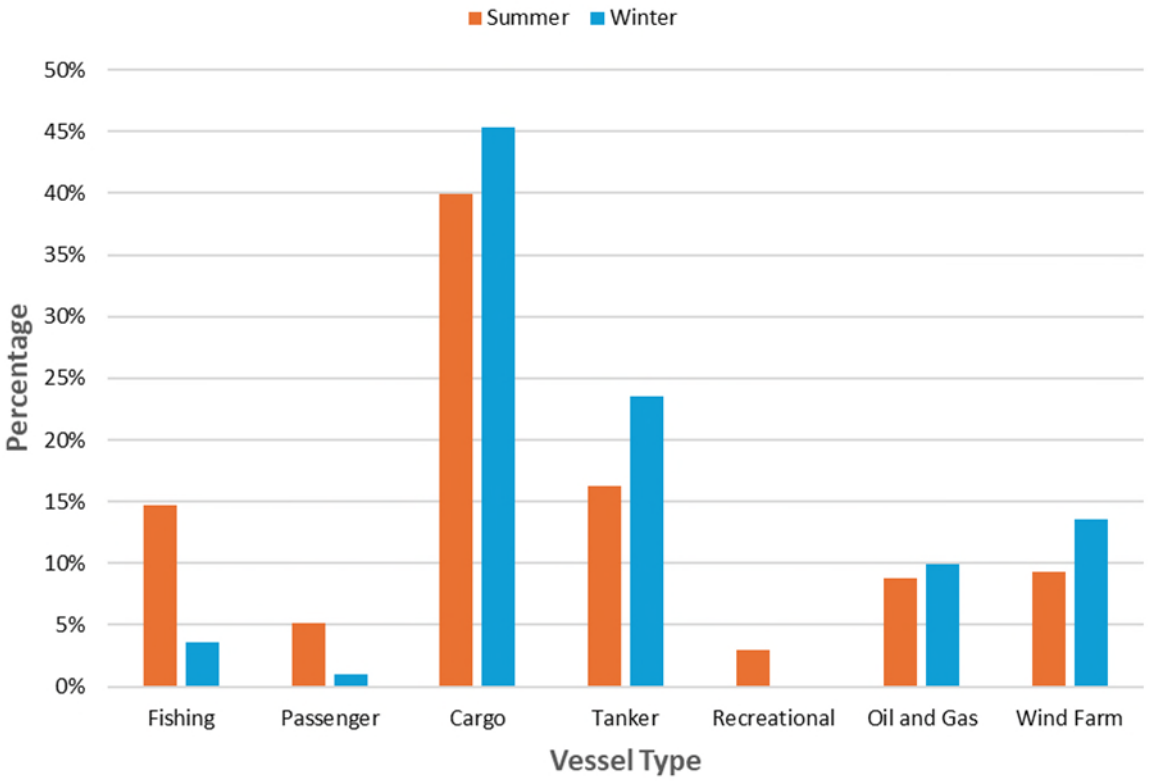

Figure 7.5 Distribution of Main Vessel Types

73. Throughout the 14-day summer period, the most common vessel types recorded within the study area were cargo vessels (40%), tankers (16%), fishing vessels (15%), wind farm support vessels (9%) and oil and gas vessels (9%). Throughout the 14-day winter period, the most common vessel types were cargo vessels (45%), tankers (24%), wind farm support vessels (14%) and oil and gas vessels (10%).

74. Wind farm support vessels recorded over both summer and winter periods were associated with the operation and maintenance of Hornsea Project One and Hornsea Project Two. These vessels were located within and in proximity to the Hornsea Project One and Hornsea Project Two array areas, and as such do not interact with the Hornsea Three array area.

75. The following subsections detail each of the main vessel types individually, during a combined 28-day period.

7.2.2.1 Cargo Vessels

76. The tracks of the cargo vessels recorded within the study area during the 28-day period are presented in Figure 7.6.

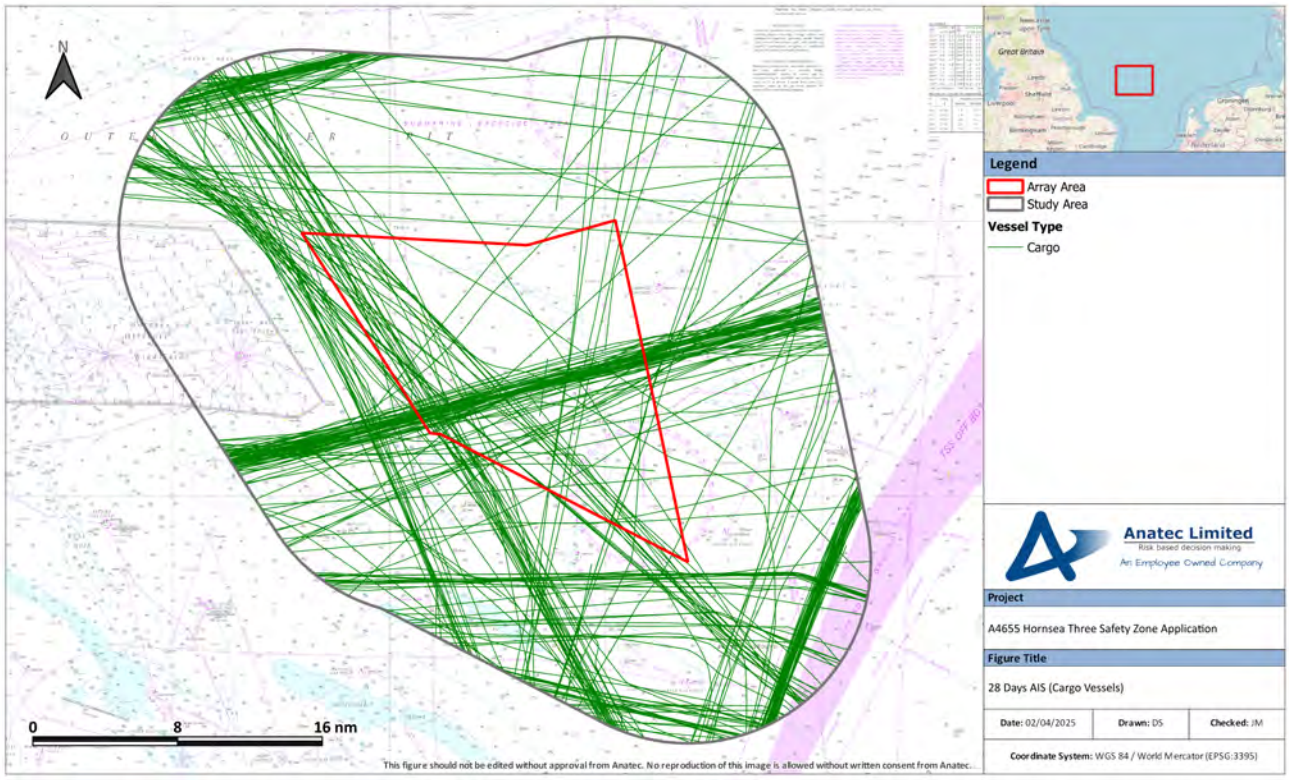

Figure 7.6 28 Days AIS (Cargo Vessels)

77. Cargo vessels were recorded on transit throughout the study area, with three well-defined cargo routes identified intersecting the array area; one in an east/west direction and two in a northwest/southeast direction.

78. An average of 12 unique cargo vessels per day were recorded within the study area during the 28-day period, with an average of five per day recorded intersecting the array area.

79. This broadly aligns with Anatec's ShipRoutes database, which indicates an average of 10 cargo vessels per day within the study area, and four cargo vessels per day intersecting the array area. Anatec's ShipRoutes database also indicated that routeing is focused to the western extent of the array area in a northwest/southeast direction, aligning with the data.

