DOGGER BANK D WIND FARM

Preliminary Environmental Information Report

Volume 2
Appendix 14.2 Commercial Fisheries Extended Baseline Report

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Acronyms

Term	Definition
AIS	Automatic Identification System
DBD	Dogger Bank D Offshore Wind Farm
DCF	Data Collection Framework
DCO	Development Consent Order
ECC	Export Cable Corridor
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FLO	Fisheries Liaison Officer
GIS	Geographic Information System
ICES	International Council for the Exploration of the Sea
IFCA	Inshore Fisheries and Conservation Authority
MAP	Multi Annual management Plan
MCRS	Minimum Conservation Reference Size
MMO	Marine Management Organisation
NFFO	National Federation of Fishermen's Organisations
NRA	Navigational Risk Assessment
PEIR	Preliminary Environmental Information Report
PLN	Port Letter and Number
SAR	Swept Area Ratio
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
TCA	Trade and Cooperation Agreement
UK	United Kingdom
UKFEN	UK Fisheries Economic Network
VMS	Vessel Monitoring System

Units

Term	Definition
€	Euros
£	Pound sterling
°C	Degrees Celsius
cm	Centimetres
hp	Horsepower
kg	Kilograms
km	Kilometres
knots	Nautical mile per hour
kW	Kilowatts
m	Metres
mm	Millimetres
nm	Nautical Mile
t	Tonne

Glossary

Term	Definition
Array area	The area within which the wind turbines, inter-array cables and Offshore Platform(s) will be located.
Automatic Identification System	A system by which vessels automatically broadcast their identity and key statistics including location, destination, length, speed and current status. Most commercial vessels and European Union fishing vessels over 15 metres (m) in length are required to carry AIS.
Beam trawl	A method of bottom trawling with a net that is held open by a beam, which is generally a heavy steel tube supported by steel trawl heads at each end. Tickler chains or chain mats, attached between the beam and the ground rope of the net, are used to disturb fish and crustaceans that rise up and fall back into the attached net.
Brexit	The withdrawal of the United Kingdom (UK) from the European Union (EU).
Bycatch	Catch which is retained and sold but is not the target species for the fishery.
COVID-19 pandemic	The COVID-19 pandemic was a global outbreak of coronavirus, an infectious disease caused by the severe acute respiratory syndrome coronavirus, first identified in 2019.
Demersal	Living on or near the seabed.
Demersal seine	A seine net is a long net, with or without a bag in the centre, which is set either from the shore or from a boat for surrounding a certain area and is operated with two (long) ropes fixed to its ends (for hauling and herding the fish).
Development Consent Order (DCO)	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.
Dhan	A marker flag made of very hard-wearing material located on a pole or buoy to mark location of fishing gear.
Diel	Refers to a 24-hour period or event that occurs on a daily cycle, and is commonly used to describe the vertical migration of fish.
Environmental Impact Assessment (EIA)	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, which sets out the EIA process for assessing the likely significant effects of a project on the environment.
Environmental Statement (ES)	The suite of documents that detail the processes and results of the Environmental Impact Assessment (EIA).
Fish stock	Any natural population of fish which an isolated and self-perpetuating group of the same species.
Fishery	A group of vessel voyages which target the same species or use the same gear.
Fishing ground	An area of water or seabed targeted by fishing activity.
Fishing mortality	Mortality due to fishing; death or removal of fish from a population due to fishing.
Fleet	A physical group of vessels sharing similar characteristics (e.g. nationality).
Gear type	The method / equipment used for fishing.

Term	Definition
ICES statistical rectangles	ICES standardise the division of sea areas to enable statistical analysis of data. Each ICES statistical rectangle is '30 min latitude by 1 degree longitude' in size (approximately 30 x 30 nautical miles). A number of rectangles are amalgamated to create ICES statistical areas.
Landings	Quantitative description of amount of fish returned to port for sale, in terms of value or weight.
Maximum Sustainable Yield	Maximum sustainable yield (MSY) is the largest yield (catch, in tonnes) that can be taken from a specific fish stock over an indefinite period under constant environmental conditions. Fishing at MSY levels should ensure the capacity of the stock to continue to produce this level in the long term.
Metier	A homogenous subdivision, either of a fishery by vessel type or a fleet by voyage type.
Minimum Conservation Reference Size (MCRS)	For the protection and conservation of fisheries resources, MCRS are applied to certain species of fish and shellfish. The MCRS is the size of a living marine aquatic species below which restrictions or incentives apply that aim to avoid capture through fishing activity.
Minimum Landing Size (MLS)	A technical measure that limits the size of fish or shellfish species that can be legally landed and sold. The MLS varies per species. With the implementation of the Landings Obligation, the existing MLS are changed into minimum conservation reference sizes (MCRS), but they will remain largely the same.
Offshore Export Cable Corridor (ECC)	The area within which the offshore export cables will be located, extending from the DBD Array Area to Mean High Water Springs at the landfall.
Otter trawl	A net with large rectangular boards (otter boards) which are used to keep the mouth of the trawl net open. Otter boards are made of timber or steel and are positioned in such a way that the hydrodynamic forces, acting on them when the net is towed along the seabed, pushes them outwards and prevents the mouth of the net from closing.
Preliminary Environmental Information Report (PEIR)	The PEIR was written in the style of a draft Environmental Statement (ES) and provided information to support and inform the statutory consultation process in the pre-application phase. Following that consultation, the PEIR documentation has been updated to produce the Project's ES that accompanies the application for the Development Consent Order (DCO).
Pelagic	Of or relating to the open sea.
Pelagic trawl	A net used to target fish species in the mid water column.
Quota	A proportion of the Total Allowable Catch for a fish stock.
Recruitment	Recruitment can be defined as the number of fish surviving to enter the fishery or to some life history stage such as settlement or maturity.
Scallop dredge	A method to catch scallop using steel dredges with a leading bar fitted with a set of spring loaded, downward pointing teeth. Behind this toothed bar (sword), a mat of steel rings is fitted. A heavy net cover (back) is laced to the frame, sides and after end of the mat to form a bag.
Spawning	The act of releasing or depositing eggs (fish).
Spawning stock biomass	The combined weight (in tonnes) of all the fish of one specific stock that are old enough to spawn. It provides an indication of the status of the stock and the reproductive capacity of the stock.

Term	Definition
Stock assessment	An assessment of the biological stock of a species and its status in relation to defined references points for biomass and fishing mortality.
String	A series of static fishing gear (pots) joined together to form a single deployable linear line of pots.
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 PEIR.
Total Allowable Catch (TAC)	TACs are catch limits, expressed in tonnes or numbers, that are set for some commercial fish stocks.
Vessel Monitoring System (VMS)	A system used in commercial fishing to allow environmental and fisheries regulatory organizations to monitor, minimally, the position, time at a position, and course and speed of fishing vessels.
Vivier	Vivier crabbers are generally larger vessels with the ability to retain large numbers of live crab onboard in storage tanks.

1. Introduction

1 This document has been prepared by NiMa Consultants Ltd (NiMa) to support the Environmental Impact Assessment (EIA) of the Dogger Bank D Offshore Wind Farm Project (hereafter the 'Project' or 'DBD').

2 The information on commercial fisheries activity presented in this document is intended to inform the EIA for the Project by providing a detailed understanding of the commercial fisheries baseline, against which the potential impacts of the Project can be assessed. An overview of the information presented in this Technical Report is provided in Volume 1, **Chapter 14: Commercial Fisheries** of the Preliminary Environmental Information Report (PEIR).

3 This document describes commercial fisheries activity, defined as fishing activity legally undertaken where the catch is sold for taxable profit. A description of charter angling activity, defined as fishing for marine species where the purpose is recreation and not sale or trade, is provided in Volume 1, **Chapter 18: Infrastructure and Other Marine Users**. The ecology of the fish and shellfish species targeted by commercial fishing activity is described in Volume 1, **Chapter 11: Fish and Shellfish Ecology**. Maritime shipping activity, inclusive of commercial fishing vessel activity where relevant, is described in **Chapter 15: Shipping and Navigation**.

1.1 Report Structure

4 This report is structured as follows:

- Section 1 – introduces the report and outlines its purpose;
- Section 2 – presents the study area over which commercial fisheries baseline activity is characterised;

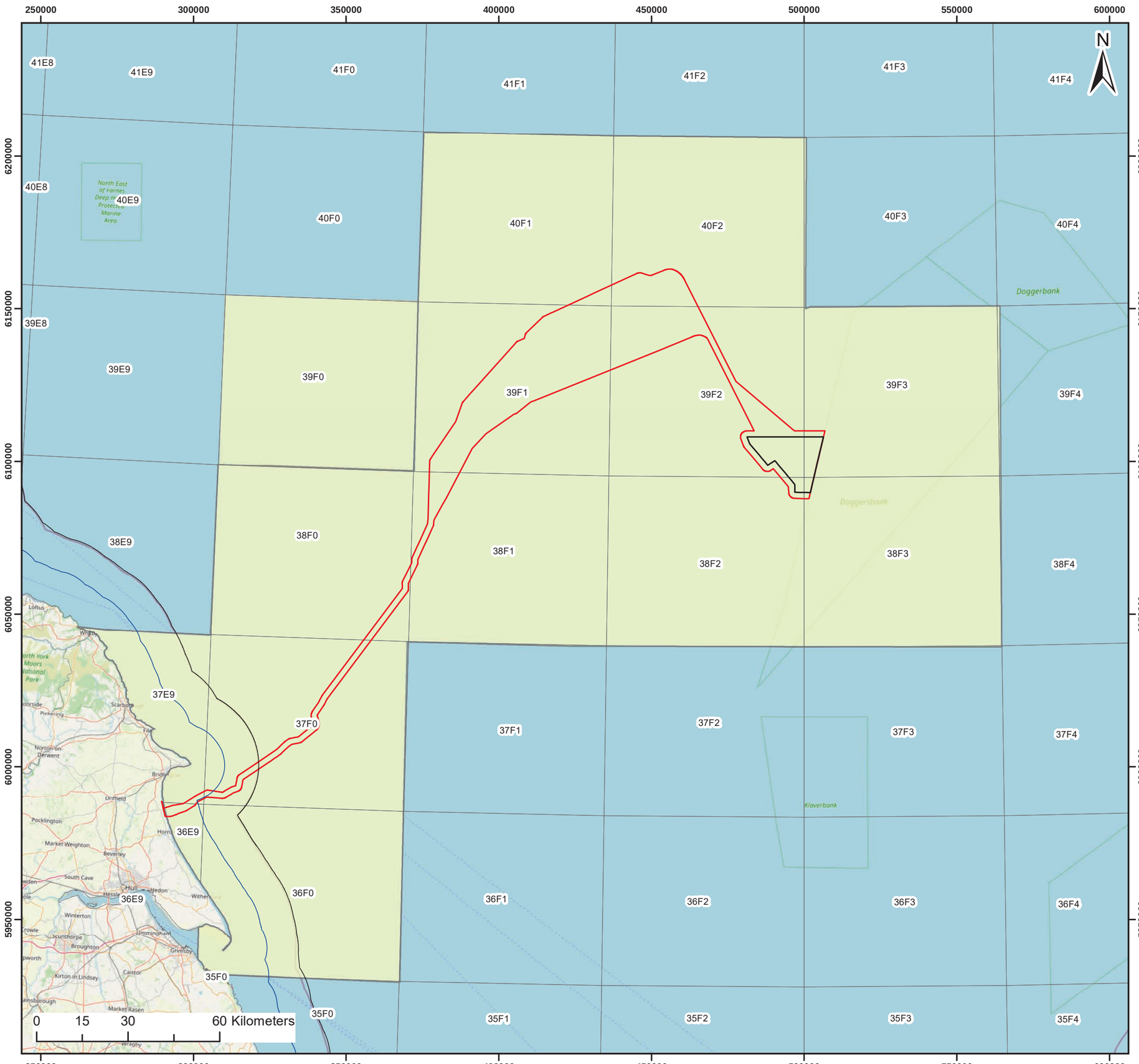
5 Section 3 – presents the methodology and data sources applied to characterise the baseline environment;

- Sections 4 to 8 – present the characterisation of the existing environment for the commercial fisheries assessment;
- Section 9 – presents the characterisation of the future baseline environment; and,
- Section 10 – summarises the findings of this report.

2. Study Area

6 The Project is located within the western portion of the International Council for the Exploration of the Sea (ICES) Division 4b (Central North Sea) statistical area, within UK Exclusive Economic Zone (EEZ) waters, with the Array Area and a large portion of the offshore export cable corridor (ECC) located outside of the 12 nautical mile (nm) limit. For the purposes of recording fisheries landings, ICES Division 4b is divided into statistical rectangles which are consistent across the UK and European Member States operating in the North Sea. Each ICES statistical rectangle is '30 min latitude and 1 degree longitude' in size, which equates to approximately 30 nm^2.

7 The Array Area is located primarily in ICES rectangle 39F2 (spatially occupying just under 5% of ICES rectangle 39F2), with relatively smaller areas of overlap with ICES rectangles 39F3 (approximately 2%), 38F2 (0.5%) and 38F3 (0.4%). The offshore ECC is located within portions of several ICES rectangles. Based on this spatial overlap of the Project's Development Area with ICES rectangles, the Commercial Fisheries Study Area (hereafter referred to as 'the Study Area') has been defined as the following fourteen ICES rectangles 36E9, 36F0, 37E9, 37F0, 38F0, 38F1, 38F2, 38F3, 39F0, 39F1, 39F2, 39F3, 40F1 and 40F2. Whilst the Project boundary does not directly overlap with ICES rectangles 39F0 or 36F0, these rectangles have been retained within the Study Area given its proximity (several kilometres to Project boundary) and to ensure any displacement effects are appropriately considered in the PEIR. The Study Area is shown in **Figure 2.1** In total, the Development Area footprint spatially overlaps with approximately 7% of the total Study Area comprising the fourteen rectangles.



Legend:

- DBD Array
- Offshore PEIR Boundary
- Commercial Fisheries Study
- ICES statistical rectangles
- 12 NM limit
- 6 NM limit

Project:

Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Commercial fisheries study area

Figure:	Drawing No:				
2.1	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

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3. Methodology

3.1 Approach

8 This report has been developed through an extensive and thorough analysis of data and literature, sources of which are fully referenced at the end of this document. The assessment encompasses both publicly available data sets and data obtained through specific requests. Landings statistics have been analysed using Microsoft Excel, while vessel monitoring system (VMS) data and Automatic Identification System (AIS) data have been evaluated using ArcMap Geographic Information System (GIS) software.

9 In addition to quantitative data, qualitative insights have been gathered through direct consultation with the fishing industry and details of such is consultation are presented in Volume 1, Chapter 14: Commercial Fisheries of the PEIR.

10 This analysis has been carried out through a desktop study, with no specific commercial fisheries survey undertaken.

3.2 Desktop Study

11 A detailed desktop review of existing studies and datasets was undertaken to gather information on commercial fisheries within the commercial fisheries Study Area. **Table 3-1** summarises the studies and datasets used.

12 Data has been sourced from ICES, the European Union (EU) Data Collection Framework (DCF), the UK Marine Management Organisation (MMO), and the European Maritime Safety Agency (EMSA).

13 Where data sources allow, a minimum five-year trend analysis has been undertaken, using the most recent annual datasets available at the time of writing. The temporal extent of this time period is dependent on each data source analysed, e.g. 2012 to 2016; 2016 to 2020; or 2018 to 2022, as annotated in **Table 3-1**.

14 Relevant literature from a number of sources has also been reviewed in the preparation of this report. A full list of references is provided at the end of this report and are cited within the text where appropriate.

Table 3-1: Commercial Fisheries Baseline Data Sources

Data	Source	Year(s)	Reference
Landings Statistics			
Landings statistics data for UK-registered vessels, with data query attributes for: landing year; landing month; vessel length category; ICES rectangle; vessel/gear type; port of landing; species; live weight (tonnes); and value (£).	MMO	2018 to 2023	MMO, 2024
Landings statistics for EU registered vessels with data query attributes for: landing year; landing quarter; ICES rectangle; vessel length; gear type; species; and, landed weight (tonnes).	EU DCF database	2012 to 2016	EU DCF, 2023
Spatial Data			
VMS data for UK registered vessels ≥15 m length. Note that UK vessels ≥12 m in length have VMS on board, however, to date, the MMO provide amalgamated VMS datasets for ≥15 m vessels only.	MMO	2016 to 2020	MMO, 2022

Data	Source	Year(s)	Reference
VMS data sourced from MMO displays the first sales value (£) of catches.			
VMS data for EU registered vessels ≥12 m length. VMS data sourced from ICES displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU (including UK) registered vessels 12 m and over in length. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface. Surface SAR provides a proxy for fishing intensity.	ICES	2016 to 2020	ICES, 2022
Fishing vessel route density, based on vessel AIS positional data. AIS is required to be fitted on fishing vessels ≥15 m length.	European Maritime Safety Agency (EMSA)	2019 to 2022	EMSA, 2024
Surveillance data indicating vessel nationality and gear type for actively fishing vessels.	MMO	2018 to 2022	MMO, 2023b
The Project's marine traffic (AIS and radar) survey data.	The Project	Summer 2023 (Winter 2024 survey to be undertaken)	Anatec, 2023
Dogger Bank A, B and D fisheries scouting survey data, noting static fishing gear observations.	The Project	2021, 2022, 2023, 2024	Applicant

3.3 Data Limitations and Uncertainties

15 A range of different data limitations and uncertainty exist for all of the commercial fisheries datasets assessed within this report. The level of uncertainty and confidence of each data set is defined in **Table 3-2** based on the expert judgement of the assessment team.

16 Limitations of landings data include the spatial size of ICES rectangles which can misrepresent actual activity across the Project boundary; care is therefore required when interpreting these data.

17 It is noted that all commercial landings by UK registered vessels are subject to the Register of Buyers and Sellers (RBS) legislation and therefore landings by UK vessels of all lengths are recorded within the MMO iFish database. While it is recognised that there is no statutory requirement for owners of vessels 10 m and under to declare their catches, registered buyers are legally required to provide sales notes of all commercially sold fish and shellfish due to the 2005 Registration of Buyers and Sellers of First-Sale Fish Scheme (RBS legislation) (MMO, 2022a; MMO, 2023a). The RBS legislation is applicable to licenced fishing vessels of all lengths and requires name and port letters and numbers (PLN) of the vessel which landed the fish to be recorded in relation to each purchase. For the 10 m and under sector, landing statistics are recorded on sales notes provided by the registered buyers (MMO, 2022a; MMO, 2023a). Information that may not be formally recorded on the sales note, such as gear and fishing area, is added by coastal staff based on local knowledge of the vessels they administer - for example,

from observations of the vessel during inspections at ports or from air and sea surveillance activities as well as discussions with the owner and/or operator of the vessel (MMO, 2022a; MMO, 2023a). There are occasions when fish are not subject to the RBS legislation and therefore are not represented within the MMO landings statistics database, for instance when purchases of first sale fish direct from a fishing vessel are wholly for private consumption, and less than 25kg is bought per day.

18 Lack of recent landings statistics for EU (non-UK) fleets is also recognised as a data limitation; based on the most recent European Commission data call, more recent landings data (2017 to 2022) is no longer available by ICES rectangle. Data at a scale of ICES division (i.e. the whole of the central North Sea) is less useful to understand fishing activity specific to the Project.

19 All UK and EU fishing vessels (i.e., fishing vessels flying the flag of the UK or an EU Member State), and third-party fishing vessels operating in UK and EU waters that are ≥ 12m in length are required to have a Vessel Monitoring System on board. This reports the vessels' position to fisheries management authorities, which in the case of EU fishing vessels, is every two hours. Since 1st January 2012, this obligation has applied to vessels that are ≥ 12m in length. Limitations of publicly available VMS data are primarily focused on the coverage being limited to larger vessels 15 m and over for UK fishing vessels. It is important to be aware that where mapped VMS data may appear to show inshore areas as having lower (or no) fishing activity compared with offshore areas, this is not necessarily the case because VMS data do not include vessels typically operating in inshore area (i.e., which typically comprises of vessels <15 m in length). To assist in mitigating the risk of under-representing smaller inshore vessels, site-specific marine traffic survey data comprising information on vessel movements gathered by both AIS and radar has been analysed alongside publicly sourced VMS and AIS data.