7.2.2.2 Tankers

80. The tracks of the tankers recorded within the study area during the 28-day period are presented in Figure 7.7.

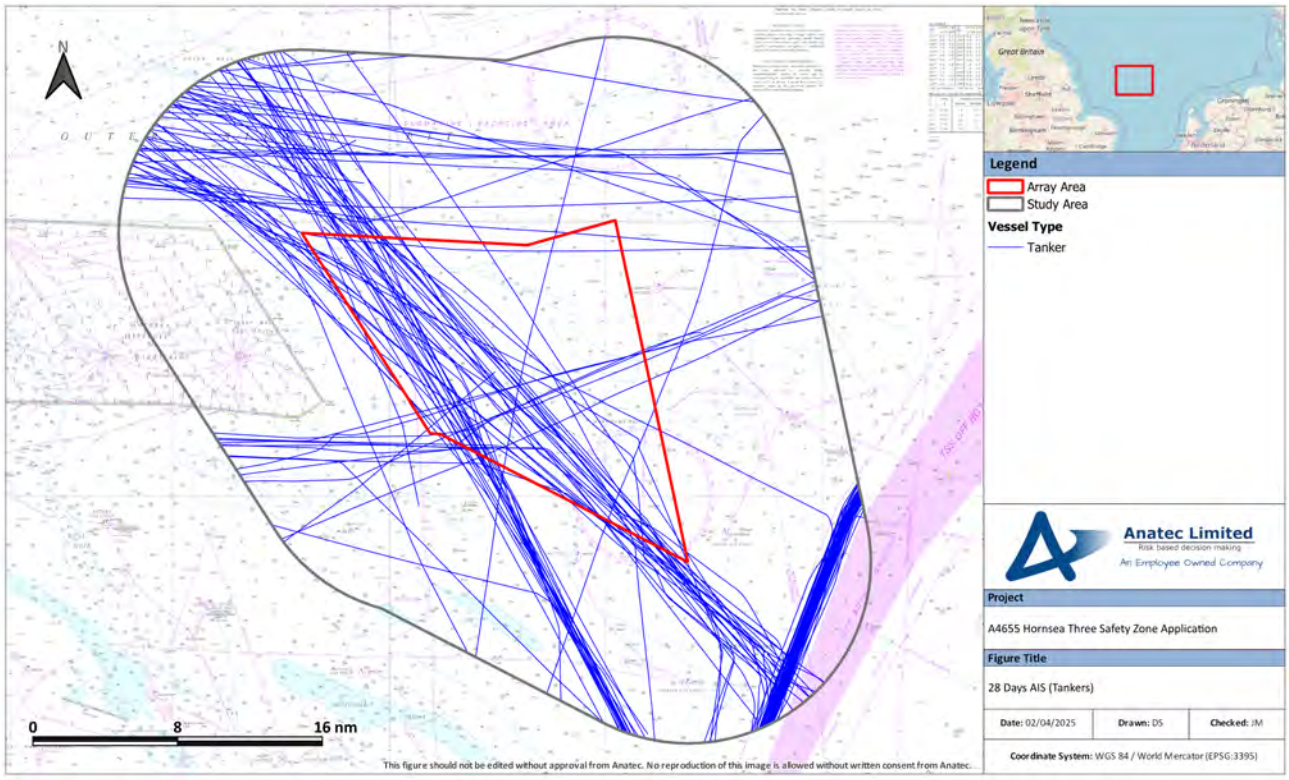

Figure 7.7 28 Days AIS (Tankers)

81. Tankers were primarily identified transiting in a northwest/southeast direction through the western portion of the array area, generally aligning with routeing patterns observed for cargo vessels in Section 7.2.2.1.

82. An average of five unique tankers per day were recorded within the study area during the 28-day period, with an average of two per day recorded intersecting the array area.

83. This is well-aligned with Anatec's ShipRoutes database, which indicates an average of five tankers per day within the study area, and two to three tankers per day intersecting the array area. Anatec's ShipRoutes database also indicated that routeing is focused to the western extent of the array area in a northwest/southeast direction, aligning with the data.

7.2.2.3 Fishing Vessels

84. The tracks of the fishing vessels recorded within the study area during the 28-day period are presented in Figure 7.8.

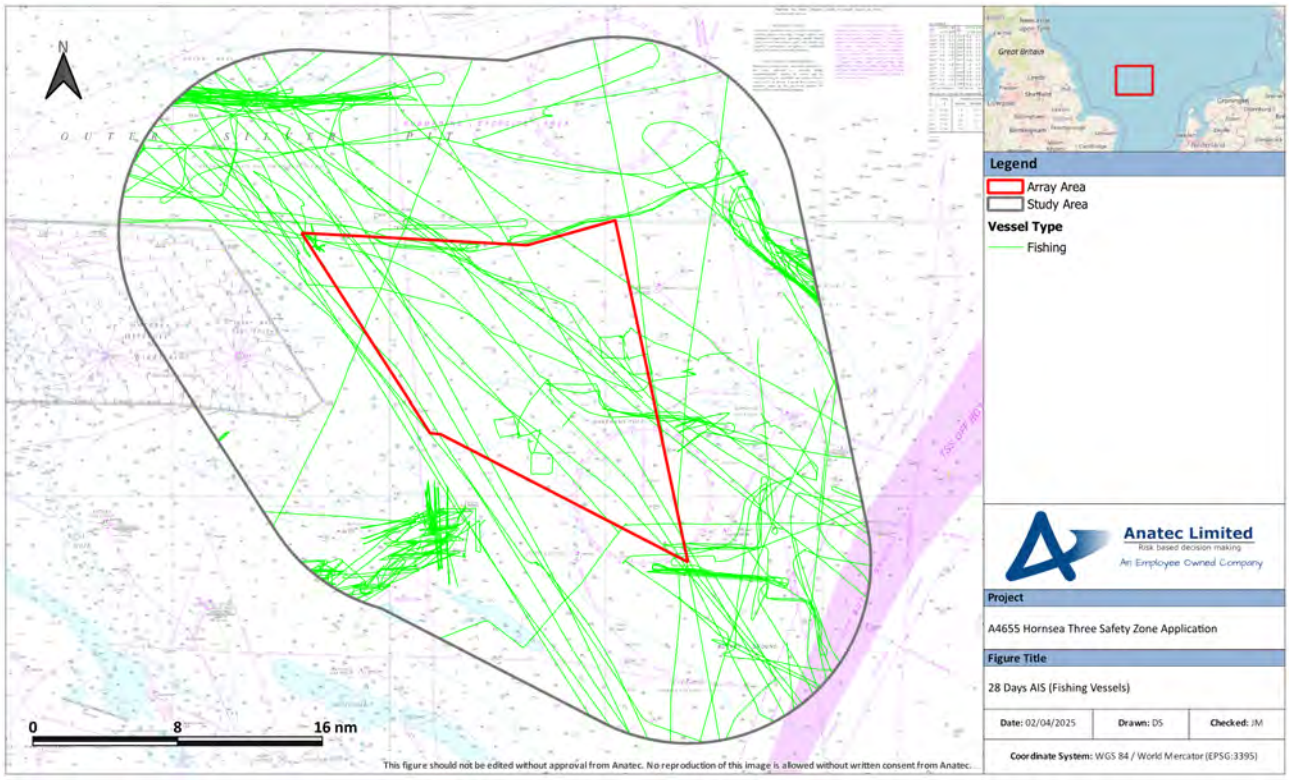

Figure 7.8 28 Days AIS (Fishing Vessels)

85. Fishing vessels were recorded on passage, typically intersecting the array area, as well as having tracks indicative of active fishing.

86. An average of three unique fishing vessels per day were recorded within the study area during the 28-day period, with an average of one per day recorded intersecting the array area.

87. Based on the information broadcast on AIS, fishing vessels recorded were all in excess of 15m Length Overall (LOA).

88. For the purposes of this safety zone application, it has been assumed that fishing vessels may seek to transit through or actively fish within the array area. The AIS data is assumed as providing a good overall indication of activity; however, smaller non-AIS vessels may also be present noting these are not likely to be in significant numbers given the distance offshore. From the NRA (Anatec, 2018), there are some non-AIS fishing vessels operating in the area, although the 2024/25 dataset is considered to provide a reasonable indication of fishing vessel activity.

7.2.2.4 Oil and Gas Vessels

89. The tracks of the oil and gas vessels recorded within the study area during the 28-day period are presented in Figure 7.9.

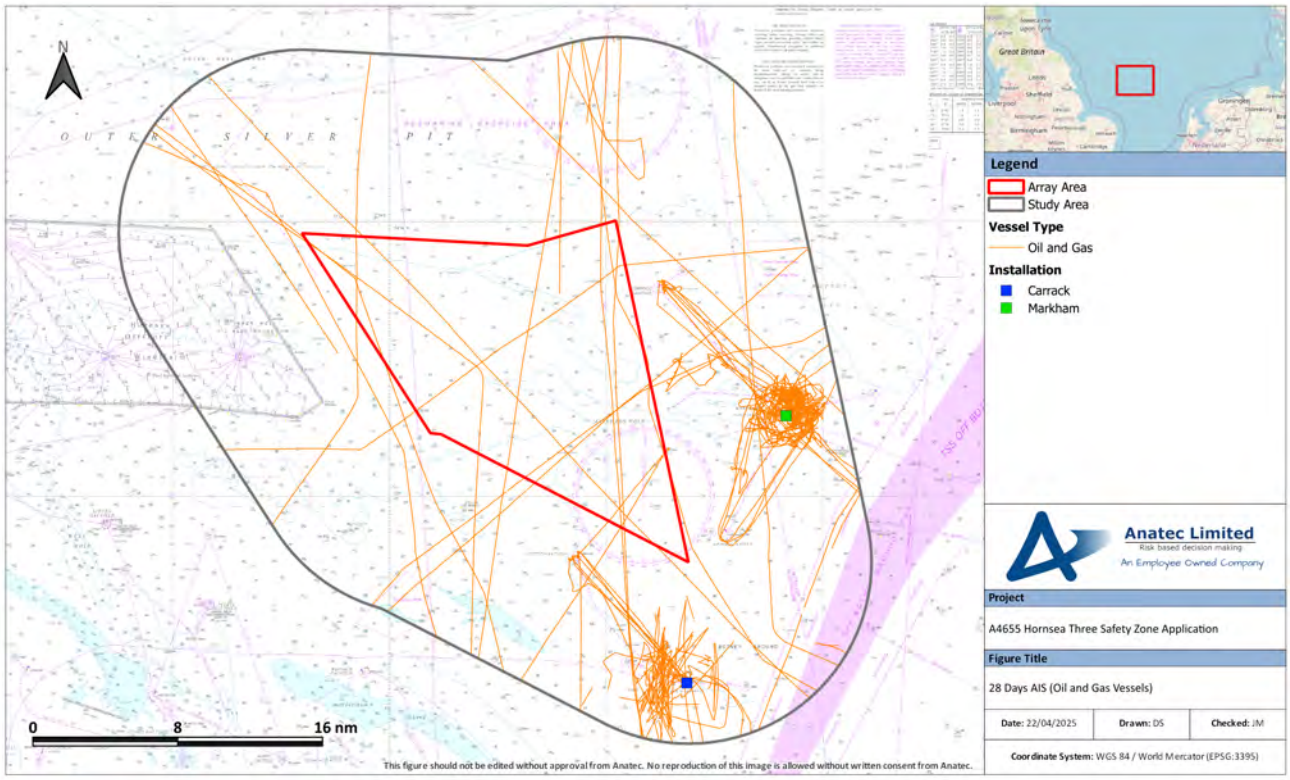

Figure 7.9 28 Days AIS (Oil and Gas Vessels)

90. Oil and gas vessels were recorded on transit, as well as operating at the Markham and Carrack gas fields to the east and south of the array area, respectively.

91. An average of three unique oil and gas vessels per day were recorded within the study area during the 28-day period, with an average of one every two days recorded intersecting the array area.

7.2.2.5 Passenger Vessels

92. The tracks of the passenger vessels recorded within the study area during the 28-day period are presented in Figure 7.10.

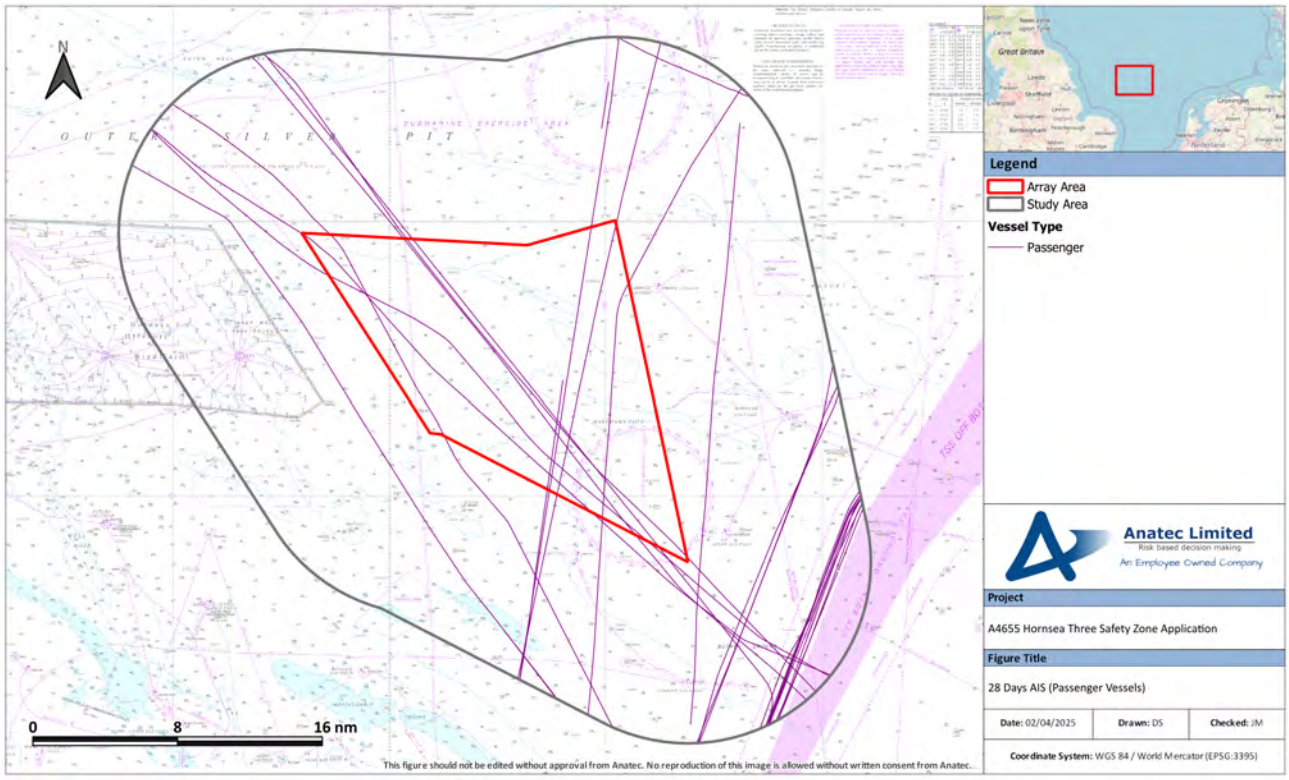

Figure 7.10 28 Days AIS (Passenger Vessels)

93. The passenger vessels recorded were typically cruise liners, with those intersecting the array area transiting in a northwest/southeast direction or north/south direction.

94. An average of one passenger vessel per day was recorded within the study area during the 28-day period, with an average of one every two days recorded intersecting the array area.

95. No regular Roll-on/Roll-off passenger (RoPax) vessel or ferry routeing was recorded within the study area.

7.2.2.6 Recreational Vessels

96. The tracks of the recreational vessels recorded within the study area during the 28-day period are presented in Figure 7.11.