20 MMO fisheries patrol vessels and surveillance aircraft operate in coordination with the Royal Navy's Fisheries Protection Squadron. UK surveillance aircraft are used to construct an on-going picture of fishing activity within the UK EEZ and to make effective use of patrol vessel activity by coordinated use of surveillance data. These data cannot be considered to give an accurate picture of the actual level of activity and have a number of limitations, including:

21 Patrol effort by vessels and patrol aircraft are optimised for enforcement purposes and not collection of sightings data. Areas with fewer fisheries enforcement issues are therefore likely to be visited less often and result in lower data confidence;

- Surveillance data are only indicative of areas where fishing activities occur, as there is no continuous monitoring of activities;

22 Surveillance data present a snapshot of activity in an area and it cannot be assumed that if no vessels have been sighted then no fishing takes place; and

23 Vessels fishing at night would likely remain undetected.

24 It is highlighted that the fishing activity described in **Section 4** can be expected to have been modified to some degree by the introduction of fishing restrictions subsequent to the baseline study period. The introduction in 2022 of a byelaw prohibiting the use of bottom towed gear across the Dogger Bank Special Area of Conservation (SAC) will have resulted in removal of any dredge, trawl or seine net fishing activity across the Array Area and eastern extent of the offshore ECC in ICES rectangles 39F1, 39F2, 39F3, 38F1 and 38F2.

Table 3-2: Data Limitations and Uncertainty (the uncertainty and confidence levels are defined based on judgement and are intended to inform the appropriateness of data used to inform the EIA)

Data	Type of Data	Limitation and Uncertainty
Landings statistics, MMO (2024)	Landings statistics (2018-2023) data for UK-registered vessels.	The data are recorded from sales notes and landing declarations for all vessel lengths. Due to the UK legislation of Registration of Buyers and Sellers data is considered accurate and verifiable. Data assessed with low uncertainty and high confidence.

Data	Type of Data	Limitation and Uncertainty
Landings statistics, EU DCF (2023)	Landings statistics (2012-2016) data for all EU landings by country, species and gear type.	The data is submitted by individual member states and therefore limitations vary per country. Vessels under 10 m may be omitted or mis-represented by the data. Accuracy is likely to be greater for landings from larger vessels. For UK vessels under 10 m length data is assessed with high uncertainty and low confidence. For all other EU vessels data is assessed with low uncertainty and high confidence.
VMS data, MMO (2022)	UK VMS data (2016-2020) for vessels ≥15 m length.	The data is only available for 15 m and over vessels, so is not representative of <15 m vessels. Data assessed with medium uncertainty and medium confidence.
VMS data, ICES (2022)	EU SAR data (2016-2020) for vessels ≥12 m length.	The data is only available for 12 m and over vessels, so is not representative of <12 m vessels. Data assessed with medium uncertainty and medium confidence.
AIS data, EMSA (2024)	AIS data (2019-2022) for fishing vessels ≥15 m length.	The data is only available for 15 m and over vessels, so is not representative of <15 m vessels. Data assessed with medium uncertainty and medium confidence.
Fisheries surveillance data, MMO (2023)	Surveillance data (2018-2022) for all fishing vessels.	The data is for all vessel lengths and UN and non-UK vessels. Data presents a snap-shot of activity at time of surveillance and is not routinely collected. Data assessed with medium uncertainty and medium confidence.
Marine traffic survey data, Anatec (2023)	Marine traffic (AIS and radar) survey data (2023).	An assessment of fishing vessel activity to inform the Navigational Risk Assessment (NRA) undertaken for the Project based on a 14-day AIS and radar survey in summer 2023 and in winter 2024 (winter survey still to be undertaken). Data assessed with low uncertainty and high confidence.
Fisheries scouting survey data, the Applicant (2021 to 2024)	Observations of static fishing gear markers recorded during scouting surveys in 2021, 2022, 2023 and 2024.	Boat-based surveys of several days duration to identify potting areas and observe static gear ahead of site investigation surveys in Dogger Bank A, B and D. Data assessed with low uncertainty and high confidence.

4. Baseline Characterisation

4.1 Overview of Landings

4.1.1 UK-registered Vessel Landings

25 Landings from the Study Area by UK-registered vessels had an average value of £30.1 million across the period 2018 to 2023 (MMO, 2024). **Plate 4-1** and **Plate 4-2** show landings values and volumes across this time period for each ICES rectangle within the Study Area, highlighting relatively high landings values in rectangles 36F0, 37E9 and 37F0 (see also **Table 4-1**)

26), within which the western portion of the offshore ECC is located. Landings from ICES rectangle 36F0 accounts for 41% of the total value of UK landings from the Study Area, and landings from rectangles 37E9 and 37F0 account for 22% and 17% of the total value, respectively. Across the 2018 to 2023 period, UK landings showed relative consistency, with a slight decline in 2020 likely to reflect the effects of the COVID-19 pandemic, increasing in 2021 before returning to approximately 2018/19 levels in 2022 and showing further slight decline in 2023 with landings values at £24.4 million.

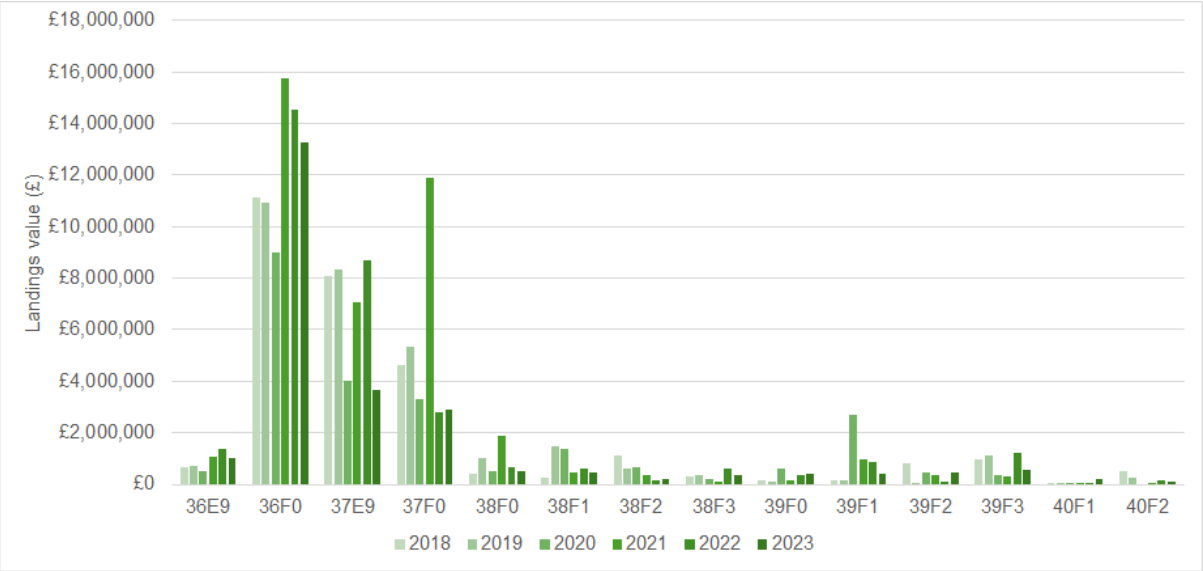


Plate 4-1: Annual Landings Value (£) by UK-Registered Vessels from the Study Area, by ICES Rectangle, between 2018 and 2023 (MMO, 2024)

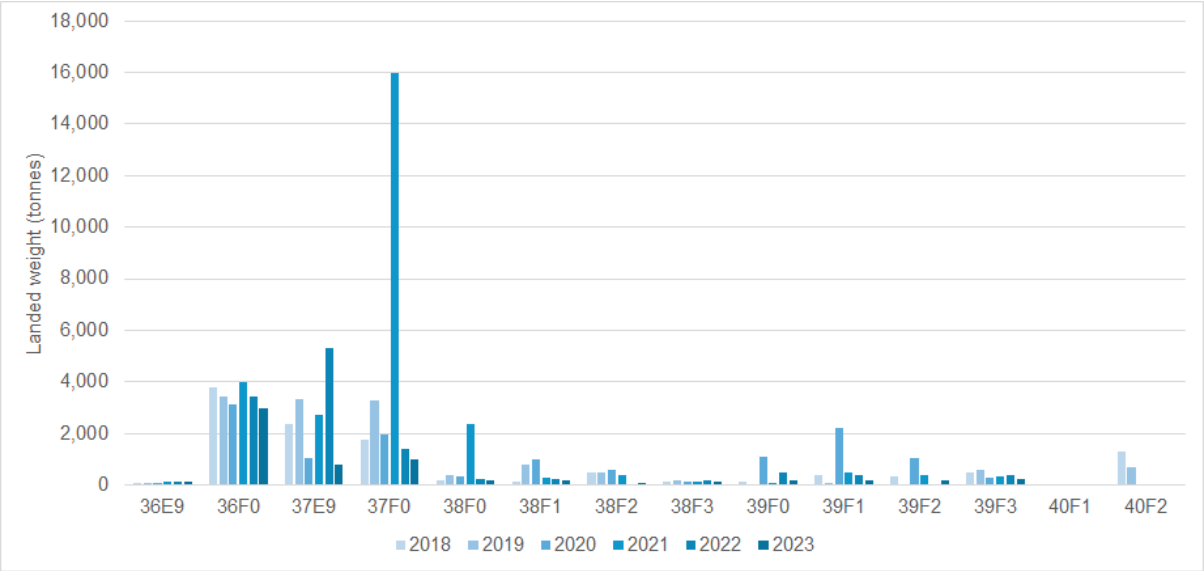


Plate 4-2: Annual Landings Weight (Tonnes) by UK-Registered Vessels from the Study Area, by ICES Rectangle, between 2018 and 2023 (MMO, 2024)

Table 4-1: Annual Landings Value (£) and Weight (Tonnes) by UK-Registered Vessels, by Vessel Length, from the Study Area, by ICES Rectangle, between 2018 and 2023 (MMO, 2024)

ICES Rectangle	Annual Average Landed Value (£)	Annual Average Landed (tonnes) Weight	Proportion of Landed Value from the Commercial Fisheries Study Area by ICES Rectangle	Proportion of Landed Value made by Vessels under 10 m Length	Proportion of Landed Value made by Vessels over 10 m Length
36E9	£888,081	104	3%	79%	21%
36F0	£12,440,589	3,463	41%	24%	76%
37E9	£6,628,230	2,595	22%	49%	51%
37F0	£5,148,985	4,223	17%	6%	94%
38F0	£825,000	615	3%	0%	100%
38F1	£781,918	428	3%	0%	100%
38F2	£505,291	343	2%	0%	100%
38F3	£319,112	156	1%	0%	100%
39F0	£299,402	333	1%	0%	100%
39F1	£879,089	607	3%	0%	100%
39F2	£388,690	341	1%	0%	100%
39F3	£746,481	385	2%	0%	100%
40F1	£56,411	13	0%	0%	100%
40F2	£210,211	422	1%	0%	100%

27 **Plate 4-3** shows the key species landed from the Study Area. Shellfish species, most notably lobster *Homarus gammarus* and brown crab *Cancer pagurus* but also scallops *Pecten maximus*, Norway lobster *Nephrops norvegicus* and whelks *Buccinum undatum*, account for approximately 80% of total landings from the Study Area by value. Between 2018 and 2023, annual landings of shellfish were relatively consistent, with a dip in landings observed in 2020 likely to reflect effects of the COVID-19 pandemic.

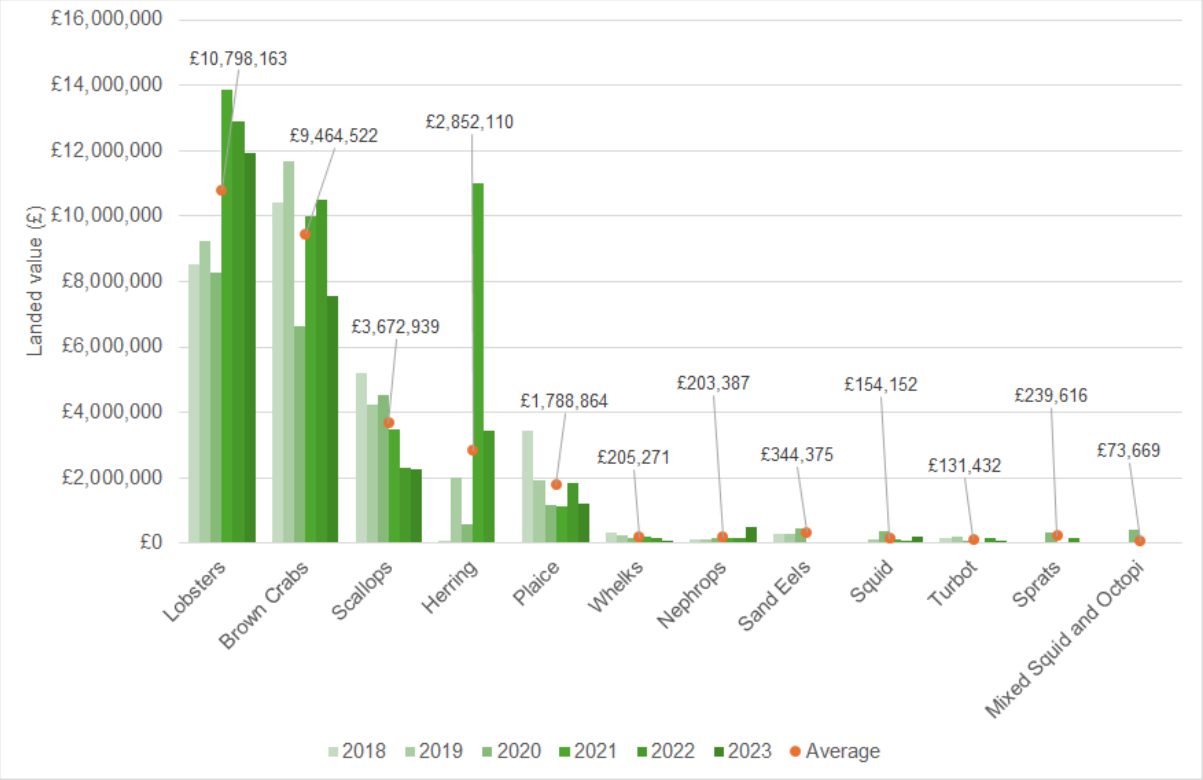


Plate 4-3: Annual Landings Value (£) by UK-Registered Vessels from the Study Area, by Key Species, between 2018 and 2023 (MMO, 2024)

28 Landings of demersal fish species, including plaice *Pleuronectes platessa* and turbot *Scophthalmus maximus* account for approximately 9% of total landings from the Study Area by value and have shown a continuous decline across the five-year study period. Landings of pelagic species from the Study Area by UK-registered vessels have historically been very low but showed a substantial spike in 2021 which landings data indicate is associated with herring *Clupea harengus* catches in the month of September in 2021.

29 In terms of the top five species landed from the Study Area, the following trends are observed:

30 Lobster landings had an average annual value of £10.8 million over the period 2018 to 2023. The average annual landings weight over the same period was 700 tonnes. Landings were relatively consistent across 2018 to 2020, rising to a peak in 2021 with an annual landed value of £13.9 million and weight of 830 tonnes. The majority of landings originate from ICES rectangles 36F0 and 37E9 which overlap with the nearshore portion of the offshore ECC. Lobster is one of the highest value per kilogram, commercially exploited shellfish species found in UK waters.

31 Brown crab landings have been relatively consistent over the 2018 to 2023 period, averaging £9.5 million in value annually and 4,700 in tonnes. As for lobster and as reported above, a relative dip in landings of lobster and brown crab in 2020 is expected to reflect the effects of the pandemic. The majority of landings originate from ICES rectangles 36F0, 37E9 and 37F0 which overlap with the nearshore portion of the offshore ECC.

32 King scallop landings are known to be cyclical in nature, with nomadic vessels moving around the entirety of the UK coastline to target productive grounds on a rotational basis. Landings of king scallop from the Study Area show a declining trend across 2018 to 2022, peaking value in 2018 at £5.2 million and having a value of £2.3 million in 2023. The majority of landings originate

from ICES rectangles 37E9 and 37F0 which overlap with the nearshore portion of the offshore ECC.

- Herring landings have fluctuated significantly over the 2018 to 2023 period, reflecting a highly mobile fishery that follows and targets these shoaling fish. Limited landings were recorded across 2018 to 2020, with sharp peak in landings in 2021 valued at almost £11 million, equating to 18,000 tonnes of landed herring.

33 Plaice landings peaked in 2018 with an annual landed value from the Study Area of £3.5 million. Landings showed a declining trend through 2019 and 2020, but since then have shown an increasing trend in terms of value. The majority of landings originate from ICES rectangles 39F3 and 38F2, with which small portions of the Array Area overlap.

34 **Plate 4-4** shows the key fishing gear types utilised across the Study Area. The largest proportion of landings by value are attributed to potting gear. The value of landings by beam trawls in the Study Area has declined over the 2018 to 2023 period, whilst use of demersal otter trawls has remained relatively consistent. Landings from dredge gear targeting scallops have remained relatively consistent over the same period showing slight decline from 2020 onwards. Use of pelagic gear is only identified in the landings data in 2021 and 2022, and not in previous years within the study period. This is likely a reflection of the transient and highly mobile nature of pelagic shoaling fish, whereby landings are not associated with highly specific or consistent grounds.

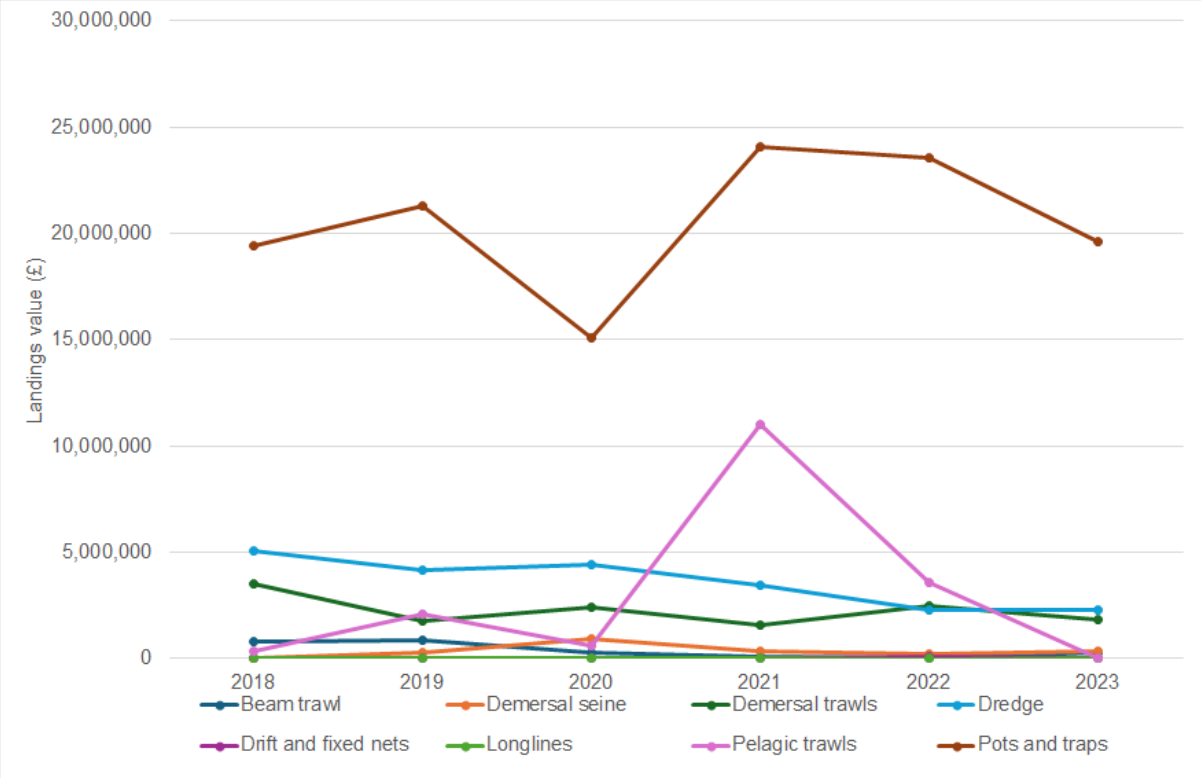


Plate 4-4: Annual Landings Value (£) by UK-Registered Vessels from the Study Area, by Key Fishing Gear, between 2018 and 2023 (MMO, 2024)

35 Landings data indicates that across the 2018 to 2023 period, and across the Study Area, English-registered fishing vessels accounted for approximately 76% of total landings, with Scottish-registered vessels accounting for 23%. Vessels accounting for the majority of landings by both weight and were within the following vessel length categories: over 40m, 24m to 40m, and 12m to 15m. Key UK ports receiving landings from the Study Area include Bridlington, Scarborough, Grimsby, Hartlepool and Whitby. Non-UK ports including Floro (Norway), Scheveningen and Harlingen (Netherlands) also receive landings from the Study Area.