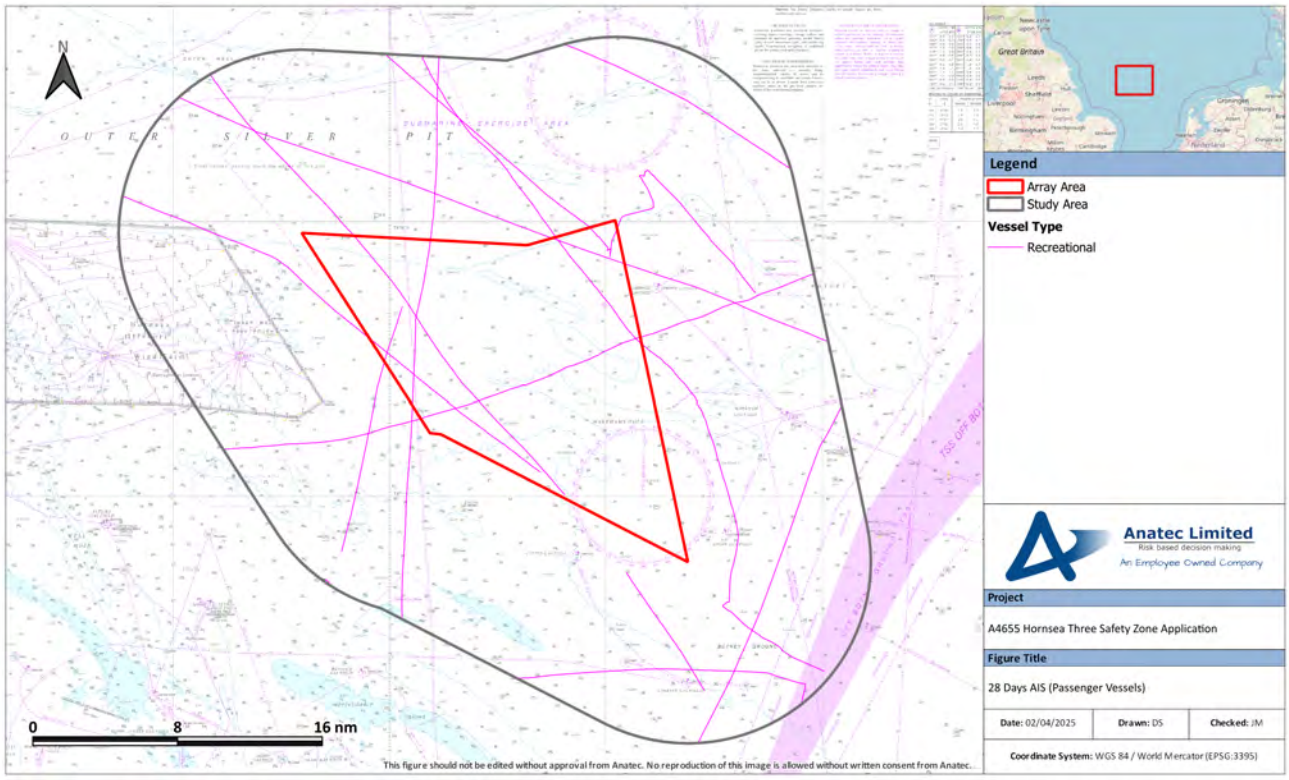

Figure 7.11 28 Days AIS (Recreational Vessels)

97. Recreational vessel transits were relatively low within the study area, which is expected due to the considerable distance offshore.

98. An average of one recreational vessel every two days was recorded within the study area during the 28-day period, with eight unique recreational vessels recorded intersecting the array area.

99. The AIS data is assumed as providing good overall indication of activity, however smaller non-AIS vessels may also be present noting these are not likely to be in significant numbers given the distance offshore. As with fishing vessels, from the NRA (Anatec, 2018) there are some non-AIS recreational vessels operating in the area, although based on general feedback from the Royal Yachting Association (RYA) take up of AIS equipment has increased over the nine years since the NRA dataset was collected in 2016 and so such vessels may now be accounted for in the vessel traffic data assessed here.

8 Safety Zone Overview

100. This section provides an indication as to what vessel scenarios are considered as triggering a safety zone during the construction and operation and maintenance phases of Hornsea Three. The list of scenarios presented is not considered to be exhaustive but does provide an indication of the types of activities that may require a safety zone.

101. The activities listed have been identified on the basis that they satisfy the following criteria:

- The activities are considered as being allowed safety zones under the relevant guidance and legislation as listed in Section 1.2.5; and
- Risk assessment has identified that where safety zones are able to be deployed under the legislative framework, such safety zones are a relevant mitigation measure to bring relevant risks (as per Section 9) to within As Low As Reasonably Practicable (ALARP) parameters.

102. The identified scenarios are listed below:

- Any construction operation involving a vessel Restricted in Ability to Manoeuvre (RAM) stationed at a structure (within 500 m);
- Any construction or major maintenance operation involving any kind of attachment to a structure (e.g., goods transfer, power cabling); and
- Any construction or major maintenance operation involving a vessel that is required to be anchored to the seabed next to the structure for the purposes of that operation (e.g., heavy lift operations).

9 Justifications for Safety Zones

103. An application for and use of safety zones was identified as an embedded mitigation measure within the NRA (Anatec, 2018). This section summarises the need for the safety zones based on:

- Vessel traffic analysis undertaken for this application as per Section 7;
- Experience of other similar or under construction projects; and
- Findings of the NRA.

9.1 Reduction in Collision Risk

104. Throughout the construction of Hornsea Three, various vessels will be present within the buoyed construction area to undertake the construction of the foundations, WTGs, OCSs and cables. Given the scale of these components and the sensitive nature of the associated works, the vessels on site will include those that are RAM with the potential for multiple such vessels to be on site simultaneously.

105. Project vessel numbers during operation are anticipated to be significantly less than during construction. However, during periods of major maintenance there may still be a requirement for RAM vessels undertaking similar sensitive operations to those during the construction phase.

106. The vessel traffic data assessed indicates commercial vessels do pass in proximity to Hornsea Three. Based on experience of under-construction OWFs, it is likely that once the array area is marked as a buoyed construction area, commercial vessels will deviate around, noting that details of Hornsea Three including in relation to the buoyage will be promulgated in advance of construction to assist in vessel passage planning. Such deviations are anticipated to include use of the navigation corridor defined between Hornsea Three, Hornsea Project One, and Hornsea Project Two. During the early stages of construction, although unlikely, limited numbers of commercial vessels may still choose to transit through the array area where a structure is under construction, and the 500 m rolling safety zones would make it clear to such vessels which areas should be particularly avoided to reduce collision risk to within ALARP parameters.

107. Fishing vessels are present in the study area based on the vessel traffic data assessed and may also choose to avoid the buoyed construction area. However, given the typical size of such vessels and nature of their activity, they may be more likely to enter into the site than larger commercial vessels and more comfortable passing closer to sensitive operations. Recreational vessel activity is anticipated to be limited, but again, any such vessels present in the area may choose to transit through. The 500 m rolling construction safety zones would make it clear to these smaller vessels the particular areas where such operations are being undertaken (i.e., those involving a RAM vessel), and as such which areas should be avoided to reduce collision risk to ALARP.

108. During the operation and maintenance phase, the commercial vessel deviations from the construction phase will be well established, and based on experience of under-construction OWFs, it is likely that commercial vessels will continue to follow these alternative routes. However, smaller vessels may choose to enter the array area and may be more likely to do so than during the construction phase given the lower project vessel volumes and absence of the buoyed construction area. The implementation of 500 m safety zones to protect any major maintenance activities will ensure collision risk to the associated vessels is ALARP.

9.2 Reduction in Allision Risk

109. As discussed in Section 9.1, it is likely that the majority of commercial vessels will avoid the array area once it is marked as a buoyed construction area and instead deviate around the construction works and structures. However, it should be considered that such vessels may still choose to transit through where the vessel Master considers it safe to do so, particularly during the early stages of construction when structures have not yet been constructed in portions of the buoyed construction area. Smaller vessels (e.g., fishing and recreational) may choose to avoid the site during construction; however, given their size and manoeuvrability may be more comfortable navigating through than commercial vessels.

110. The implementation of 50 m safety zones around constructed structures (partial or complete) would make it clear to passing vessels the particular areas which should be avoided to minimise allision risk. In this regard details of the safety zones would be promulgated in advance to ensure vessels were able to passage plan to account for the presence of the structures and associated safety zones. This promulgation would also increase awareness of Hornsea Three in general, further reducing allision risk.

111. As per Section 11, any safety zones would be monitored and policed to ensure they are an effective mitigation, noting that the formal approval of the safety zones provides the legislative framework to warn passing third-party vessels that entry into active safety zones is prohibited.

112. In summary, the use of safety zones as mitigation will reduce the allision risk to ALARP levels in combinations with the other mitigation implemented.

9.3 Protecting Project Personnel

113. During the construction phase or during periods of major maintenance there will be a notable increase in the number of crew and personnel on site. This includes personnel on RAM vessels which are at particular risk of collision as per Section 9.1 and also any personnel stationed on the structures themselves, which are at risk of allision as per Section 9.2.

114. Therefore, there is a need to ensure the safety of the crew working on-board construction/maintenance vessels throughout the construction and maintenance phases and any other on-site personnel. The implementation of mandatory 500 m safety zones provides an alert to vessels transiting within the area that a sensitive operation is underway and allows them to passage plan to maintain a safe passing distance for any activity. This ensures the safety of the crew and personnel to within ALARP parameters. Similarly, during the construction phase in situations where personnel were stationed on a structure but with no construction vessel alongside, the 50 m safety zones will reduce allision risk (see Section 9.2) and hence reduce risk to the personnel.

9.4 Prevention of Dangerous Behaviour

115. Experience at other OWFs has indicated that third-party vessels can pass sensitive operations at distances which are of concern to the construction or maintenance vessels engaged in those operations. During any such operations at Hornsea Three, the project vessels will be fully compliant with the International Regulations for Preventing Collisions at Sea (COLREGS) (International Maritime Organization (IMO), 1972), including watch keeping requirements.

116. Experience from other OWFs show that COLREGS does not fully provide the required level of mitigation to ensure that the safety of sensitive operations is not impacted by passing vessels. Although COLREGS provides responsibilities for vessels at sea, a clear demarcation of areas to be avoided for the safety of the project vessel, personnel, and third-party vessels and crew due to the risks of the operations occurring is required. By promulgating safety zones both in advance and at the time of operation, vessels can effectively passage plan to ensure they stay clear of any sensitive or dangerous operations, as identified by risk assessment. A 500 m safety zone radius is well known as a safe passing distance in the offshore wind industry, and prevents the ambiguity often presented in the wording of COLREGS. For example, Rule 18 states that:

117. A vessel engaged in fishing when underway shall, so far as possible, keep out of the way of:

i. a vessel not under command (NUC);

ii. a vessel restricted in her ability to manoeuvre (RAM).

118. "So far as is possible" is not defined, which often leads to confusion. The intention of safety zones is not to over-regulate traffic or prosecute the third-party mariner, but to ensure that those mariners are aware that entering active safety zones could lead to dangerous occurrences.

9.5 Assistance in Passage Planning

119. As per the International Convention for the Safety of Life at Sea (SOLAS) (IMO, 1974), all vessels are required to passage plan before proceeding to sea, taking all known and relevant factors into consideration. The implementation of safety zones will make it clear to all vessels the areas which should be avoided within the array area while constructing or once operational (where maintenance is underway). This facilitates effective passage planning and removes any ambiguity as to what warrants a safe passing distance (see Section 9.4).

9.6 Reduction in Fishing Gear Snagging

120. Based on the vessel traffic data studied (see Section 7.2.2.3), fishing vessels do currently transit within the array area. Based on speed and behaviour of the recorded vessels, this activity included active fishing.

121. The partially completed structures and IACs in proximity to structures both pose a snagging risk to deployed fishing gear. In addition, utilisation of anchor spread by construction/maintenance vessels will also pose a snagging risk. The implementation of 500 m safety zones around structures where construction or major maintenance works are ongoing and 50 m safety zones around completed structures (prior to commissioning of the wind farm) will therefore reduce the likelihood of an associated snagging incident.

9.7 Reduction in Interaction with Anchor Spread

122. The construction of the structures may include use of a construction vessel utilising an anchor spread. There may also be a need for similar activity during major maintenance. These subsea anchors and lines/chains create an interaction risk with vessels and their anchors. This could lead to severe consequences for the passing vessel and/or vessels associated with Hornsea Three, with the potential for injury or loss of life as a worst case.

123. The implementation of mandatory 500 m safety zones provides a buffer from passing traffic and thus reduces the likelihood of an anchor spread interaction.

124. As per Section 11, any safety zones would be monitored and policed to ensure they are an effective mitigation, noting that the formal approval of the safety zones provides the legislative framework to warn passing third-party vessels that entry into active safety zones is prohibited.

125. It is noted that anchor spreads could exceed the 500 m radius of the safety zones; however, the sections posing most under keel risk to passing vessels (i.e., lines/chains closest to the sea surface) will likely be within the 500 m radius. Other forms of mitigation such as marker buoys may be utilised to alert passing vessels to the full extent of any anchor spreads.

9.8 Accounting for Inexperienced Mariners

126. As discussed in Section 7.2.2.6, recreational traffic is limited in and near the array area. Given the distance offshore, it is likely that any recreational users would be experienced; however, it should be considered that there may be transits from recreational vessels that carry a lower standard of navigational equipment than commercial vessels, and/or with crews that may not be as experienced or have few formal qualifications.

127. Implementation of mandatory safety zones in conjunction with other embedded mitigation measures (e.g., guard vessel used where identified as necessary, construction site marking and charting) is therefore necessary to mitigate risks to any recreational users.

128. As previously detailed, if a vessel were to infringe upon a safety zone, and therefore become at risk of an allision and/or collision, the monitoring and policing procedures would be actioned as detailed in Section 11. Any infringements to these safety zones would be noted by the onsite vessel(s) and efforts made to contact the vessel using standard marine procedures, alerting it to the safety zone infringement. Furthermore, the on-site vessels shall be contactable (via Very High Frequency (VHF)) and be able to provide information to recreational vessels navigating in or in proximity to the site should they require.

129. Therefore, the implementation of safety zones in combination with other mitigation measures shall bring the risk to within ALARP parameters.

9.9 Accounting for Unforeseen Risk

130. During the construction phase and any periods of major maintenance, there is potential for a number of events to occur which may result in previously unforeseen risk. Such events could include:

- Fire/explosion on board construction/maintenance vessel;
- Machinery failure (including steering) on board construction/maintenance vessel;
- Cargo (e.g., structure components) shifting on board construction/maintenance vessel;
- Structural failure of OWF component;
- Dropped object;
- Accidental interaction with Unexploded Ordnance (UXO)/wreck; or
- Accident associated with adverse weather.

131. If any of these incidents were to occur throughout the construction/during periods of major maintenance of Hornsea Three, there is potential for loss of life and/or serious environmental damage. While safety zones would not necessarily directly mitigate any of these events in of themselves, they would decrease the likelihood of a third-party vessel being exposed to a hazard by sterilising the immediate working areas of existing vessel traffic. The presence of these safety zones allows third-party traffic to passage plan and pass at a safe distance and therefore reduces the risk of a third-party vessel becoming involved in any of the aforementioned unforeseen risk scenarios. This greatly reduces the overall severity of consequence to third-party users of any potential incident.

132. The safety zones will be implemented in combination with a suite of other mitigation measures (e.g., on-site vessel(s), construction site marking, lighting and marking, charting) thus bringing the risk to within ALARP parameters.

10 Impact of Safety Zones

133. This section considers the potential impact of safety zones on relevant traffic, which has been identified based on the vessel traffic assessment undertaken (see Section 7).

10.1 Commercial Vessel Routeing

134. Currently, commercial vessel routeing passes through the array area on a regular basis. These vessels are primarily cargo vessels and tankers. Some displacement of these vessels is therefore anticipated to occur, noting that from experience of other under-construction and operational OWFs, commercial vessels typically avoid navigating internally. Use of the navigation corridor between Hornsea Three, Hornsea Project One, and Hornsea Project Two is anticipated.

135. In the initial stages of the construction phase, some commercial vessels may still enter into the buoyed construction area. However, this would likely be into areas where construction works were not yet commenced and hence avoiding any active safety zone(s).

136. In addition, promulgation of information will be undertaken including details of active safety zones which will facilitate passage planning of commercial vessels.

137. On this basis, the safety zones are not considered as having any additional impact on commercial vessels over that of the structures themselves.

10.2 Fishing Vessels

138. As per Section 7.2.2.3 based on the available vessel traffic data, fishing vessels currently transit and actively fish (i.e., deploy gear) within and in proximity to the array area, noting that the analysis may underrepresent smaller fishing vessels (less than 15 m). It is therefore possible that fishing vessels may seek to transit and/or fish within the array area during the construction and operation and maintenance phases.

139. During the construction phase the 50 m pre-commissioning safety zones are considered unlikely to have any notable impact given the minimum spacing of approximately 1,000 m.