4.1.2 EU-registered Vessel Landings

36 Landings from the Study Area by EU-registered vessels have been analysed using data sourced from the EU DCF database covering two different time periods. The first source covers the period

2012 to 2016 and is usefully disaggregated at the level of individual ICES rectangle. The second source provides landings data up to 2021 but is available only at ICES division level (i.e. the central North Sea) and so whilst more recent, is less helpful in terms of understanding EU fishing activity across the Study Area.

37 **Plate 4-5** presents landings by both UK and non-UK fishing vessels from the Study Area between 2012 and 2016. The data indicates limited EU vessel activity in the inshore ICES rectangles, with relatively high levels of activity in those rectangles beyond the 12 nm limit. Historically, a Danish sandeel *Ammodytes marinus* fishery was active in the Study Area, which has declined substantially since the 2000's, and it is noted that as of March 2024 the UK government has prohibited the fishing of sandeels within the English waters of ICES Area 4 (North Sea) by vessels of any nationality.

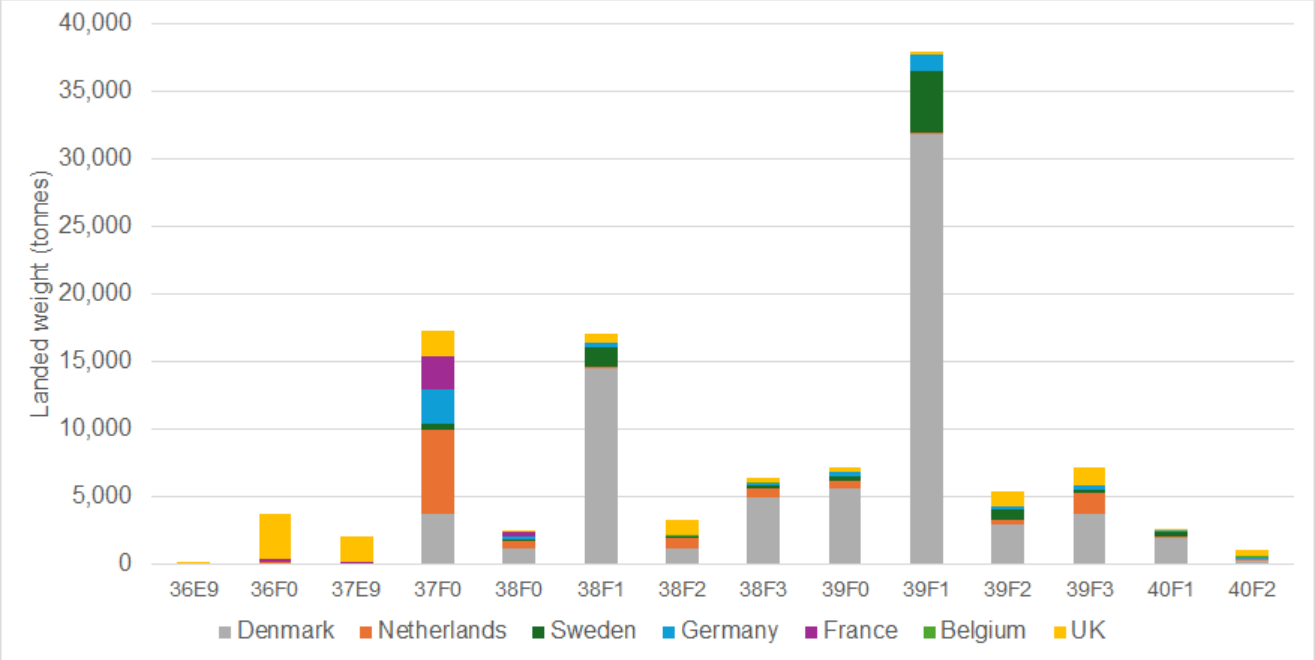


Plate 4-5: Average Annual Landed Weight (Tonnes) by UK and EU Vessels from the Study Area, by ICES Rectangle, between 2012 and 2016 (EU DCF, 2023)

38 **Plate 4-6** presents landings by EU fishing vessels from ICES division 4b, operating in the UK EEZ (i.e. a large area of the central North Sea of significantly greater extent than the Study Area) in 2021. The data indicates the presence of fishing vessels from the Netherlands, Denmark, Germany, France, Belgium and Sweden, with vessels using demersal trawls, beam trawls and flyseine methods to primarily target demersal fish. As per paragraph 24 above, it is noted that as of 2022 the Dogger Bank SAC byelaw prohibits the use of bottom towed fishing gear by vessels of any nationality (inclusive of all gear types shown in **Plate 4-6**) across a significant portion of the commercial fisheries study area; the introduction of the byelaw is expected to have resulted in a reduction in towed fishing gear activity by non-UK vessels within the Project's Development Area.

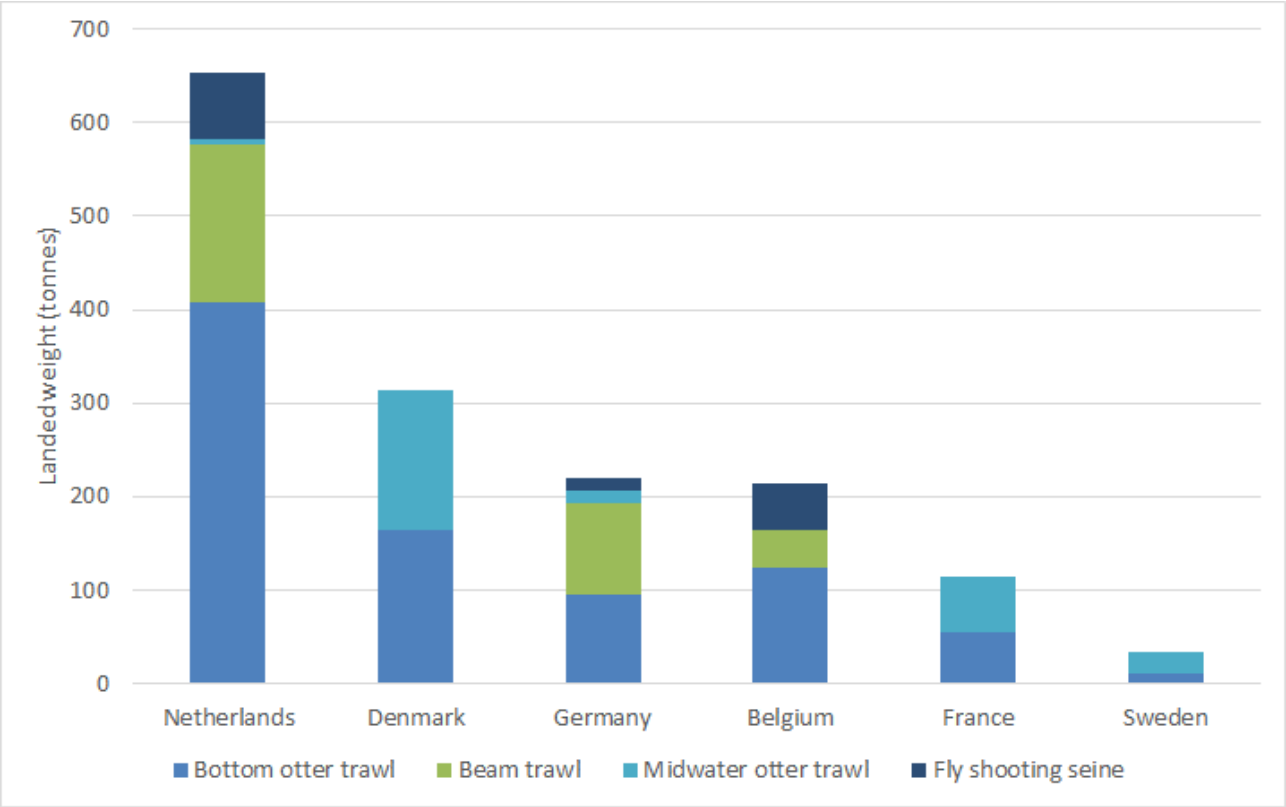


Plate 4-6: Landed Weight (Tonnes) by EU Vessels in ICES Division 4b, by Country and Gear Type between 2012 and 2016 (EU DCF, 2023)

5. Fishing Restrictions

39 Within the UK EEZ, fishing activity from the shore to 6 nm is only permissible for UK-registered vessels. A number of restrictions are in place based on byelaws set by English Inshore Fisheries and Conservation Authorities (IFCAs) that control fisheries out to 6 nm. From 6 nm to 12 nm, non-UK vessels may fish if they have acquired historical rights to do so. Outside 12 nm, international vessels are permitted to fish subject to quota allocation and other EU level restrictions including technical gear measures and effort restrictions such as days at sea.

5.1 Total Allowable Catch (TAC) and Quotas

40 Limits on catch volumes are in place for many commercially fished species, taking the form of Total Allowable Catches (TAC) and quotas. Species targeted in the Study Area for which TAC are set include plaice, turbot, herring, and Nephrops. Key shellfish species targeted in the Study Area, including lobster and brown crab, are not subject to TAC, but are subject to national and local fisheries management measures.

41 As per EU Council Regulations, Total Allowable Catches (TACs) and quotas are in place for many commercial fish species based on their stock distribution across ICES Divisions. TACs are intended to allocate fish resources to different countries and to control the amount of fish removed each year. When setting TACs, the European Commission is informed by scientific stock assessments and advice provided by ICES on an annual basis. Different quotas are applied to different areas for different species. The TACs set for a species across ICES Divisions 4 (North Sea) and 2 (Norwegian Sea) for example, allow countries that have been allocated a quota from this TAC to fish within ICES Divisions 4a, 4b, 4c, 2a, and 2b. TACs and quotas per country are presented in **Table 5-1** for key species landed from the Study Area.

Table 5-1: Total allowable catch and quotas in tonnes by country for the key species landed in the regional fisheries Study Area in 2024 (EU, 2024)

Species	ICES Division	TAC (tonnes)	Netherlands	Belgium	France	Denmark	UK	Germany	Sweden	Norway
Herring	4	510,323	56,422	-	21,783	77,892	96,736	48.595	4,765	147,994
Plaice	4; 2a; 3a	136,413	36,303	5,809	1,089	18,878	36,105	5,446	-	9,549
Sole	2a; 4	3,675	2,423	268	54	123	587	215	-	5
Nephrops	4; 2a	21,184	570	1,107	33	1,107	18,350	16	-	-

5.2 Byelaws, Technical Measures and Spatial Closures

42 In addition to limits on catch volumes, a number of restrictions are in place based primarily on fisheries byelaws, intended to protect fish stocks and their habitats. These restrictions include limits on minimum landings sizes, technical measures relating to fishing gear design and use, limits on fishing effort, and temporary and permanent fishery closures.

43 Within the Study Area several spatial and temporal fishing restrictions are in place that are relevant to the Project. These include (**Figure 5.1**):

44 UK Government prohibition of the fishing of sandeels within English waters of ICES Area 4 (North Sea), with this measure applying to all vessels of any nationality, effective from 26 March 2024.

45 MMO Byelaw Dogger Bank SAC 2022 – A person must not use bottom towed fishing gear in the specified area. A vessel transiting through the specified area must have all bottom towed fishing gear (including dredges, trawls and seine nets) inboard, lashed and stowed. The presence of the byelaw, which covers the entirety of the SAC and a large portion of the Project, including the entirety of the Array Area, can be expected to result in a significant reduction in mobile gear fishing activity within the Project's scoping boundaries.

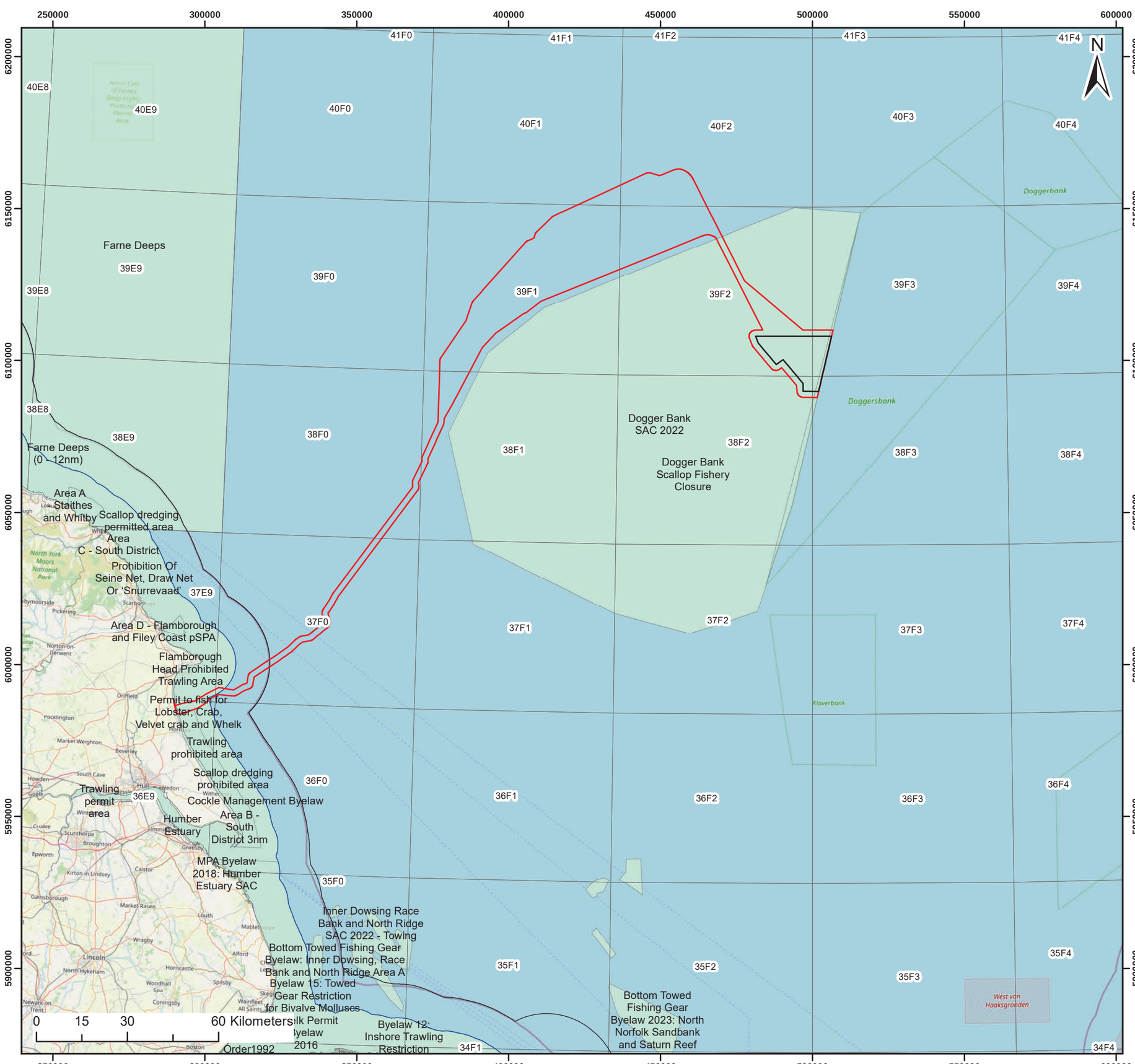
46 North Eastern IFCA (NE IFCA) byelaw – Trawling within IFCA waters (i.e. within the 6 nm limit) is not permitted unless a permit with conditions (e.g. the vessel must not exceed 18.3 m length or 400 kW engine power) has been granted.

47 NE IFCA byelaw – No fishing with any seine net or draw net is permitted within IFCA boundaries.

48 NE IFCA byelaw – Scallop dredging is prohibited outside of the specified area, which is located between 3 nm and 6nm and runs from just north of Sunderland to the north, to Filey in the south, and is subject to a permit with conditions. The byelaw, introduced in 2015, also enforces seasonal (may to October) and daily (7pm to 7am) closures.

49 NE IFCA byelaw – Beam Trawling Byelaw 2024, whereby a person must not use a beam trawl for the exploitation of sea fisheries resources within the district other than in accordance with a beam trawl permit. This byelaw was introduced in response to an increase in the number of trawlers targeting king scallops using beam trawls in an area outside of the permitted area of the seasonal scallop fishery, and to protect current scallop stocks from over-exploitation.

50 To the west of the Study Area and shown in **Figure 5.1**, fishing restrictions are also in place to manage use of bottom towed fishing gear (i.e. trawls, seines and dredges) in marine protected areas, including at Farne Deeps and Farnes East Marine Conservation Zone (MMO, 2023b).



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit
- Fishing Restrictions

Project: Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title: Fishing restrictions informed by Kingfisher Mapping

Figure: 5.1 | Drawing No: Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor

6. Key Species

51 The key commercial species as identified in **Section 4** are discussed in this section in terms of biological characteristics, seasonal trends and relevant fisheries management.

6.1 Shellfish

6.1.1 Lobster

52 European lobster (hereafter referred to as lobster) is a long-lived, large decapod crustacean. Lobster breed once per year in the summer and newly berried females begin to appear from September to December. Juveniles or adult lobsters do not undertake any significant migrations and juveniles in the first 3 to 4 years of life may be particularly sedentary. Unlike crab, which at times move appreciable distances, lobsters tend to be more sessile which reduces the area in which a lobster fishery can occur. From hatching it takes approximately five years for a lobster to recruit to the fishery. Lobsters typically inhabit rocky reef and rough ground, sheltering in crevices between rocks and boulders. The availability of suitable habitat is considered to influence the carrying capacity and size structure of lobster populations (Seitz et al., 2014).

53 Lobsters are caught by pots and there are no TACs or quotas in place. Primary management is by the technical measure of a Minimum Conservation Reference Size (MCRS) of 87 mm (UK Government, 2018). Due to the inshore location of lobster, they are predominantly targeted by the UK potting fleet along the Yorkshire/Humber coast, under the jurisdiction of the NE IFCA from 0 nm to 6 nm and the MMO and Defra from 6 nm to 12 nm.

54 The main fishing season for lobster runs across late summer and into autumn with a peak in landings typically across July and August (**Plate 6-1**).

55 A stock assessment undertaken by Cefas in 2023 (Cefas, 2024a), relevant to stocks within the Yorkshire Humber region, notes the recent marked expansion of the fishery from 2021, which may mask declines in the stock, of which the exploitation status is considered to be high. A mass mortality event in 2021 is noted in the assessment, with the cause unknown.

56 It is noted that the NE IFCA 2023 shellfish landings report (Bublitz and Anand, 2023) states that is it not possible at present to evaluate the state of the stock, though reports concerns about declines in landings into local NE IFCA ports that are in contrast to wider national landings trends.

6.1.2 Brown crab

57 Brown crab (also known as edible crab) is one of the most economically important crab species in UK waters. This decapod crustacean is benthic and is found in a wide range of habitats ranging from soft mud to rocky substrata. Activity tends to be higher at night when foraging occurs although smaller crabs are known to be equally active during both day and night (Scott, 2019. Post larval settlement is generally in inshore areas and juvenile crabs are more commonly associated with the inshore shallower intertidal zones whereas the adults are commonly found at depths of 6 m – 40 m but have been known to occur at 100 m.

58 Peak mating period is July to September usually at night and after the female has moulted. Eggs are attached to the female pleopods and take around 7-8 months to hatch, during which time the female does not feed but remains hidden and is unlikely to be captured in baited pots (Ondes et al., 2019). In the North Sea females tend to move offshore to release the planktonic larvae then move back inshore to feed. The period from hatching to recruitment into the fishery takes approximately 4 years and adults move into deeper water as they grow and mature.

59 Adult crabs are known to undertake extensive migrations, although previous studies have indicated that there were no migratory exchanges between the North Sea and English Channel (Bannister, 2009). Adult females have shown a migratory movement northward along the east coast from Norfolk to Yorkshire and Humberside (Bannister, 2009).

60 As with lobster, brown crab are predominately targeted by the UK potting fleet located along the Yorkshire/Humber coast, under jurisdiction of the NE IFCA from 0 nm to 6 nm and the MMO and Defra from 6 nm to 12 nm. As with lobster, brown crab are caught by pots and have no TACs or quotas in place. Primary management is by the technical measure of a MCRS of 140 mm carapace width (UK Government, 2018). Within the Study Area landings statistics indicate an autumn peak in landings.

61 A stock assessment undertaken by Cefas in 2023 (Cefas, 2024b), relevant to stocks within the southern North Sea, concluded that the exploitation level of crab is high and, although stable, above the level required for Maximum Sustainable Yield. The Cefas assessment notes that anecdotal information suggests an expansion of fishing activity in both pot numbers and distribution in the southern North Sea; the increase in landings associated with this is interpreted in stock modelling as an increase in spawning stock. Spawning stock status judgements should therefore be treated with caution. A mass mortality event occurred in autumn 2021 in the North Sea, the cause of which is unknown.

62 It is noted that the NE IFCA 2023 shellfish landings report (Bublitz and Anand, 2023) states that is it not possible at present to evaluate the state of the stock, though reports concerns about declines in landings into local NE IFCA ports that are in contrast to wider national landings trends.

6.1.3 King scallop

63 King scallop (hereon referred to as scallop) are most common in water depths of 20 m to 70 m, in areas of clean firm sand and fine gravel exposed to water currents, which provide good feeding conditions for this bivalve mollusc. Scallops reach reproductive maturity at a minimum size of 60 mm and will be fully mature between 3 to 5 years. Their lifespan can be up to 20 years. Recruitment is usually unpredictable as it depends not only on successful spawning and larval production but also on retention of larvae or transport of larvae into areas suitable for settlement. Settlement in a particular area may be unpredictable leading to an unstable age structure. As a consequence of this, scallop beds frequently show a regional separation of year classes and spatial variability in age structure.

64 Scallop are targeted almost exclusively in this area by UK-registered dredgers and there are no TACs or quotas in place with this species, therefore this species is primarily managed by a MCRS of 100 mm (UK Government, 2018). National legislation limits the number of licenses for scallop vessels >10 m. The English Scallop Order applies in England to British vessels and places spatial restrictions on the number of dredges that can be employed at any one time and specifies technical measures defining the type of dredge that can be used. In 2023, a newly developed Fisheries Management Plan (FMP) for king scallops in English and Welsh waters was published by the UK Government (2023) which lays the foundation for improved data acquisition on the state of king scallop stocks to allow a transition of fisheries management away from a precautionary approach to a robust estimation of maximum sustainable yield.

65 Landings of scallop in this area fluctuate throughout the year but tend to be higher in quarters one and two.

66 Regionally, key scallop grounds are located throughout the central North Sea and some overlap with the offshore ECC. In their most recent scallop stock assessment, Cefas (2024c) observed that the scallop harvest rate in this area has fluctuated around the Maximum Sustainable Yield reference point since 2018.

6.1.4 Whelk

67 Common whelk is a gastropod mollusc that inhabits mixed sediment from the low water mark down to 1,200 m water depth, though being most common in water depths between 0 m and 50 m. Most are caught in depths of 40 m – 60 m. Whelk reach reproductive maturity at different sizes depending on their geographical location and environmental conditions. Whelks grow to 150 mm and live for up to 15 years, reaching maturity at 2 to 3 years. European populations are understood to breed from autumn to winter. Eggs are fertilised internally and laid on hard benthic substrata, with juveniles emerging after approximately 3 to 5 months. The life cycle therefore has no pelagic phase, leading to limited dispersal between populations.

68 Due to the limited dispersal of whelk juveniles it is thought that there is limited connectivity between populations which could have implications for management and may make the species susceptible to local depletion and longer recovery rates (Blue Marine Foundation (BMF), 2018).

69 Whelk pot fisheries have been expanding around the UK in recent years as prices have increased and export to non-EU countries has grown. Within the UK, whelk are often considered to be a suitable alternative to seasonal fishing especially for the crab and lobster fleet as well as for vessels targeting more regulated fisheries. In the Study Area whelk landings peak in quarters one and two.

70 No TAC or quotas are in place for whelk. The current EU-wide MLS for whelks is 45 mm, noting that around the UK, whelks typically reach maturity between 45 mm and 78 mm. The Whelk

Fishery Flexible Permit Byelaw 2020 requires IFCAs to review flexible permit conditions not less than once every three years; in the NE IFCA district an MLS of 45 mm (shell height) has been set.

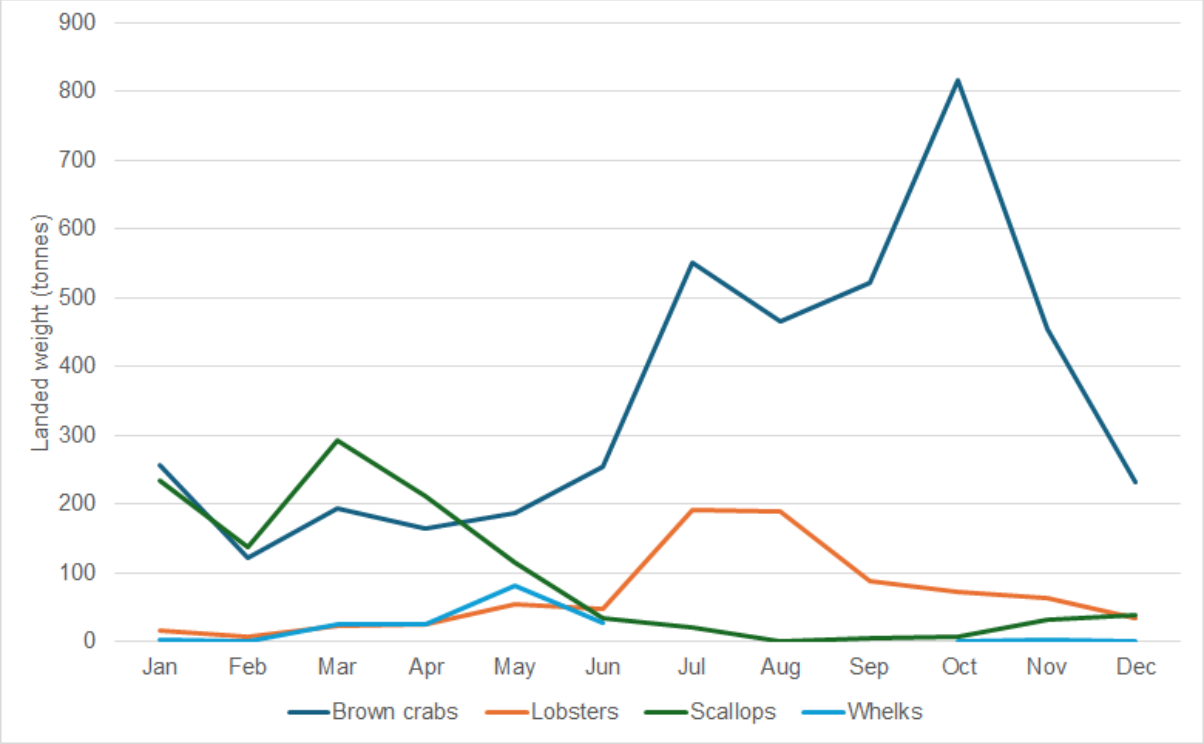


Plate 6-1: Seasonality of landings of shellfish species based on landed weight (tonnes) in 2022 from UK vessels (MMO, 2023)

6.2 Demersal Finfish

6.2.1 Plaice

71 Plaice is a bottom-dwelling flatfish. It spawns in the early months of the year (January to March) and sometimes makes long spawning migrations. They grow to around 50 cm to 60 cm in length but have been recorded up to 90 cm. Plaice are most commonly found on sandy bottoms but can live on gravel or mud. They are active at night and remain stationary during the day, usually buried within the sediment leaving only the eyes protruding. They have been recorded from between 0 m and 200 m depth but are mostly between 10 m and 50 m.

72 The North Sea plaice stock is in a healthy state and fishing pressure is considered sustainable (ICES, 2024a). The TAC in recent years have been set in line with advice, and catches are usually below TACs, owing to limited market demand. The fishery is subject to technical measures including minimum net mesh sizes and a MCRS of 27 cm.

73 Landing statistics for the Study Area indicate that sole and plaice landings peak in summer months.

6.3 Pelagic Finfish

6.3.1 Herring

74 The North Sea herring stock, which collapsed in the 1970s and was closed to fishing for several years, subsequently recovered, and although it fell back in the mid-1990s, it has again been rehabilitated. Since 1998 spawning stock biomass has been above maximum sustainable yield and fishing pressure has remained below the maximum sustainable yield benchmark (ICES, 2024b), though there are concerns that future low recruitment could alter this trend. Applicable to directed herring fisheries in the North Sea there is a Minimum Conservation Reference Size of 20 cm (3 cm above the size of maturity). Catches below this size must be landed but can't be sold for human consumption, and so are less valuable.

75 Herring schools move between spawning and wintering grounds in coastal areas and feeding grounds in open water. Herring populations are known to use traditional spawning grounds, many of which are along shallow coastal areas (15 m to 40 m depth), or on offshore banks down to 200 m. Spawning usually occurs on gravel or rock bottoms.

76 Herring form distinct breeding stocks, known as races, categorised by their separate spawning grounds and some distinguishing features. The race most proximate to the Study Area is the Banks or dogger group, spawning in the central North Sea and off the eastern English coast from August to October. Herring schools move between spawning and wintering grounds in coastal areas and feeding grounds in open water. Herring are caught using pelagic trawls, typically in September.

6.3.2 Sandeel

77 Lesser sandeel is a short-lived species. Sandeels are small, eel-like fish which form large shoals and spend a large part of their life buried in seabed sediments. The larvae drift with currents before settling on suitable areas of coarse sand with low silt content. This requirement for a highly specific sediment type results in patchy distributions. They remain buried throughout the diel cycle in winter, except during spawning around new-year. However, in early spring they start to emerge on a daily basis to feed and become one of the most abundant fish species in the water column of the North Sea for the following three to four months.

78 Sandeel in the North Sea has historically been targeted by an industrial fishery. Annual catches peaked in the 1980s and 1990s, exceeding one million tons in some years. Sandeel are taken by trawlers using small-mesh demersal otter trawl gear.

79 From 2010 onwards, ICES has presented advice for the North Sea sandeel divided into seven management areas, based on the assumption that this will better reflect the stock structure and enable improved management avoiding local depletion. The area relevant to the Study Area is referred to as ‘SA1r’. In SA1r, spawning stock biomass has been recovering from low values in 2019. Catches of sandeel from this area have fluctuated, showing an overall declining trend since the early-2000s. ICES data indicate the presence of sandeel fishery activity in this area up to 2022 when the catch from SA1r was 5,156 tonnes (ICES, 2023). ICES advice recommended zero catch in SA1r in 2022 and a catch of no more than 120,428 tonnes in 2023. ICES advice states that though recruitment has been below average between 2020 and 2022, the low fishing mortality in 2021 and 2022 allowed the stock to rebuild sufficiently to allow a fishery in 2023 (ICES, 2023).

80 As of March 2024, the UK government has prohibited the fishing of sandeels within the English waters of ICES Area 4 (North Sea) by vessels of any nationality.

7. Key Fishing Gears

81 There are three descriptive units used for defining fisheries (Marchal, 2008):

- fishery – a group of vessel voyages which target the same species or use the same gear;
- fleet – a physical group of vessels sharing similar characteristics (e.g. nationality); and

82 métier – a homogenous subdivision, either of a fishery by vessel type or a fleet by voyage type.

83 A range of fleets target different fisheries across the Study Area which are described on a fleet basis within this section.

84 As depicted in **Plate 7-1**, landings by UK vessels from the Study Area are made by vessels operating a variety of gear types. Pots and traps dominate in terms of their associated landed value, followed by scallop dredges, pelagic trawls and demersal trawls. Within those ICES rectangles that overlap the Array Area (39F2, 39F3, 38F2, 38F3), landings are primarily associated with demersal trawls and beam trawls, with very limited landings (under 2% by value) associated with other gear types.

85 EU vessels active in the Study Area are primarily deploying demersal trawls and pelagic trawls, with a small volume of landings associated with beam trawls.

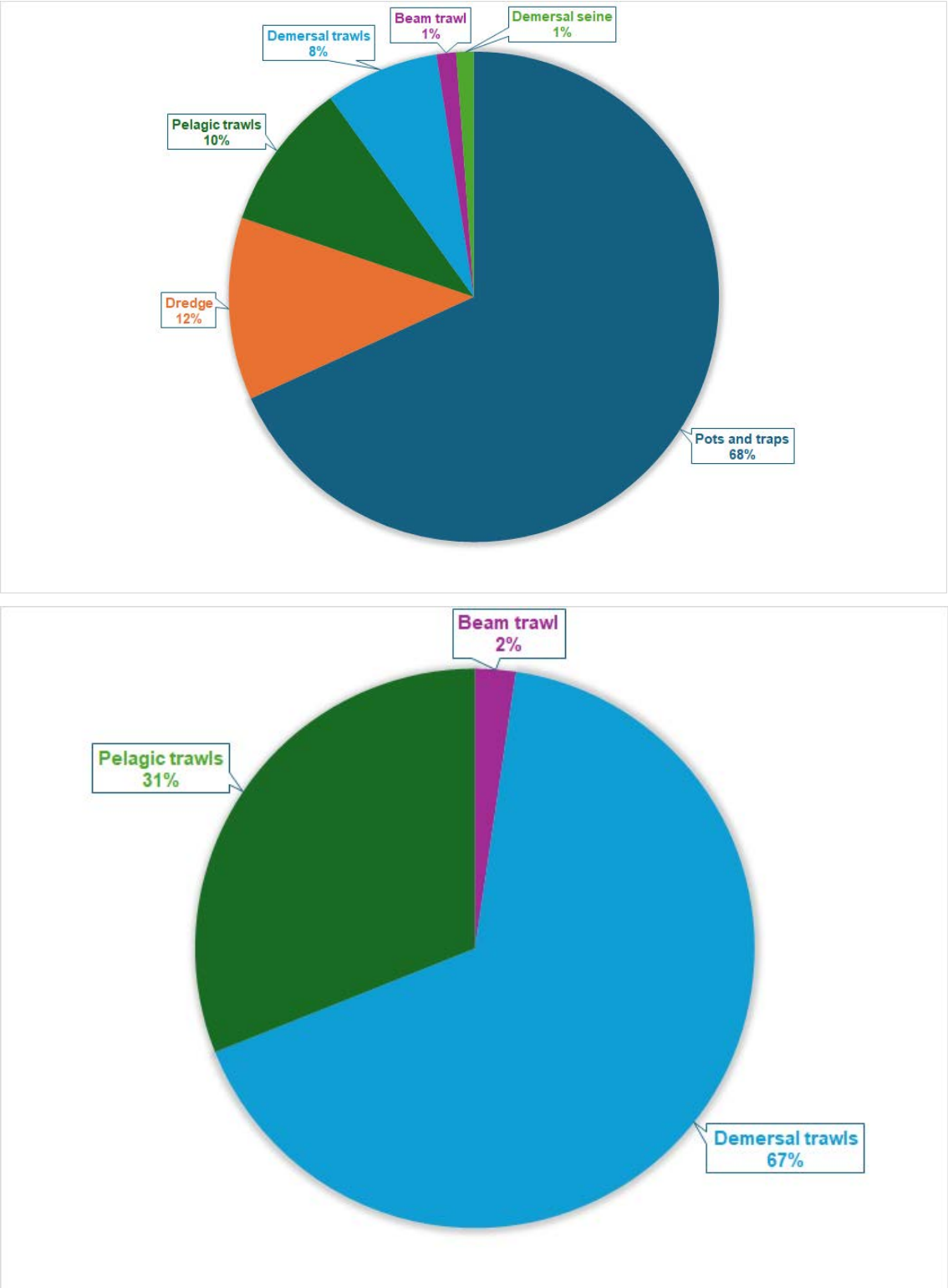


Plate 7-1: Proportion of landings from the Study Area by gear type for UK (TOP; based on 2018 to 2023 landings data) and non-UK (BOTTOM; based on 2012 to 2016 landings data) fishing vessels (Source: MMO, 2024 and EU DCF, 2023)

7.1 Pots and Traps

86 **Plate 7-2** and **Plate 7-3** show typical potting vessels, gear and the configuration of set pots and **Table 7-1** describes the profile of potting vessels active across the Study Area.

87 Vessels predominately target crab and lobster with mainly parlour (two chambered) pots (or creels), but also standard (single chambered) pots, both of which are side opening. Whelks are targeted with top opening plastic pots. Some vessels will operate fleets of crab and lobster pots and whelk pots simultaneously.

88 When targeting brown crab and lobster, parlour pots are favoured for more offshore locations. Vessels may operate 1,000 to 3,500 pots in total, with 20 to 30 pots per string for a typical vessel, and up to 50 per string for larger vessels; pots are spaced approximately 15 fathoms apart. Pots are shot away with the tide; one string can cover up to 0.3 nm. Soak time is commonly 24 to 48 hours before pots are hauled. Catch is sorted at sea, with any undersize or poor-quality individuals returned immediately, whilst the remainder is sold to processors, restaurant outlets and local fishmongers once landed.

89 Whelk fishing activity is driven by market prices; when the price goes up, vessels will focus on whelk. Whelk are predominately targeted in muddy habitats, and not generally found on mobile sand or rocky ground.

90 Historically, the potting fishery was an inshore mixed species creel fishery operating near the coastline, primarily due to limitations of the vessels and equipment. The introduction of larger vessels and the capability to store and transport live animals in subsequent years has increased the range in which potters operate, enabling fishing grounds further afield to be utilised. The potting fleet today is comprised of vessels with a range of varying capabilities; a significant number still fish in close proximity to the shore on the historic fishing grounds while many of the fishers have replaced their traditional vessels with larger boats, targeting both inshore and offshore grounds. Catches of shellfish from the Study Area using pots are typically landed into Bridlington, Grimsby, and Scarborough as well as a number of smaller local harbours.

Table 7-1: Profile of typical potting vessels active across the Study Area

Parameter	Indicative details
Main target species	Brown crabs, lobsters, whelks
Vessel nationality	English, some Scottish
Vessel length	Under 10 m and over 10 m; vivier crab vessels up to 24 m
Horsepower	60 hp to 200 hp
Typical speed when shooting and hauling gear	0 to 9 knots
Typical soak time	1 to 2 days, up to a week
Seasonality of activity	Brown crab landings peak autumn Lobster landings peak later summer Whelk landings peak spring and summer
Typical gear configuration	Fleets of baited pots are placed on the seabed. Pots are typically hauled every week but may be left for a number of weeks. Generally, day boats, but also includes a vivier fleet (crabs stored live in water tanks).

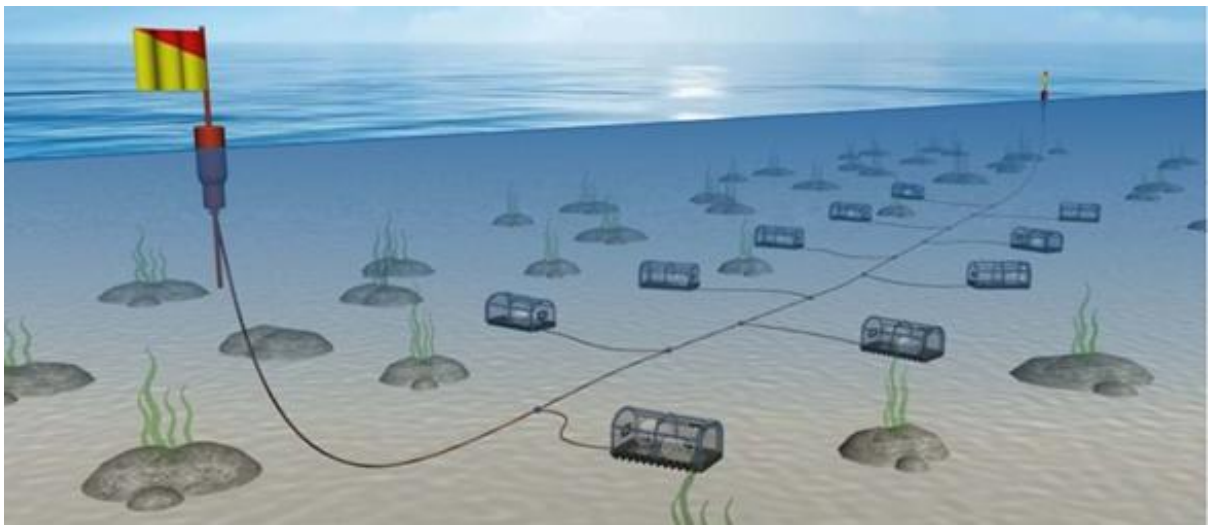


Plate 7-2: Typical potting gear configuration (Source: Seafish, 2015)

Plate 7-3: Example of potting vessels, including larger vivier crabber (left) and smaller inshore potter (right) (Source: Hook and Net Magazine[1] [left] and Fishing News[2] [right])

7.2 Scallop Dredge

91 Dredges are rigid structures that are towed along the seabed to target various species of shellfish. In the Study Area, they are used to primarily target scallop.