140. During the operation and maintenance phase, safety zones would only be active during periods of major maintenance and as such will only be present for limited periods of time, and will be lower in terms of frequency than during the construction phase

141. It should also be considered that promulgation of information will be undertaken in advance of any construction and major maintenance activities including in relation to associated safety zones. This will include through the Kingfisher Bulletin, the FLO the project FIRs.

142. Therefore, any impact from safety zones on fishing vessels is anticipated to be minimal.

10.3 Recreational Vessels

143. As per Section 7.2.2.6, the available data indicates that recreational activity within the array area is limited. However, transits may still occur noting these are likely to be from experienced recreational users. The decision as to whether to transit through would be at the discretion of each individual vessel.

144. Regardless, the minimum structure spacing of approximately 1,000 m is considered sufficient to facilitate recreational vessel transits including the implementation of 50 m pre-commissioning safety zones and 500 m construction or major maintenance safety zones.

145. The low expected numbers of recreational vessels indicates that any impact from safety zones on recreational users is likely to be minimal.

10.4 Anchored Vessels

146. Assessment of the information transmitted via AIS and an additional behavioural assessment was undertaken to identify any potential instances of vessel anchoring within the study area. No anchoring

activity was identified on this basis, noting this is to be expected given the distance offshore. It is considered unlikely that a third-party vessel would deliberately choose to anchor within the array area during construction or operation, except in an emergency.

147. On this basis any impact from the safety zones on anchoring activity is likely to be minimal.

11 Monitoring and Policing

11.1 Monitoring

148. Safety zones are most effectively monitored through the use of a guard vessel, or other mobile on-site vessel which is not deemed critical to construction or operational activities. However, as such a vessel may not always be available (e.g., during periods of adverse weather), a tiered approach to the monitoring of safety zones will be undertaken. This will ensure that safety zones can remain as an active mitigation measure even when a dedicated monitoring vessel is unavailable. The approach is as follows:

- Where a guard vessel, or other mobile vessel is on-site and able to be assigned dedicated monitoring duties, the safety zones will be monitored and policed by this vessel;
- Where no such vessel is available, a vessel associated with the relevant construction or maintenance operation will undertake monitoring (i.e., a crew member on board will be assigned monitoring/policing duties); and
- Where no vessel is present, and where coverage allows, monitoring will be undertaken via AIS.

149. Where a vessel is monitoring the safety zone, Radar, AIS, VHF communications and visual observations shall be utilised to make early contact with any third-party vessels in the area approaching the array area to alert them to the presence of any currently active (or soon to be active) safety zones. A vessel observed to enter into a safety zone (or pass in close proximity) will be contacted by the monitoring vessel (using standard marine procedures), and informed that they have or are close to infringing the safety zone. The vessel will be instructed to increase their minimum passing distance from the safety zone and to avoid or refrain from entering them in the future.

150. Where no monitoring vessel is available, AIS coverage will be monitored where practical to identify any vessels approaching or infringing the active safety zones. Where feasible, contact will be made with the associated vessels at the earliest opportunity, and details of any incidents will be logged, with the AIS evidence retained for submission to DESNZ where appropriate (see Section 11.2).

151. It is noted that direct navigational advice will not be given to any vessel. Standard marine terminology will be used to warn the vessel that action to avoid the safety zone would be required.

11.2 Policing

152. Where feasible, details and actions of any vessels which consistently ignore the warnings issued by the designated monitoring vessel (see Section 11.1) or are considered to be causing a potential danger to vessels, personnel or assets within the safety zone areas will be monitored and action (including steps taken) recorded. Where a safety zone infringement is reported to DESNZ any supporting evidence will be included such as AIS recording and witness statements.

153. DESNZ will then decide what action, in consultation with other stakeholders including the MCA, is required. Prosecutions are only likely to be sought where infringements are deliberate and malicious, causing damage, nuisance or endangering lives. Due regard will be given to the relevant exceptions to infringement detailed in the legislation (see Section 1.2), in particular prosecution would not be sought in the event of a third-party vessel entering into a safety zone to fulfil obligations under SOLAS (IMO, 1974) to render assistance to persons in danger.

11.3 Existing Experience

154. It is noted that due to the development of other existing OWFs in proximity (e.g., Hornsea Project One, Hornsea Project Two), the majority of regular operators are likely to be familiar with the implementation and operation of construction/major maintenance safety zones, and the associated procedures around how they are monitored and policed. In particular, it is noted that safety zones have been implemented at Hornsea Project One and Hornsea Project Two, where relevant, since offshore construction began in 2018 and 2020, respectively.

12 Summary

155. This document represents a safety case demonstrating the need for safety zones to be implemented at Hornsea Three. Safety zones have been applied for during the construction and operation and maintenance phases as follows:

- 'Rolling' (i.e., active only when construction is ongoing) 500 m safety zones established around each WTG/OCS, and/or their foundations, whilst construction work is being performed, as indicated by the presence of a construction vessel(s);
- Construction 50 m safety zones established around any WTG/OCS which is either partially completed or fully constructed where a construction vessel is not present prior to commissioning of the OWF; and
- 500 m safety zones around all 'major maintenance' being undertaken around a WTG/OCS, as denoted by the presence of a major maintenance vessel.

156. The safety case indicates the safety zones (in combination with other mitigation measures) are necessary to bring the following risks to within ALARP parameters:

- Collision risk;
- Allision risk;
- Interaction with the anchor spread of construction/maintenance vessels;
- Risks to persons involved in the construction/maintenance process; and
- Fishing gear snagging.

157. The safety zones will also facilitate advanced passage planning by third-party vessels and reduce consequences in the event of an unforeseen emergency incident by decreasing the likelihood that a third-party vessel will be in proximity. The findings of the vessel traffic data have indicated no significant impacts to third-party vessels are expected from the safety zones, and thus they are considered a proportionate mitigation measure.

158. The safety zones shall primarily be monitored for infringements by third-party vessels by a guard vessel (used where identified as necessary), or other nominated vessel. Where such a vessel is unavailable, AIS would be used where feasible for monitoring purposes. The primary response to potential infringement will be to warn passing traffic of the ongoing works and any active safety zones, and to alert any vessels where an infringement may occur or has already occurred by VHF radio. Records of all infringements shall be kept and, if necessary, evidence passed to DESNZ and the MCA for follow-up action if deemed appropriate.

13 References

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IALA, 2021. G1162 the Marking of Offshore Man-Made Structures. Saint Germaine en Laye, France: IALA.

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Appendix A Structure Coordinates

The table below presents the coordinates for each structure within the array area. This includes positions for WTGs, OCSs and spares, as outlined in Section 2.1. The ID associated with each position – and referenced in the table – is illustrated in the figure below.