92 A typical scallop dredging vessel is shown in **Plate 7-5** Plate 7-4and **Table 7-2** describes the profile of scallop dredging vessels active across the Study Area. A schematic showing typical dredge gear is provided in **Plate 7-4**. Scallop dredgers fish as the tooth bar of each dredge rakes through the sediment lifting out scallops and the spring-loaded tooth bar swings back, allowing the dredge to clear obstacles on the seabed. The dredges are held in a series on two beams, which are fished on each side of the vessel. Generally, queen scallop are targeted using skid dredges. Skid dredges operate in much the same way as toothed dredges which target king scallop, but the tooth bar is replaced with a "tickler chain" which disturb queen scallops resting on the seafloor, causing them to swim upwards into the water column where they can be caught by the dredge.

93 UK scallop dredgers operate around the entire coastline of the UK. A number of scallop vessels are nomadic, fishing one location before moving to another and returning to grounds when they have recovered. In this way, most of the suitable grounds around the UK are fished. Vessels

[1] Vivier crabber repeat order (hookandnet.com)

[2] Isobella M – new 12m potting catamaran | Fishing News

targeting scallop locally typically land their catch into Hartlepool. Within the NE IFCA boundaries the scallop fishery is targeted by three permitted vessels.

94 Scallop dredging is an activity which is generally engaged by larger (>10m vessel length) vessels due to the engine capacity required to tow this heavy fishing gear.

Table 7-2: Profile of typical dredging vessels active across the Study Area

Parameter	Indicative details
Main target species	King scallops
Vessel nationality	English, Scottish
Vessel length	Over 15 m
Horsepower	200 hp to 400 hp
Typical speed when shooting and hauling gear	2 to 6 knots
Seasonality of activity	Spring peak
Typical gear configuration	Up to 10 dredges per side of vessel. Each dredge consists of a triangular frame leading to an opening, a tooth bar with spring-loaded teeth, and a bag of steel rings and netting back.

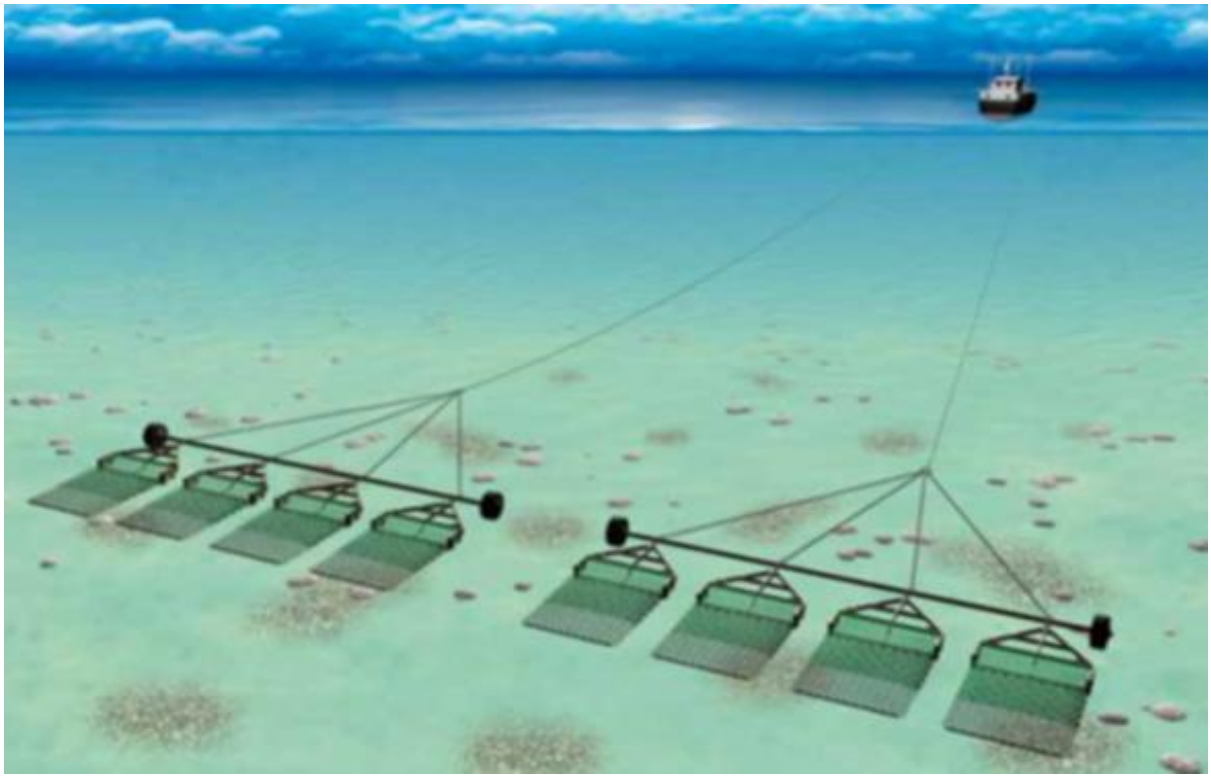


Plate 7-4: Typical dredge gear configuration (Source: Seafish, 2015)

Plate 7-5: Example of scallop dredge vessel (Source: VesselFinder[3])

7.3 Pelagic Trawls

95 **Table 7-3** describes the profile of pelagic trawl vessels active across the Study Area and **Plate 7-6** shows typical pelagic trawl gear configuration. **Plate 7-7** shows an example of a pelagic trawl vessel.

96 Pelagic or mid-water trawls are towed at the appropriate level in the water column to intercept shoaling fish such as herring and sprat. The location of the shoals is determined by sonar or vertical sounder echoes.

97 UK pelagic trawlers are Scottish-registered and land their catches primarily into Peterhead or Lerwick.

Table 7-3: Profile of typical pelagic trawl vessel active across the Study Area

Parameter	Indicative details
Main target species	Herring
Vessel nationality	Danish, Dutch, Scottish
Vessel length	Over 30 m
Horsepower	500 hp to 1200 hp
Typical speed when shooting and hauling gear	2 to 5 knots

[3] STAR OF JURA, Fishing vessel - Details and current position - MMSI 235040345 - VesselFinder

Parameter	Indicative details
Typical gear configuration	Pair or single pelagic (mid-water) trawling. Little or no bottom contact occurs, and ground ropes are not required. Net depth is changed by altering either warp (rope) length or towing speed.

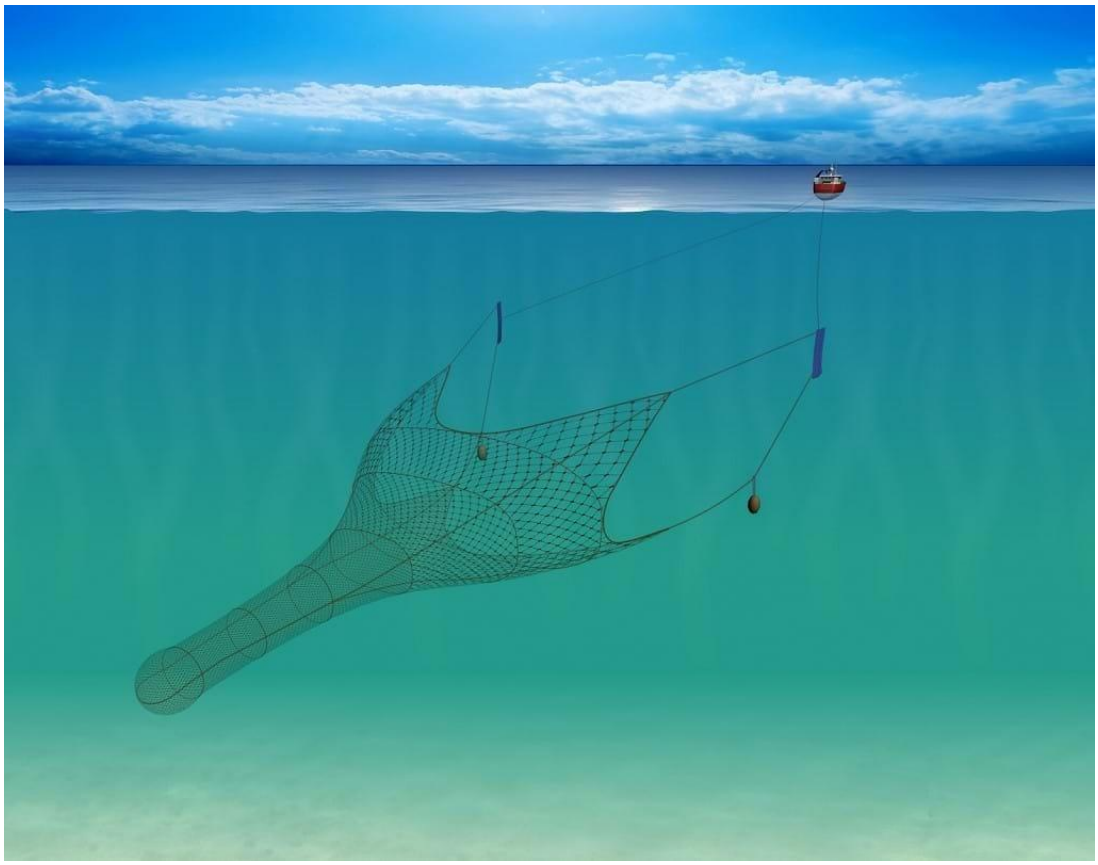


Plate 7-6: Typical pelagic trawl gear configuration (Source: Seafish, 2015)

Plate 7-7: Example of pelagic trawl vessel (Source: ShipSpotting[4])

7.4 Demersal Trawls

98 Demersal otter trawling uses a cone-shaped net which is held open by water pressure on two otter boards. The net is towed either across the seabed or within the water column. Fish are herded between the boards into the mouth of the trawl and then forced along a funnel into the end of the net. Net mesh sizes can be altered to target different fish species. Light otter trawling can be conducted by smaller boats using small doors.

99 Within the Study Area, English and Scottish trawlers, typically in the length range 24 m to 40 m, are active, landing primarily into Dutch ports, but also into North Shields. These trawlers are typically targeting plaice and catching other gadoids and groundfish. Some vessels target Nephrops. Non-UK trawlers active in the Study Area include Danish, Dutch, French, and Belgian vessels targeting mixed demersal species.

100 **Plate 7-8** shows a typical otter trawler and associated gear and **Table 7-4** describes the profile of otter trawling vessels active across the Study Area. **Plate 7-9** shows examples of demersal trawlers. Demersal trawlers operating across Study Area tend to tow in directions which are in line with natural seabed contours.

Table 7-4: Profile of typical demersal otter trawl vessel active across the Study Area

Parameter	Indicative details
Main target species	Plaice, mixed demersal species, Nephrops
Vessel nationality	UK, Dutch, Danish, French, Belgian
Vessel length	16 m to 40 m
Horsepower	300 hp to 850 hp

[4] https://www.shipspotting.com/photos/1124665

Parameter	Indicative details
Typical speed when shooting and hauling gear	2 to 6 knots
Seasonality of activity	Autumn and winter peak
Typical gear configuration	Demersal otter trawl. Possible twin or multi-rig bottom trawl. Two trawl doors.

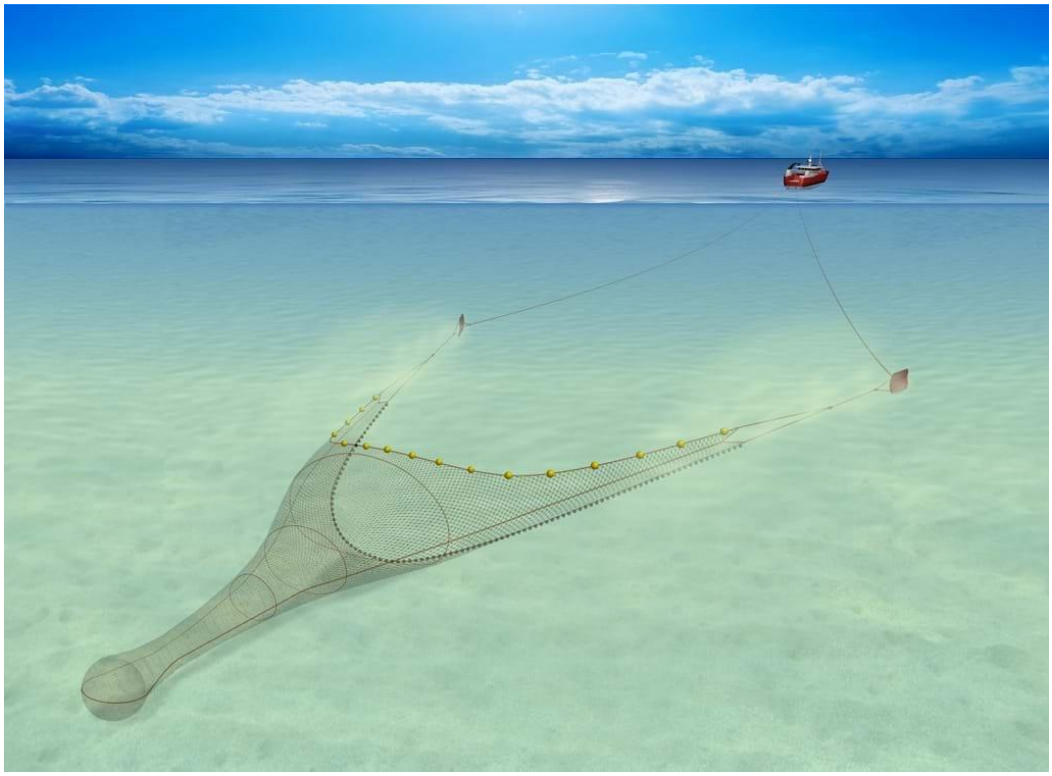


Plate 7-8: Typical otter trawl gear configuration (Source: Seafish, 2015)

Plate 7-9: Example of otter trawl vessels (Source: VesselFinder[5] [left] and Fishing News[6])

[5] FV TH0MAS NICOLAS 2, Fishing Vessel - Details and current position - IMO 9234733 - VesselFinder

[6] New-look Blueye | Fishing News

7.5 Beam Trawls

101 **Plate 7-11** shows a typical beam trawler and associated gear and **Table 7-5** describes the profile of beam trawling vessels active across the Study Area. **Plate 7-10** shows the typical configuration of beam trawl gear.

102 Beam trawl gear is used to target flatfish such as sole and plaice, which are often somewhat buried in the seabed. Beam trawl nets are held open by a heavy steel beam which is towed along the seabed on a line approximately three times the depth of the water. Some beam trawls include tickler chains, which drag along the seabed in front of the net, disturbing fish in its path and encouraging them to rise into the net. Beam trawls can range in length from 4 m to 14 m and each trawlers tows two beam trawls at a time from derricks on either side of the vessel.

103 Fishing effort for the target flatfish species is spread over a wide area and across various grounds throughout the North Sea.

Table 7-5: Profile of typical beam trawl vessel active across the Study Area

Parameter	Indicative details
Main target species	Plaice
Vessel nationality	English, Dutch, Belgian
Vessel length	25 m to 45 m
Horsepower	500 hp to 2,000 hp
Typical speed when shooting and hauling gear	3.5 to 8 knots
Seasonality of activity	Spring peak
Typical gear configuration	Twin beam, max length 12 m each beam. Each beam weighing <10 tonnes (~two tonnes for brown shrimp). Chain matting or individual chains attached to underside.

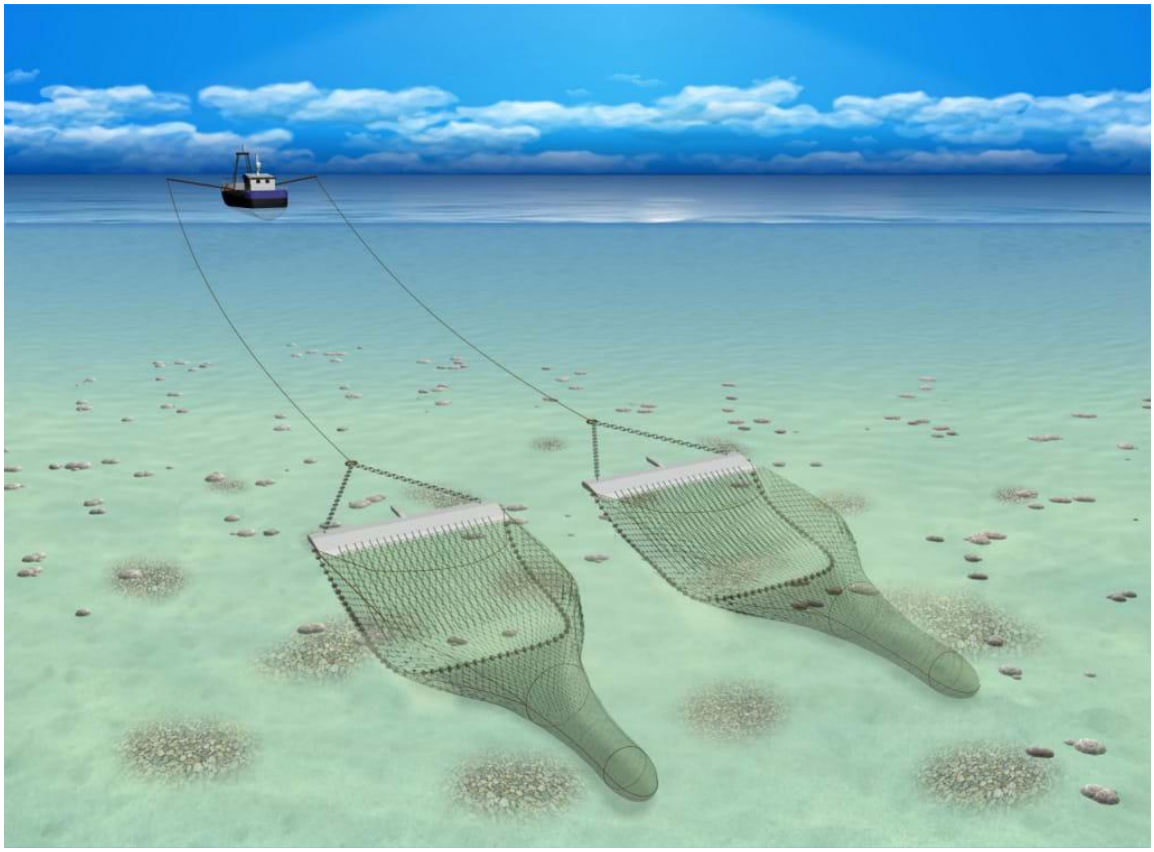


Plate 7-10: Typical beam trawl gear configuration (Source: Seafish, 2015)

Plate 7-11: Example of beam trawl vessels (Source: ShipSpotting[7] [left] and FiskerForum[8] [right])

7.6 Other Gear Types

104 Demersal seine netting (also referred to as flyseine) is a fishing method involving use of long weighted ropes to herd fish into the mouth of a trawl to target demersal species which live or feed on or near the seabed. Flyseine activity in the Channel and southern North Sea is understood to be increasing, involving a relatively small number of powerful vessels, which are either purpose-built or converted beam trawlers (Defra, 2022). MMO landings data for the Study Area indicate a peak in demersal seine landings in 2020 (340 tonnes) with target species including squid *Loligo*, mullets *Mugilidae* and whiting *Merlangius merlangus*. Landings have declined across 2021 (320 tonnes) and 2022 (80 tonnes).

105 Some intertidal fixed netting activity may also be expected to take place on the coastline between Flamborough and Withernsea, targeting shellfish, sea trout and white fish species. Landings in 2023 by drift and fixed nets in the nearshore portion of the Study Area (ICES rectangle 36E9) equated 0.2 tonnes (MMO, 2024).

[7] ISLA B - IMO 5393555 - ShipSpotting.com - Ship Photos, Information, Videos and Ship Tracker

[8] Avanti Z-26 - FiskerForum

8. Spatial Fishing Activity

8.1 Fishing Intensity based on VMS Data

106 VMS data sourced from ICES[9] displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU (including UK) registered vessels 12 m and over in length. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface and provides a proxy for fishing intensity.

107 VMS data sourced from the MMO displays the value of catches for UK registered vessels 15 m and over in length.

108 Figures presented below depict the following:

- Potting activity for UK vessels;
- Pelagic trawl activity for UK vessels;
- Dredge activity for EU and UK vessels;
- Demersal otter trawl activity for EU and UK vessels;
- Demersal seine activity for EU and UK vessels; and
- Beam trawl activity for EU and UK vessels.

109 **Figure 8.1** and **Figure 8.2** present the MMO VMS dataset for UK potting activity. Data does not include vessels less than 15 m in length, which form a significant portion of the UK fleet. The figures are therefore highly likely to significantly under-represent the potting activity in the region – particularly in inshore waters – and additional data (e.g. surveillance and landings data), together with stakeholder consultation has informed the assessment of impacts on this fleet for the PEIR and ES stages. The VMS data indicates that the western portion of the offshore ECC is located within regional potting grounds and that potting activity can be expected to take place within parts of the offshore ECC (in particular in ICES rectangle 37F0). The data indicates limited potting activity in the eastern portion of the offshore ECC (i.e. ICES rectangles 39F0, 39F1, 39F2) and in the Array Area.

110 **Figure 8.3** and **Figure 8.4** present the MMO VMS dataset for UK pelagic trawl activity. Pelagic trawl vessels are over 15 m in length and therefore expected to be well represented by the data. Aligned with landings data, pelagic trawl activity in the Study Area is annually sporadic. When it does occur it is typically in a spatially discrete area that overlaps with the offshore ECC in ICES rectangle 37F0 and runs north into ICES rectangle 37E9.

111 **Figure 8.5** to **Figure 8.7** indicate scallop dredge activity (associated with the UK fleet) within the portion of the offshore ECC that coincides with the 12 nm limit overlapping with a scallop ground in ICES rectangle 37F0. Data indicates that the offshore ECC routes through the southern extent of a scallop ground, with dredge activity more intensely focused to the north in ICES rectangle 37E9.

112 **Figure 8.8** to **Figure 8.10** indicate the potential presence of EU (including UK, but primarily expected to be EU vessels) demersal otter trawlers throughout the Study Area and outside of it. Within the Project Development Area, data indicate relatively higher levels of activity in the eastern portion of the offshore ECC and in the Array Area (noting demersal trawling no longer takes place in the Array Area as a result of byelaw implementation in 2022), with data also indicating that key demersal trawl grounds are located to the south and east of the Project.

113 **Figure 8.11** indicates the potential presence of flyseine vessels (including EU and UK) throughout the Study Area and outside of it, with activity overlapping sections of the offshore ECC and Array Area (noting demersal seining no longer takes place in the Array Area as a result of byelaw implementation in 2022).

114 **Figure 8.12 to Figure 8.14** indicate the potential presence of EU (including UK, but primarily expected to be EU vessels) beam trawlers throughout the Study Area and outside of it. Within

[9] Note that UK VMS data presents information on fishery value, whereas ICES VMS data presents 'swept-area ratio', which is the cumulative area contacted by a fishing gear within a grid cell over an annual period.

the Project's boundaries, data indicate relatively higher levels of activity in the eastern portion of the offshore ECC and in the Array Area (noting beam trawling no longer takes place in the Array Area as a result of byelaw implementation in 2022), with data also indicating that key beam trawl grounds are located to the south and east of the Project, with the Project located on the fringes of these grounds.

8.2 Fishing Intensity based on AIS Data

115 **Figure 8.15** to **Figure 8.17** present AIS fishing vessel route density data. AIS is required to be fitted on fishing vessels ≥15 m length. The data is specific to fishing vessels and indicates the route density per square kilometre per year. This data does not distinguish between transiting vessels and active fishing but does provide a useful source to corroborate fishing grounds. Data indicates sustained fishing vessel presence in the inshore portion of the offshore ECC, with discrete areas of activity in the offshore ECC and limited activity in the Array Area. Some of the patterns in activity seen in the data can be explained by the presence of fishing restrictions (see **Section 5**).

8.3 Fishing Intensity based on Marine Traffic Survey

116 A project-specific marine traffic survey was undertaken in July and August 2023 (See Volume 1, Chapter 15: Shipping and Navigation for additional detail), using AIS and radar tracking and visual observations to record vessel activity across the Array Area and a surrounding 10 nm buffer.

117 During the summer survey, an average of one commercial fishing vessel was recorded within the Study Area per day during the survey period. All commercial fishing vessels were in transit as opposed to being engaged in fishing activity. Most vessels were recorded to the east of the Array Area and only one vessel intersected the Array Area to the north (Anatec, 2023).

118 A further winter marine traffic survey is to be undertaken in winter 2024 / 2025 and results will be drawn upon when they become available.

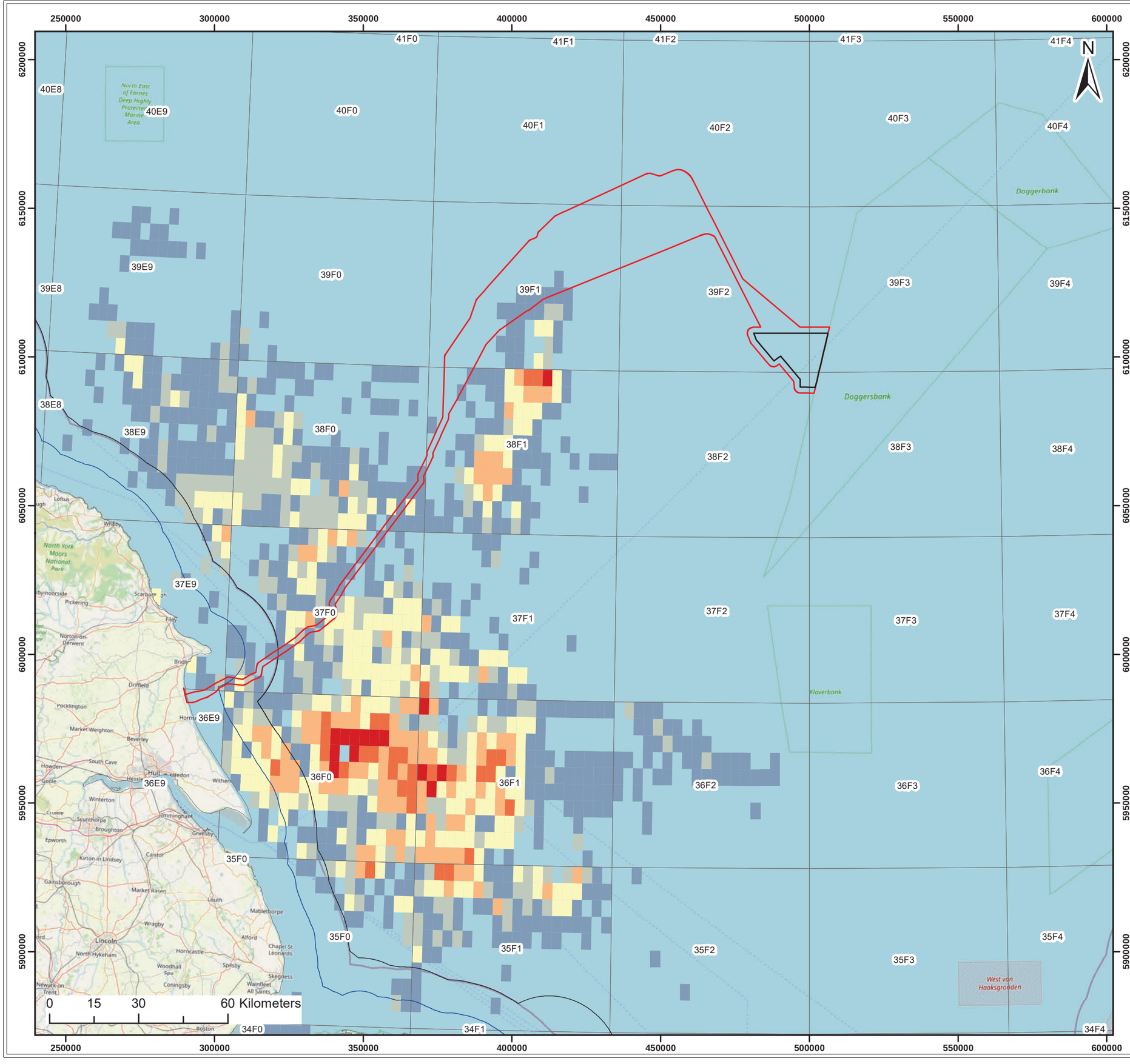
8.4 Fishing Activity based on MMO Surveillance Data

119 **Figure 8.18** and **Figure 8.19** display MMO surveillance patrol data by gear type and vessel nationality. The data confirm the presence of fishing vessels deploying a variety of gear types across the Study Area, in particular potting vessels, scallop dredgers, and trawlers. The data indicate the relative dominance of UK vessels in surveillance observations, but confirm the presence of fishing vessels from other EU fleets.

8.5 Fishing Activity based on Other Data Sources

120 Fisheries scouting surveys were undertaken ahead of site investigation surveys in Dogger Bank A, B and D. The aim of these surveys was to identify potting areas and gear within the project areas, enabling liaison with relevant operators ahead of site survey. Surveys were variously undertaken in 2021, 2022, 2023 and 2024. Visual observations of static gear markers are shown **Figure 8.20** and **Figure 8.21**.

121 The surveys recorded static potting gear in and adjacent to the nearshore section of the offshore ECC.



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Potting 2020 (UK vessels ≥15m)

Total value, £

- £0.01 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £145,000.00

Source: © Haskoning DHV UK Ltd, 2023;
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title: Potting vessels VMS data indicating first sales value
Annual data (for 2020) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:				
8.1	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

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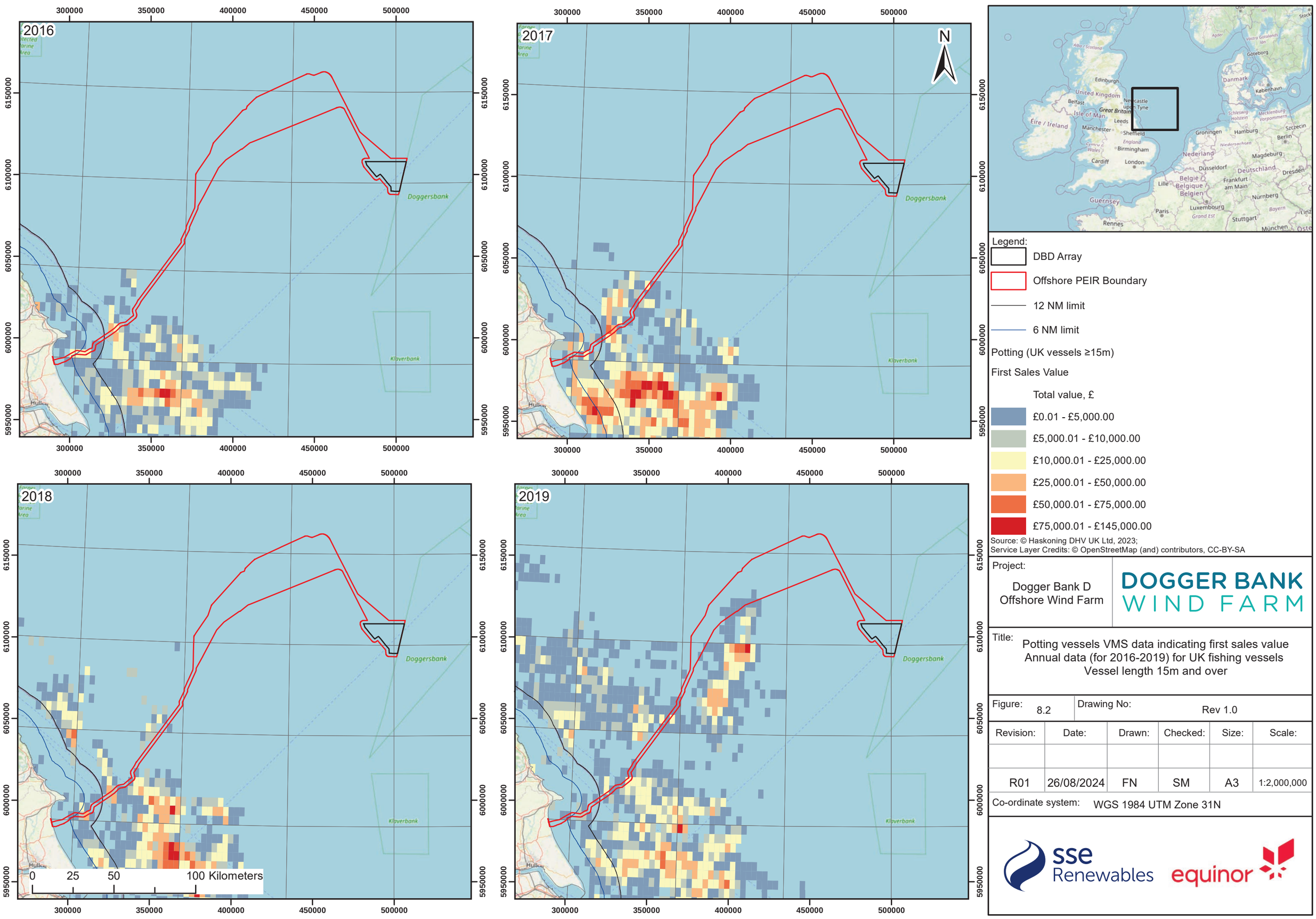
2016
2017
2018
2019
N
Doggersbank
Klaverbank
Hull
300000
350000
400000
450000
500000
6150000
6100000
6050000
6000000
5950000
0
25
50
100 Kilometers
Legend:
DBD Array
Offshore PEIR Boundary
12 NM limit
6 NM limit
Potting (UK vessels ≥15m)
First Sales Value
Total value, £
£0.01 - £5,000.00
£5,000.01 - £10,000.00
£10,000.01 - £25,000.00
£25,000.01 - £50,000.00
£50,000.01 - £75,000.00
£75,000.01 - £145,000.00
Source: © Haskoning DHV UK Ltd, 2023;
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Project:
Dogger Bank D
Offshore Wind Farm
DOGGER BANK
WIND FARM
Title:
Potting vessels VMS data indicating first sales value
Annual data (for 2016-2019) for UK fishing vessels
Vessel length 15m and over
Figure: 8.2
Drawing No: Rev 1.0
Revision: | Date: | Drawn: | Checked: | Size: | Scale:
R01 | 26/08/2024 | FN | SM | A3 | 1:2,000,000
Co-ordinate system: WGS 1984 UTM Zone 31N
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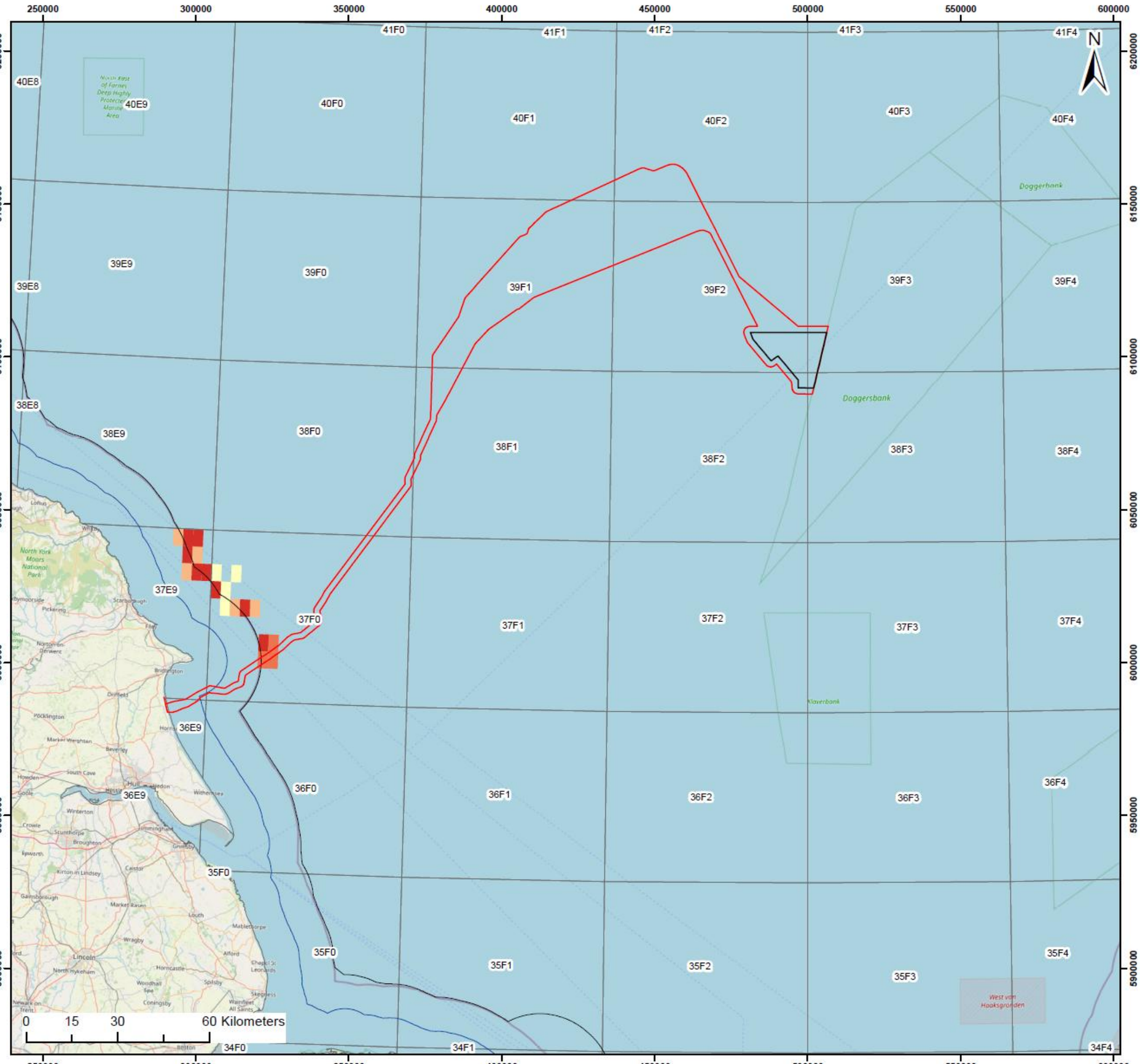

Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Pelagic Trawl 2020 (UK vessels ≥15m)

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £211,000.00

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Pelagic trawl VMS data indicating first sales value
Annual data (for 2020) for UK fishing vessels
Vessel length 15m and over

Figure: 8.3

Drawing No: Rev 1.0

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

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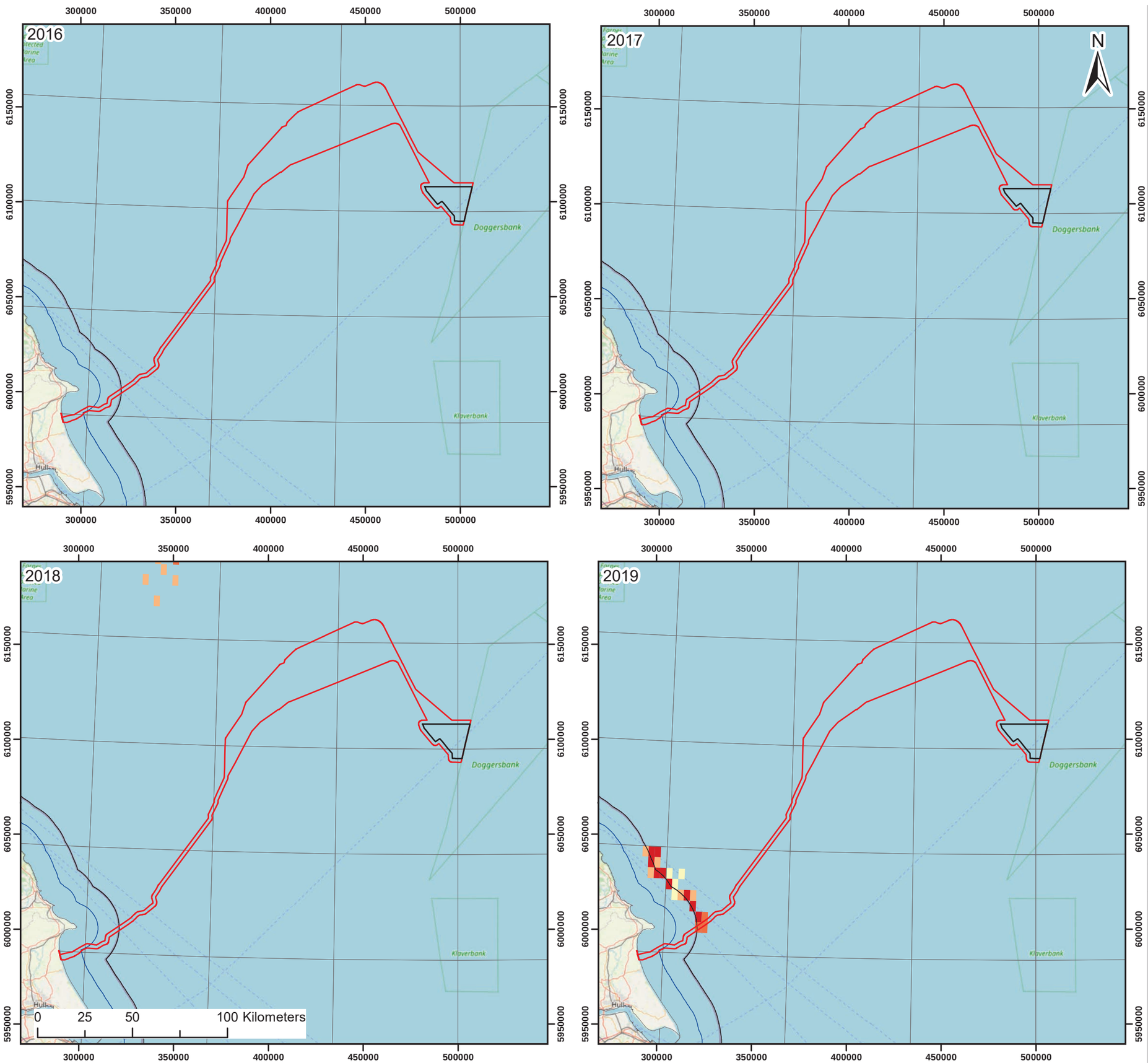

Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Pelagic Trawl (UK vessels ≥15m)

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £242,000.00

Project:
Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:
Pelagic trawl vessels VMS data indicating first sales value
Annual data (for 2016-2019) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:				
8.4	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
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Co-ordinate system: WGS 1984 UTM Zone 31N

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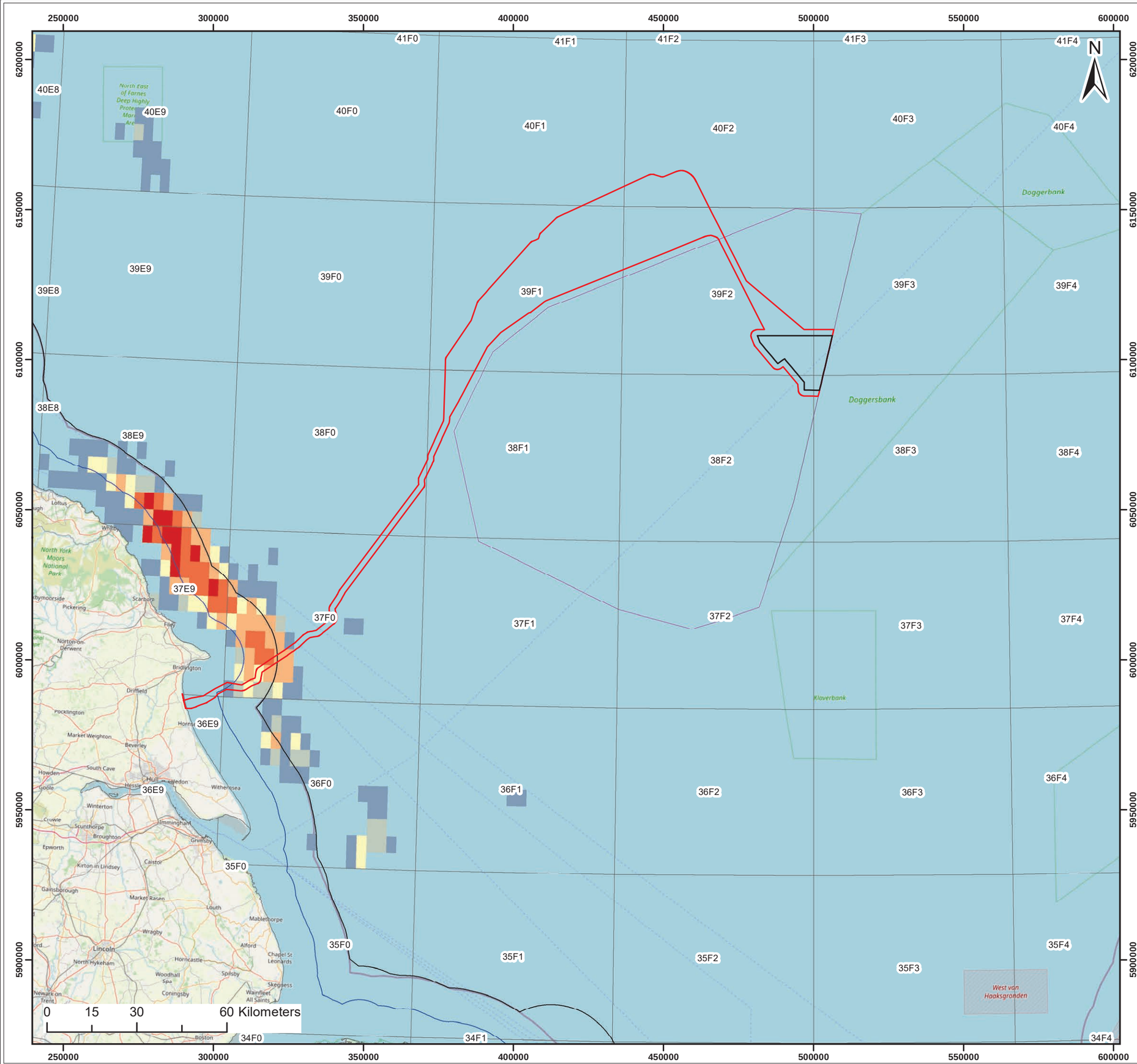

Legend:

- DBD Array
- Offshore PEIR Boundary
- Dogger Bank SAC*
- 12 NM limit
- 6 NM limit

Dredge 2020 (UK vessels ≥15m)

First Sales Value

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £232,000.00

*As of June 2022 use of bottom towed fishing gear is prohibited in the Dogger Bank SAC

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Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

Project:

Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Dredge VMS data indicating first sales value
Annual data (for 2020) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:
8.5	Rev 1.0

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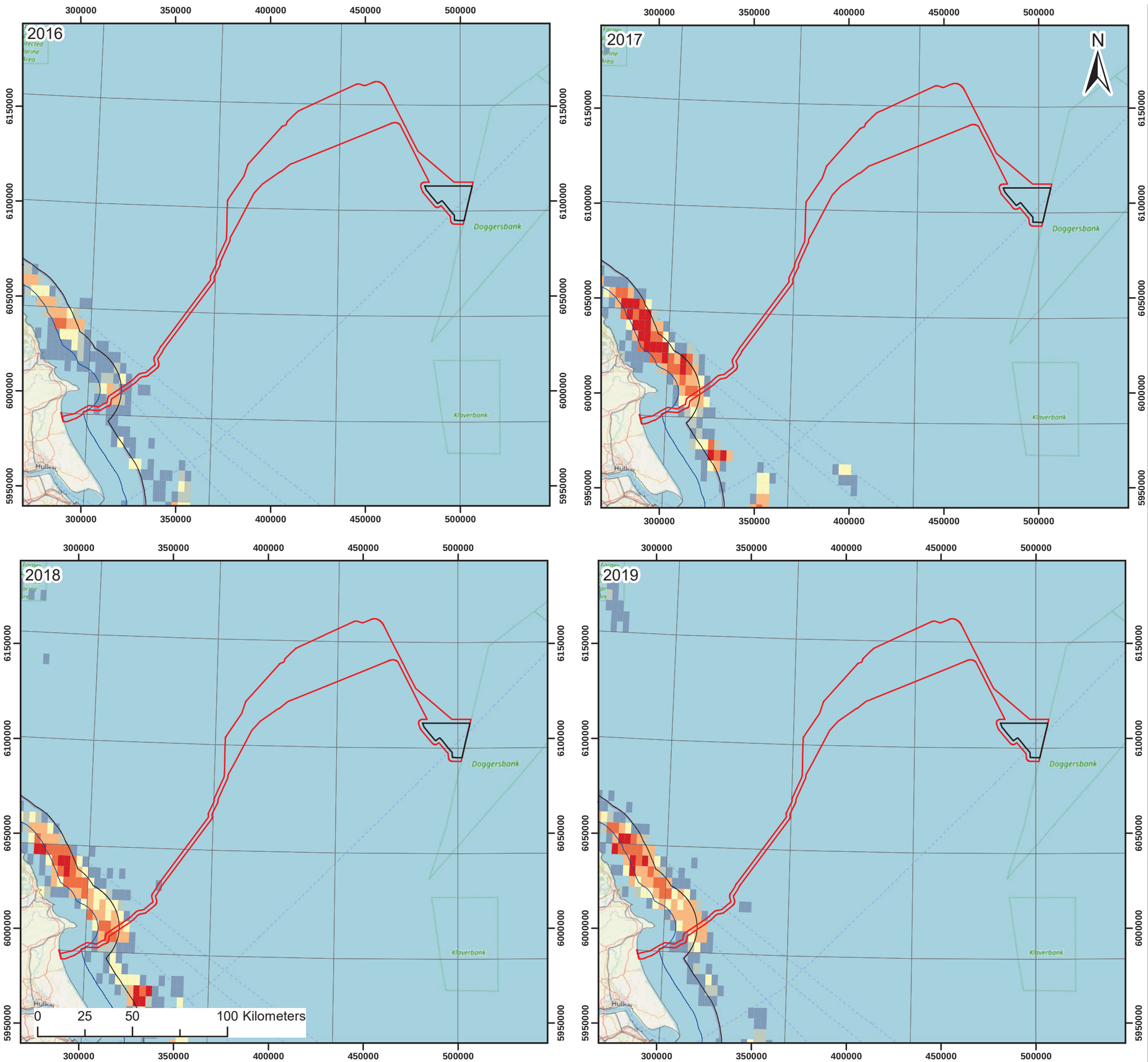
Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Dredge (UK vessels ≥15m)

Total value, £

- £0.91 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £280,000.00

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Dredge VMS data indicating first sales value
Annual data (for 2016-2019) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:
8.6	Rev 1.0

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

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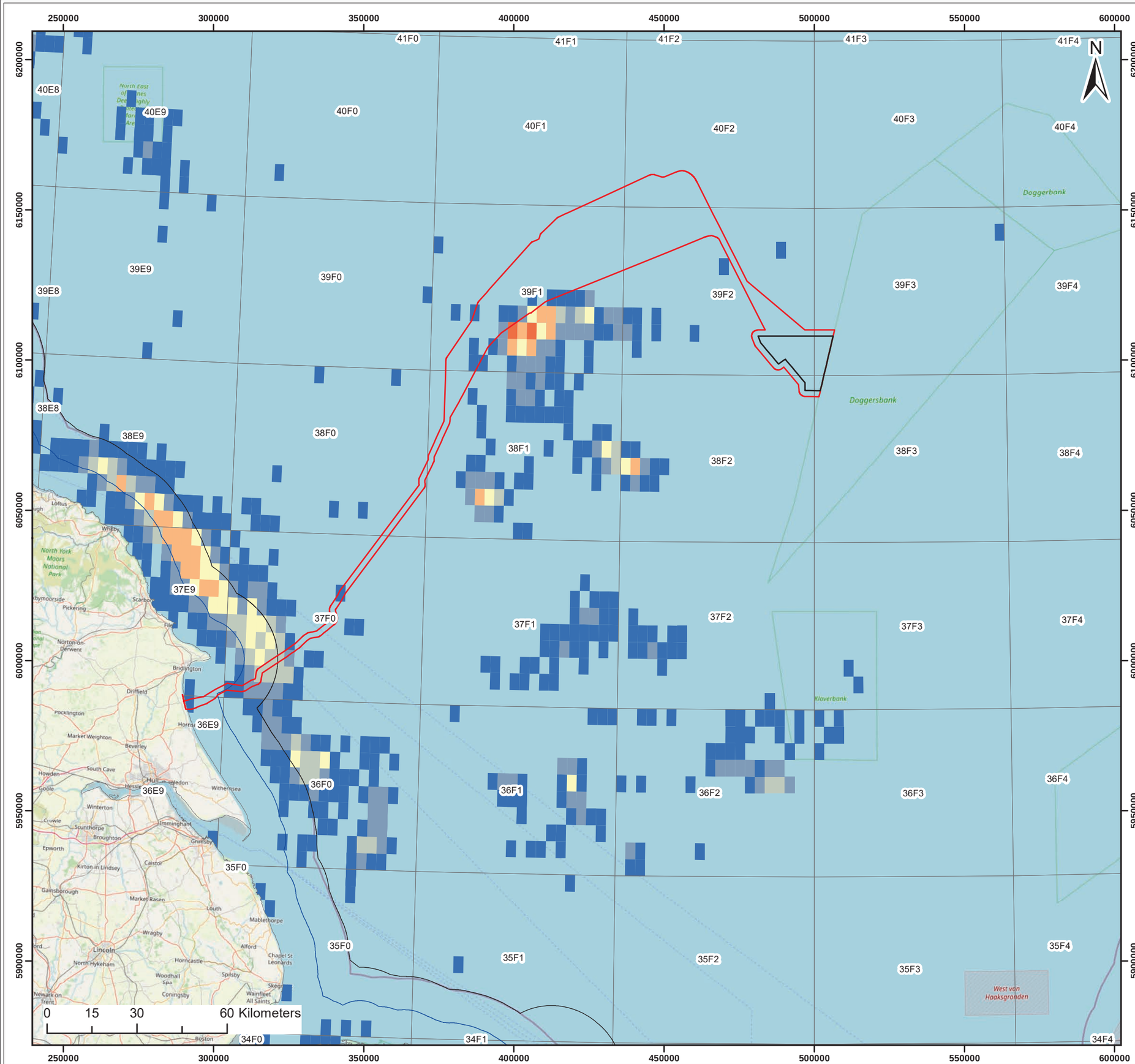


Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Dredge (EU and UK vessels ≥12m)

Average Annual Surface Swept Area Ratio (2016-

- 0.0 - 0.1
- 0.2 - 0.5
- 0.6 - 0.8
- 0.8 - 1.0
- 1.1 - 2.0
- 2.1 - 2.5
- 2.6 - 3.8

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

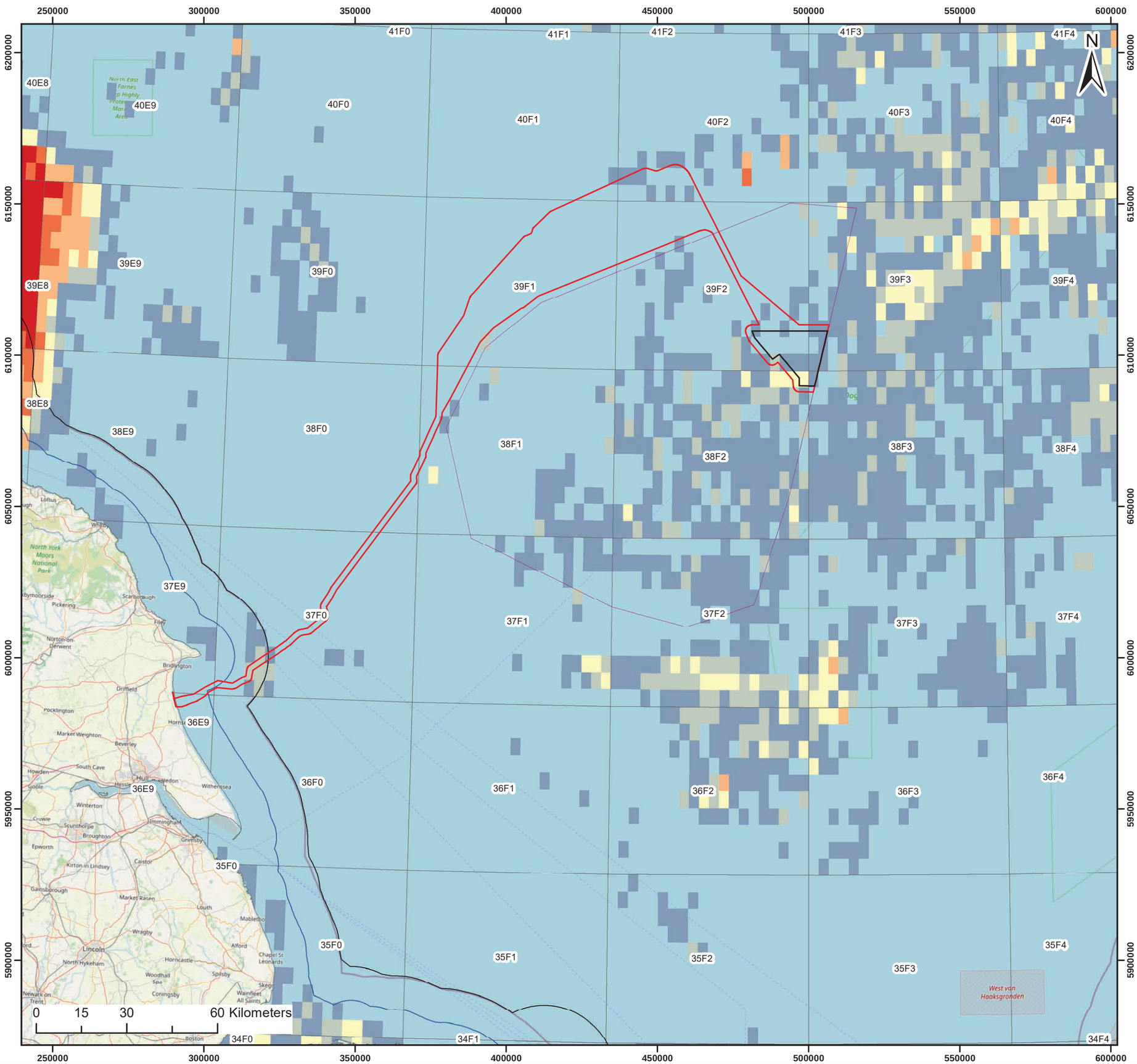
Dredge Surface Swept Area Ratio
5-year average (2016-2020)
EU (including UK) fishing vessels 12m and over

Figure:	Drawing No:
8.7	Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- Dogger Bank SAC*
- 12 NM limit
- 6 NM limit

Demersal Otter Trawl 2020 (UK vessels ≥15m)

First Sales Value

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £595,000.00

*As of June 2022 use of bottom towed fishing gear is prohibited in the Dogger Bank SAC

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Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

Project:
Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:
Demersal otter trawl VMS data indicating first sales value
Annual data (for 2020) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:				
8.8	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
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Co-ordinate system: WGS 1984 UTM Zone 31N