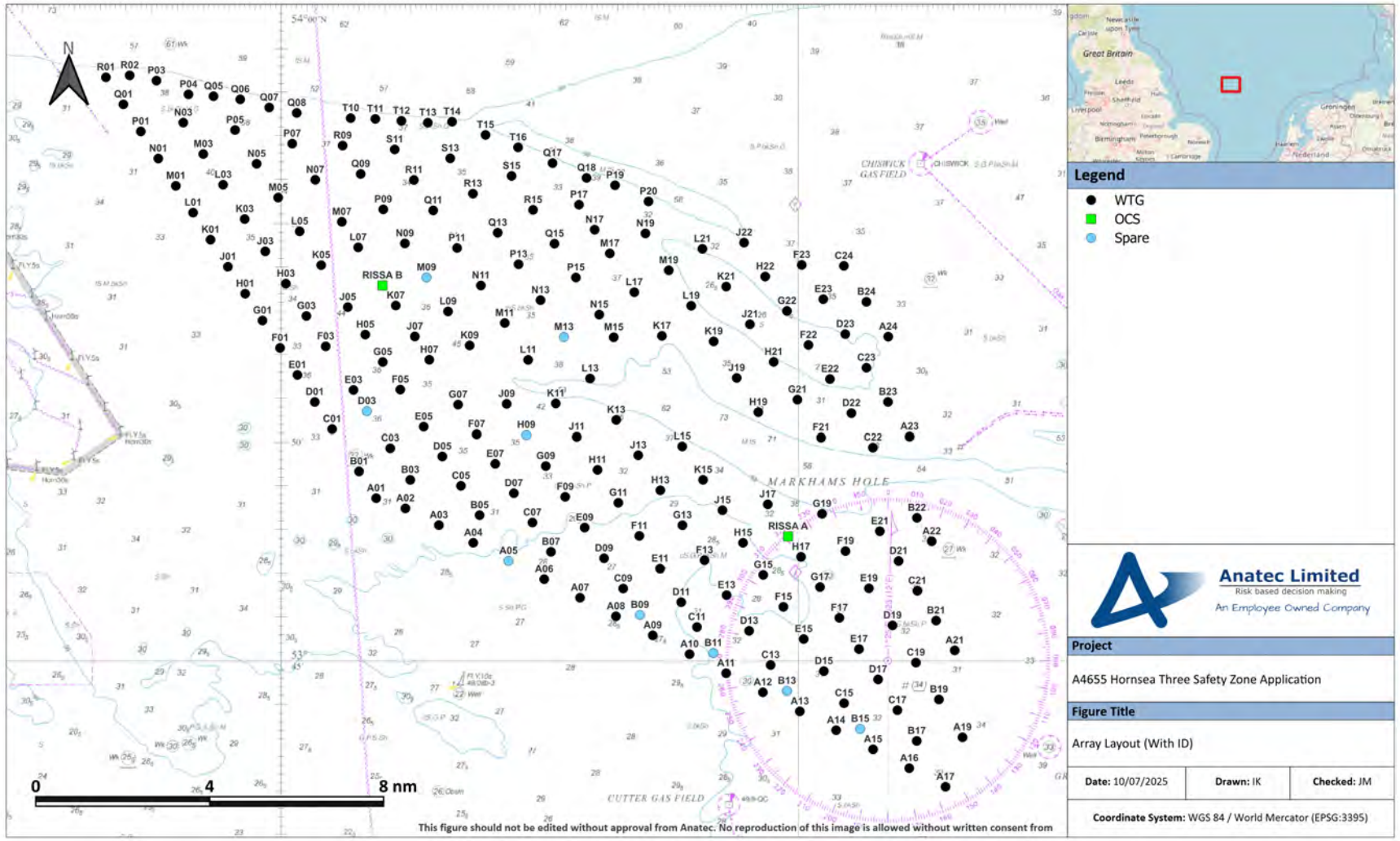

Figure 13.1 Array Layout Number 240 (With IDs)

ID	Structure	Latitude (World Geodetic System 1894 (WGS84))	Longitude (WGS84)
A01	WTG	53° 48.710′ N	002° 23.663′ E
A02	WTG	53° 48.477′ N	002° 24.794′ E
A03	WTG	53° 48.093′ N	002° 26.090′ E
A04	WTG	53° 47.689′ N	002° 27.420′ E
A05	Spare	53° 47.274′ N	002° 28.783′ E
A06	WTG	53° 46.854′ N	002° 30.163′ E
A07	WTG	53° 46.428′ N	002° 31.549′ E
A08	WTG	53° 46.002′ N	002° 32.937′ E
A09	WTG	53° 45.565′ N	002° 34.362′ E
A10	WTG	53° 45.133′ N	002° 35.785′ E
A11	WTG	53° 44.696′ N	002° 37.198′ E
A12	WTG	53° 44.258′ N	002° 38.621′ E
A13	WTG	53° 43.820′ N	002° 40.050′ E
A14	WTG	53° 43.387′ N	002° 41.454′ E
A15	WTG	53° 42.948′ N	002° 42.883′ E
A16	WTG	53° 42.514′ N	002° 44.282′ E
A17	WTG	53° 42.087′ N	002° 45.685′ E
A19	WTG	53° 43.225′ N	002° 46.341′ E
A21	WTG	53° 45.220′ N	002° 46.043′ E
A22	WTG	53° 47.722′ N	002° 45.150′ E
A23	WTG	53° 50.116′ N	002° 44.295′ E
A24	WTG	53° 52.398′ N	002° 43.468′ E
B01	WTG	53° 49.323′ N	002° 23.002′ E
B03	WTG	53° 49.130′ N	002° 24.982′ E
B05	WTG	53° 48.321′ N	002° 27.663′ E
B07	WTG	53° 47.481′ N	002° 30.425′ E
B09	Spare	53° 46.034′ N	002° 33.865′ E
B11	Spare	53° 45.159′ N	002° 36.706′ E
B13	Spare	53° 44.291′ N	002° 39.551′ E
B15	Spare	53° 43.419′ N	002° 42.384′ E
B17	WTG	53° 43.141′ N	002° 44.572′ E
B19	WTG	53° 44.093′ N	002° 45.430′ E
B21	WTG	53° 45.903′ N	002° 45.319′ E
B22	WTG	53° 48.261′ N	002° 44.579′ E
B23	WTG	53° 50.903′ N	002° 43.460′ E
B24	WTG	53° 53.195′ N	002° 42.625′ E
C01	WTG	53° 50.283′ N	002° 21.961′ E
C03	WTG	53° 49.852′ N	002° 24.209′ E
C05	WTG	53° 48.994′ N	002° 26.943′ E
C07	WTG	53° 48.153′ N	002° 29.707′ E
C09	WTG	53° 46.639′ N	002° 33.217′ E
C11	WTG	53° 45.755′ N	002° 36.071′ E
C13	WTG	53° 44.883′ N	002° 38.921′ E

C15	WTG	53° 44.008′ N	002° 41.760′ E
C17	WTG	53° 43.847′ N	002° 43.824′ E
C19	WTG	53° 44.939′ N	002° 44.541′ E
C21	WTG	53° 46.587′ N	002° 44.595′ E
C22	WTG	53° 49.867′ N	002° 42.875′ E
C23	WTG	53° 51.687′ N	002° 42.626′ E
C24	WTG	53° 54.017′ N	002° 41.753′ E
D01	WTG	53° 50.902′ N	002° 21.290′ E
D03	Spare	53° 50.694′ N	002° 23.304′ E
D05	WTG	53° 49.666′ N	002° 26.223′ E
D07	WTG	53° 48.825′ N	002° 28.988′ E
D09	WTG	53° 47.333′ N	002° 32.479′ E
D11	WTG	53° 46.326′ N	002° 35.463′ E
D13	WTG	53° 45.668′ N	002° 38.089′ E
D15	WTG	53° 44.744′ N	002° 40.979′ E
D17	WTG	53° 44.554′ N	002° 43.076′ E
D19	WTG	53° 45.793′ N	002° 43.635′ E
D21	WTG	53° 47.270′ N	002° 43.870′ E
D22	WTG	53° 50.647′ N	002° 42.045′ E
D23	WTG	53° 52.457′ N	002° 41.808′ E
E01	WTG	53° 51.521′ N	002° 20.618′ E
E03	WTG	53° 51.177′ N	002° 22.786′ E
E05	WTG	53° 50.339′ N	002° 25.502′ E
E07	WTG	53° 49.497′ N	002° 28.269′ E
E09	WTG	53° 48.037′ N	002° 31.727′ E
E11	WTG	53° 47.095′ N	002° 34.643′ E
E13	WTG	53° 46.487′ N	002° 37.216′ E
E15	WTG	53° 45.480′ N	002° 40.198′ E
E17	WTG	53° 45.251′ N	002° 42.338′ E
E19	WTG	53° 46.644′ N	002° 42.722′ E
E21	WTG	53° 47.953′ N	002° 43.145′ E
E22	WTG	53° 51.427′ N	002° 41.214′ E
E23	WTG	53° 53.256′ N	002° 40.958′ E
F01	WTG	53° 52.140′ N	002° 19.947′ E
F03	WTG	53° 52.176′ N	002° 21.712′ E
F05	WTG	53° 51.187′ N	002° 24.596′ E
F07	WTG	53° 50.169′ N	002° 27.550′ E
F09	WTG	53° 48.742′ N	002° 30.975′ E
F11	WTG	53° 47.846′ N	002° 33.842′ E
F13	WTG	53° 47.289′ N	002° 36.363′ E
F15	WTG	53° 46.219′ N	002° 39.413′ E
F17	WTG	53° 45.967′ N	002° 41.579′ E
F19	WTG	53° 47.498′ N	002° 41.816′ E
F21	WTG	53° 50.094′ N	002° 40.873′ E
F22	WTG	53° 52.207′ N	002° 40.383′ E

F23	WTG	53° 54.040′ N	002° 40.123′ E
G01	WTG	53° 52.768′ N	002° 19.265′ E
G03	WTG	53° 52.871′ N	002° 20.964′ E
G05	WTG	53° 51.818′ N	002° 23.918′ E
G07	WTG	53° 50.842′ N	002° 26.832′ E
G09	WTG	53° 49.446′ N	002° 30.223′ E
G11	WTG	53° 48.605′ N	002° 33.031′ E
G13	WTG	53° 48.090′ N	002° 35.509′ E
G15	WTG	53° 46.952′ N	002° 38.634′ E
G17	WTG	53° 46.673′ N	002° 40.830′ E
G19	WTG	53° 48.352′ N	002° 40.909′ E
G21	WTG	53° 50.957′ N	002° 39.956′ E
G22	WTG	53° 52.986′ N	002° 39.550′ E
H01	WTG	53° 53.381′ N	002° 18.599′ E
H03	WTG	53° 53.610′ N	002° 20.170′ E
H05	WTG	53° 52.445′ N	002° 23.243′ E
H07	WTG	53° 51.869′ N	002° 25.719′ E
H09	Spare	53° 50.151′ N	002° 29.470′ E
H11	WTG	53° 49.360′ N	002° 32.225′ E
H13	WTG	53° 48.892′ N	002° 34.654′ E
H15	WTG	53° 47.688′ N	002° 37.852′ E
H17	WTG	53° 47.366′ N	002° 40.097′ E
H19	WTG	53° 50.670′ N	002° 38.443′ E
H21	WTG	53° 51.819′ N	002° 39.038′ E
H22	WTG	53° 53.773′ N	002° 38.711′ E
J01	WTG	53° 53.997′ N	002° 17.929′ E
J03	WTG	53° 54.349′ N	002° 19.374′ E
J05	WTG	53° 53.075′ N	002° 22.565′ E
J07	WTG	53° 52.403′ N	002° 25.160′ E
J09	WTG	53° 50.860′ N	002° 28.711′ E
J11	WTG	53° 50.111′ N	002° 31.421′ E
J13	WTG	53° 49.693′ N	002° 33.800′ E
J15	WTG	53° 48.435′ N	002° 37.058′ E
J17	WTG	53° 48.570′ N	002° 38.810′ E
J19	WTG	53° 51.453′ N	002° 37.609′ E
J21	WTG	53° 52.681′ N	002° 38.120′ E
J22	WTG	53° 54.549′ N	002° 37.893′ E
K01	WTG	53° 54.616′ N	002° 17.256′ E
K03	WTG	53° 55.088′ N	002° 18.579′ E
K05	WTG	53° 54.034′ N	002° 21.536′ E
K07	WTG	53° 53.110′ N	002° 24.422′ E
K09	WTG	53° 52.197′ N	002° 27.278′ E
K11	WTG	53° 50.869′ N	002° 30.611′ E
K13	WTG	53° 50.492′ N	002° 32.948′ E
K15	WTG	53° 49.131′ N	002° 36.308′ E

K17	WTG	53° 52.416′ N	002° 34.717′ E
K19	WTG	53° 52.289′ N	002° 36.717′ E
K21	WTG	53° 53.543′ N	002° 37.201′ E
L01	WTG	53° 55.234′ N	002° 16.583′ E
L03	WTG	53° 55.872′ N	002° 17.744′ E
L05	WTG	53° 54.807′ N	002° 20.705′ E
L07	WTG	53° 54.441′ N	002° 22.967′ E
L09	WTG	53° 52.975′ N	002° 26.444′ E
L11	WTG	53° 51.867′ N	002° 29.541′ E
L13	WTG	53° 51.440′ N	002° 31.937′ E
L15	WTG	53° 49.894′ N	002° 35.502′ E
L17	WTG	53° 53.415′ N	002° 33.648′ E
L19	WTG	53° 53.104′ N	002° 35.847′ E
L21	WTG	53° 54.405′ N	002° 36.282′ E
M01	WTG	53° 55.847′ N	002° 15.916′ E
M03	WTG	53° 56.575′ N	002° 16.976′ E
M05	WTG	53° 55.579′ N	002° 19.872′ E
M07	WTG	53° 55.026′ N	002° 22.337′ E
M09	Spare	53° 53.753′ N	002° 25.609′ E
M11	WTG	53° 52.710′ N	002° 28.637′ E
M13	Spare	53° 52.391′ N	002° 30.923′ E
M15	WTG	53° 52.384′ N	002° 32.852′ E
M17	WTG	53° 54.301′ N	002° 32.701′ E
M19	WTG	53° 53.916′ N	002° 34.980′ E
N01	WTG	53° 56.471′ N	002° 15.235′ E
N03	WTG	53° 57.292′ N	002° 16.203′ E
N05	WTG	53° 56.350′ N	002° 19.040′ E
N07	WTG	53° 55.985′ N	002° 21.308′ E
N09	WTG	53° 54.531′ N	002° 24.774′ E
N11	WTG	53° 53.569′ N	002° 27.715′ E
N13	WTG	53° 53.233′ N	002° 30.019′ E
N15	WTG	53° 52.903′ N	002° 32.291′ E
N17	WTG	53° 54.845′ N	002° 32.114′ E
N19	WTG	53° 54.759′ N	002° 34.078′ E
P01	WTG	53° 57.090′ N	002° 14.561′ E
P03	WTG	53° 58.250′ N	002° 15.166′ E
P04	WTG	53° 57.937′ N	002° 16.404′ E
P05	WTG	53° 57.122′ N	002° 18.206′ E
P07	WTG	53° 56.811′ N	002° 20.417′ E
P09	WTG	53° 55.309′ N	002° 23.938′ E
P11	WTG	53° 54.427′ N	002° 26.793′ E
P13	WTG	53° 54.054′ N	002° 29.170′ E
P15	WTG	53° 53.751′ N	002° 31.388′ E
P17	WTG	53° 55.416′ N	002° 31.508′ E
P19	WTG	53° 55.860′ N	002° 32.902′ E

P20	WTG	53° 55.490′ N	002° 34.197′ E
Q01	WTG	53° 57.708′ N	002° 13.886′ E
Q05	WTG	53° 57.894′ N	002° 17.373′ E
Q06	WTG	53° 57.823′ N	002° 18.406′ E
Q07	WTG	53° 57.637′ N	002° 19.525′ E
Q08	WTG	53° 57.513′ N	002° 20.592′ E
Q09	WTG	53° 56.119′ N	002° 23.065′ E
Q11	WTG	53° 55.286′ N	002° 25.870′ E
Q13	WTG	53° 54.775′ N	002° 28.364′ E
Q15	WTG	53° 54.525′ N	002° 30.560′ E
Q17	WTG	53° 56.367′ N	002° 30.485′ E
Q18	WTG	53° 56.029′ N	002° 31.801′ E
R01	WTG	53° 58.327′ N	002° 13.211′ E
R02	WTG	53° 58.370′ N	002° 14.130′ E
R09	WTG	53° 56.768′ N	002° 22.367′ E
R11	WTG	53° 55.982′ N	002° 25.122′ E
R13	WTG	53° 55.668′ N	002° 27.406′ E
R15	WTG	53° 55.298′ N	002° 29.732′ E
RISSA A	OCS	53° 47.834′ N	002° 39.595′ E
RISSA B	OCS	53° 53.569′ N	002° 23.906′ E
S11	WTG	53° 56.679′ N	002° 24.380′ E
S13	WTG	53° 56.476′ N	002° 26.528′ E
S15	WTG	53° 56.073′ N	002° 28.901′ E
T10	WTG	53° 57.394′ N	002° 22.678′ E
T11	WTG	53° 57.377′ N	002° 23.631′ E
T12	WTG	53° 57.332′ N	002° 24.639′ E
T13	WTG	53° 57.291′ N	002° 25.661′ E
T14	WTG	53° 57.312′ N	002° 26.599′ E
T15	WTG	53° 57.010′ N	002° 27.894′ E
T16	WTG	53° 56.726′ N	002° 29.152′ E