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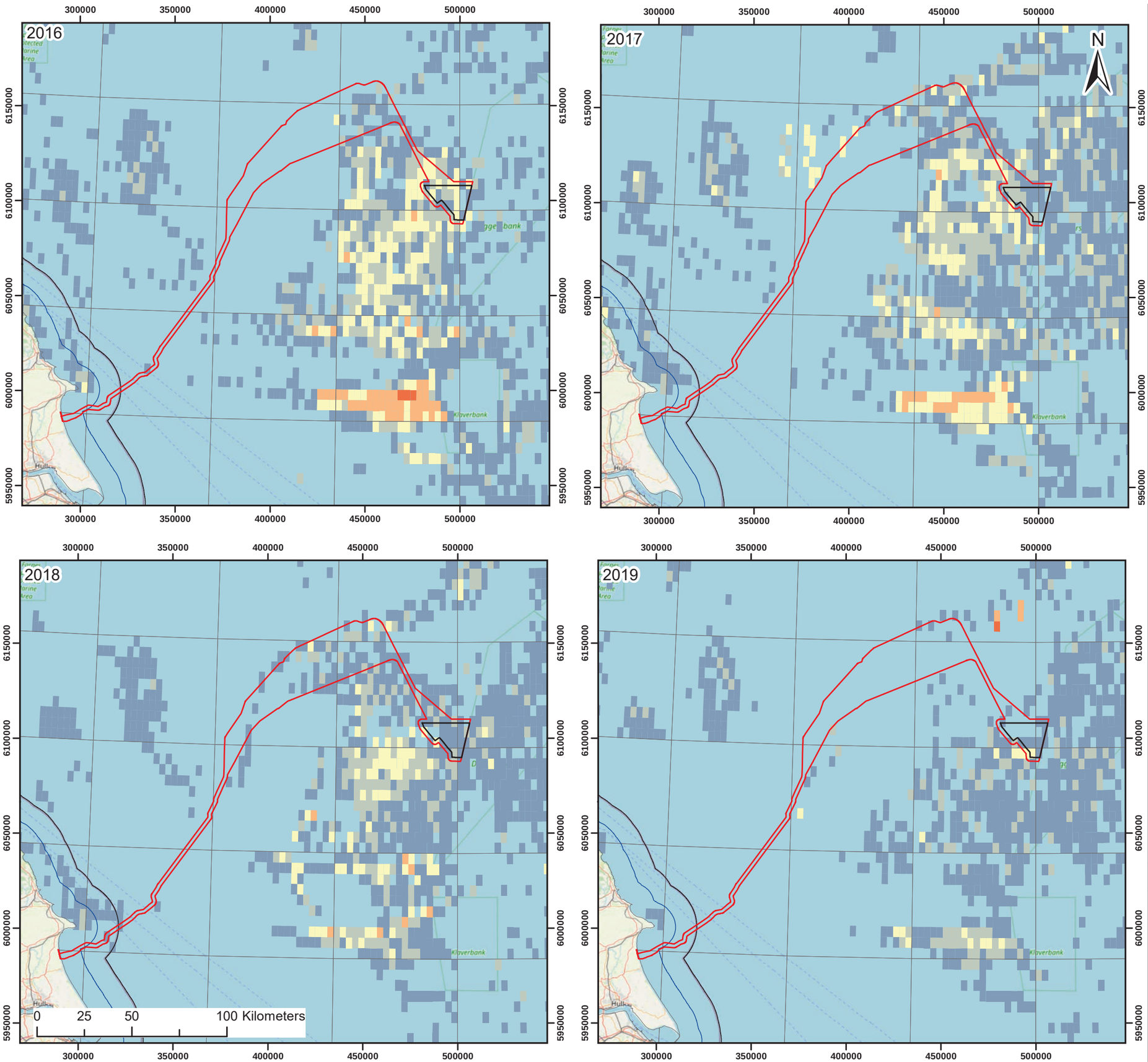

Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Demersal Otter Trawl (UK vessels ≥15m)

Total value, £

- £0.02 - £5,000.00
- £5,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £100,000.00

Project:
Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:
Demersal otter trawl VMS data indicating frst sales value
Annual data (for 2016-2019) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:				
8.9	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:2,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

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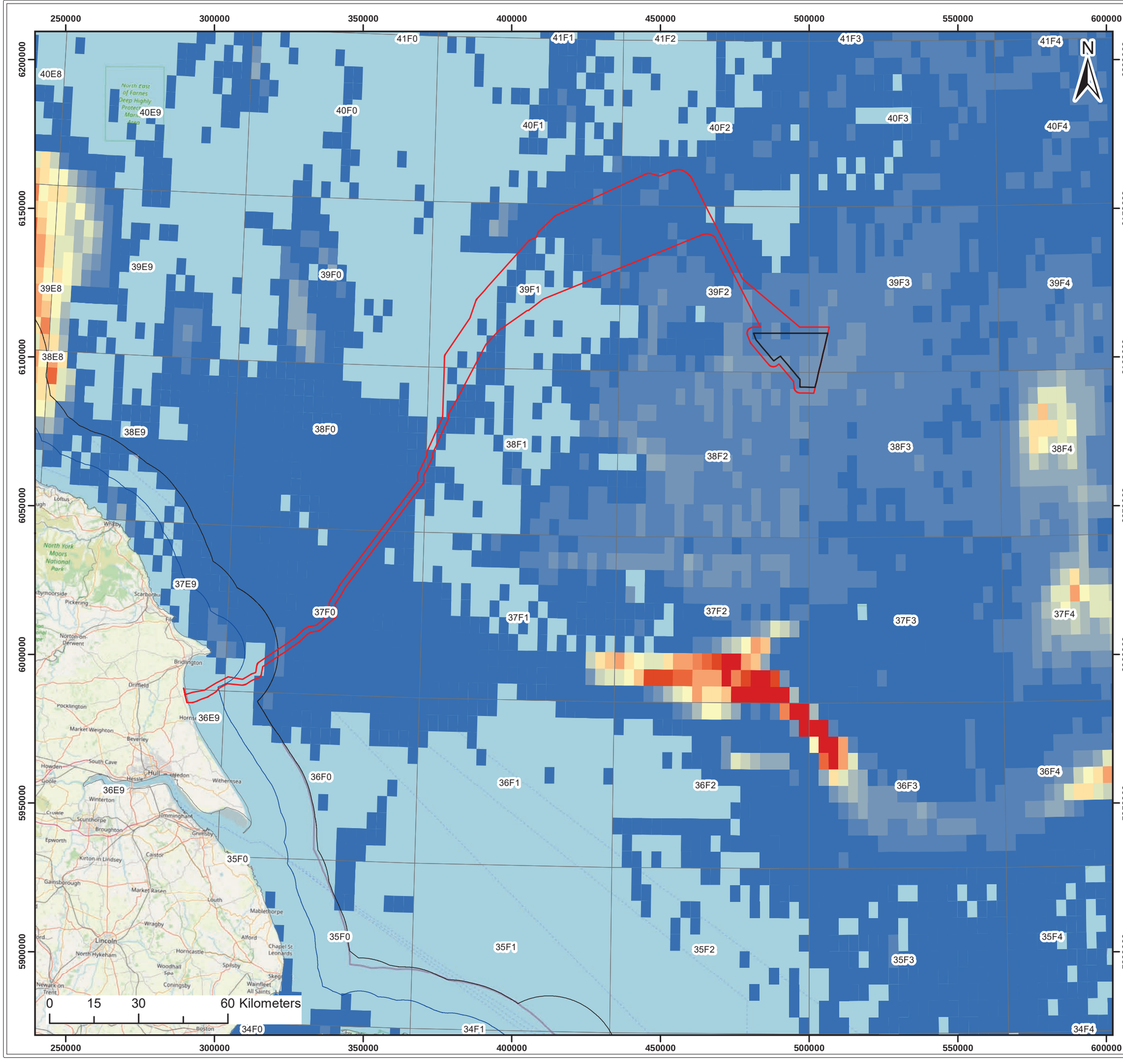


Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Demersal Otter Trawl (EU and UK vessels ≥12m)
Average Annual Surface Swept Area Ratio (2016-2020)

0.0 - 0.6	4.6 - 5.1	9.1 - 23.2
0.7 - 1.3	5.2 - 5.8	
1.4 - 1.9	5.9 - 6.4	
2.0 - 2.6	6.5 - 7.1	
2.7 - 3.2	7.2 - 7.7	
3.3 - 3.9	7.8 - 8.4	
4.0 - 4.5	8.5 - 9.0	

Project:
Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

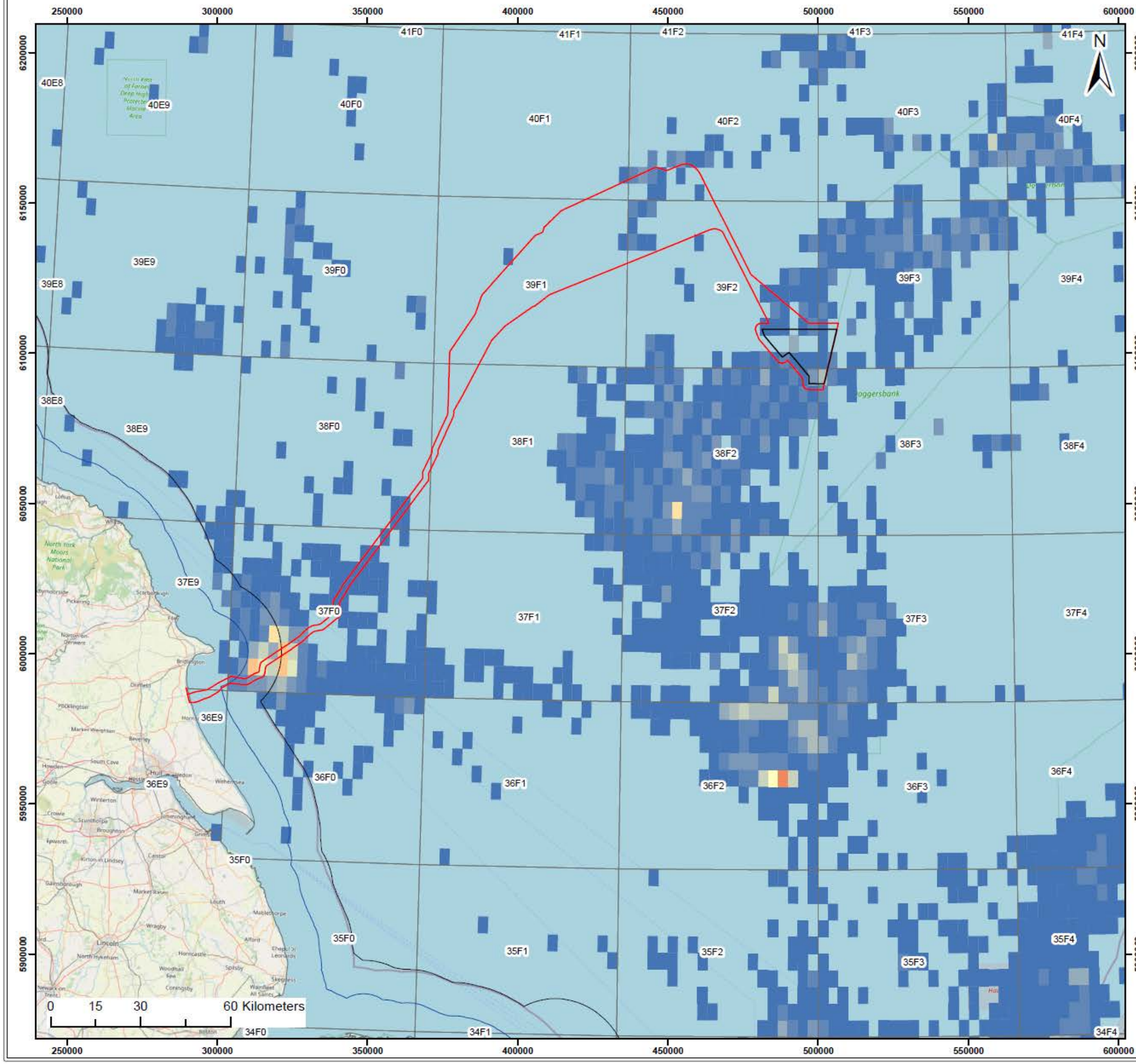
Title:
Demersal Otter Trawl Surface Swept Area Ratio
5-year average (2016-2020)
EU (including UK) fishing vessels 12m and over

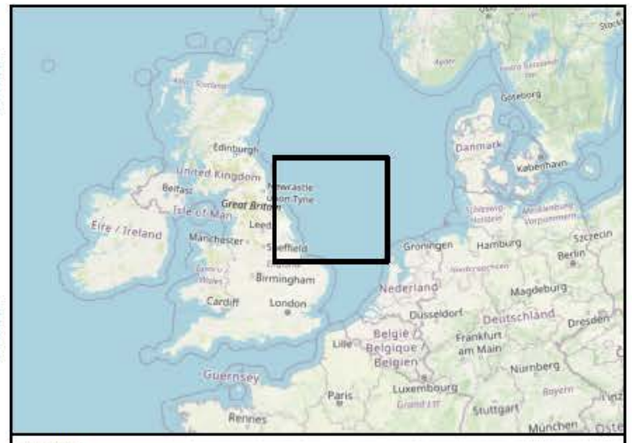
Figure: 8.10
Drawing No: Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables
equinor





Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Demersal Seine (EU and UK vessels ≥12m)
Average Annual Surface Swept Area Ratio (2016-2020)

0.0 - 0.6	4.6 - 5.1	9.1 - 46.8
0.7 - 1.3	5.2 - 5.8	
1.4 - 1.9	5.9 - 6.4	
2.0 - 2.6	6.5 - 7.1	
2.7 - 3.2	7.2 - 7.7	
3.3 - 3.9	7.8 - 8.4	
4.0 - 4.5	8.5 - 9.0	

Project:
Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

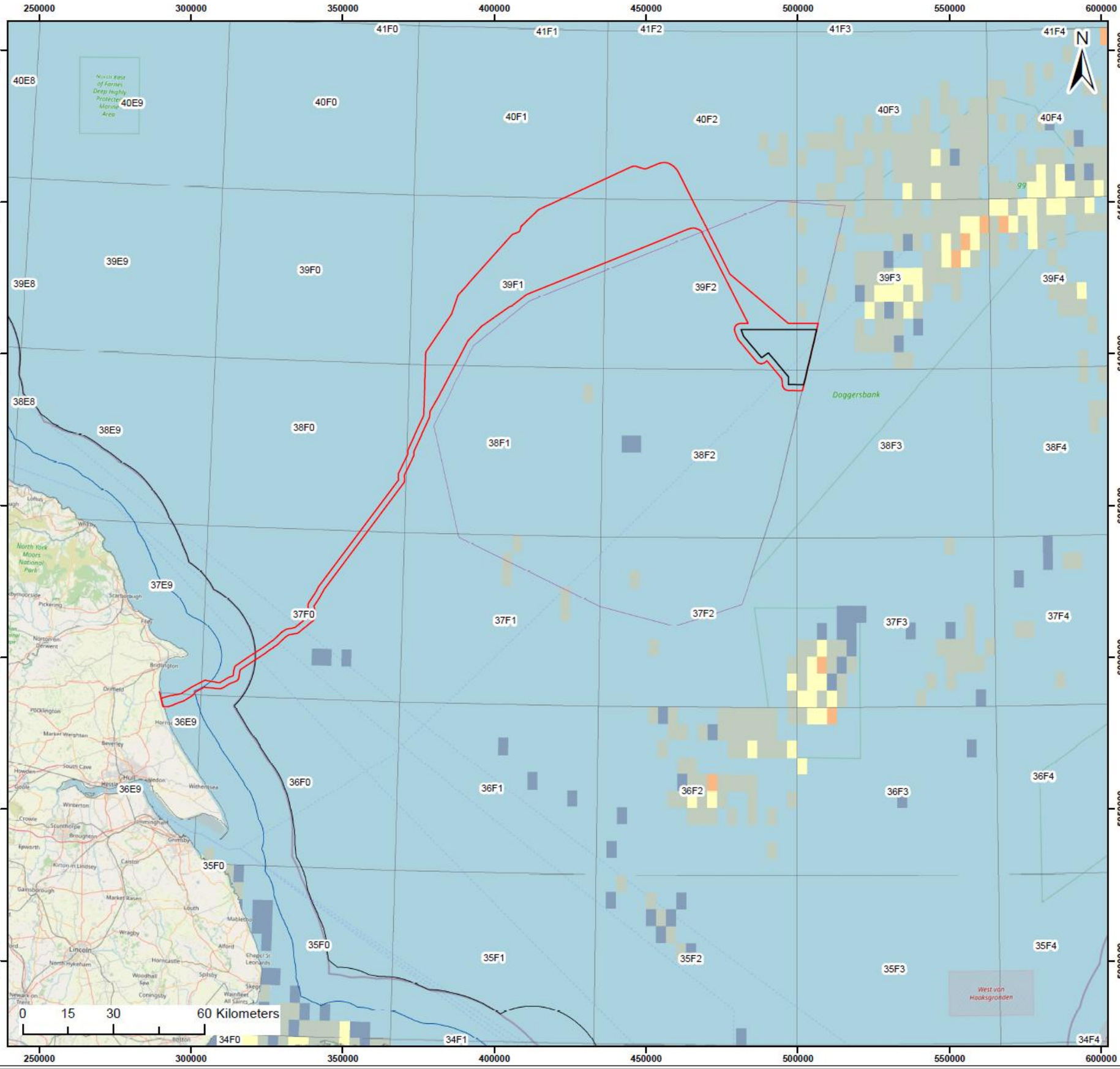
Title:
Demersal Seine Surface Swept Area Ratio
5-year average (2016-2020)
EU (including UK) fishing vessels 12m and over

Figure: 8.11
Drawing No: Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- Dogger Bank SAC*
- 12 NM limit
- 6 NM limit

Beam Trawl 2020 (UK vessels ≥15m)

First Sales Value

Total value, £

- £0.02 - £1,000.00
- £1,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £45,987.96

*As of June 2022 use of bottom towed fishing gear is prohibited in the Dogger Bank SAC

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Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

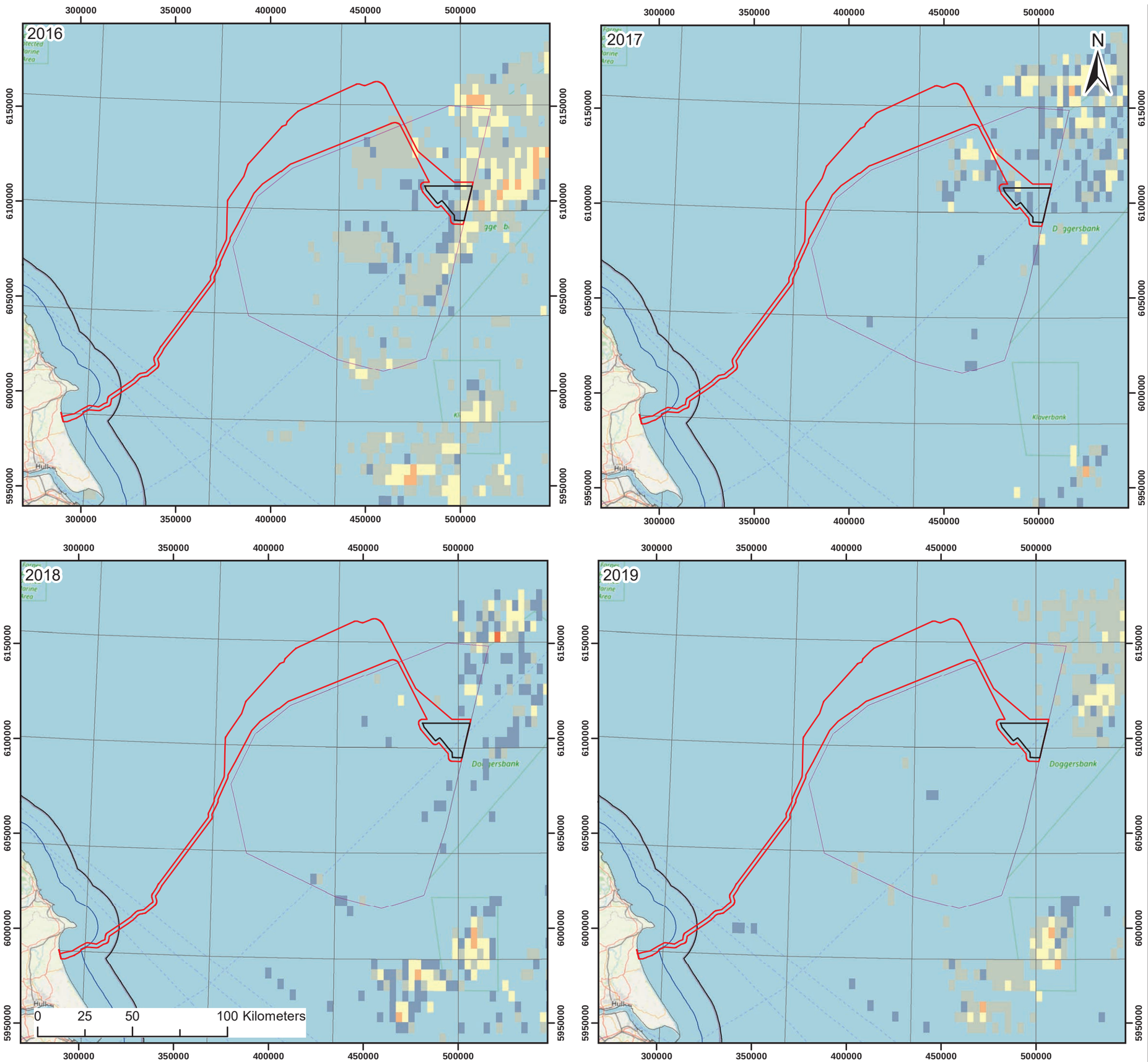
Beam trawl VMS data indicating first sales value
Annual data (for 2020) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:	
8.12		Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- Dogger Bank SAC*
- 12 NM limit
- 6 NM limit

Beam Trawl (UK vessels ≥15m)

Total value, £

- £0.02 - £1,000.00
- £1,000.01 - £10,000.00
- £10,000.01 - £25,000.00
- £25,000.01 - £50,000.00
- £50,000.01 - £75,000.00
- £75,000.01 - £86,138.54

*As of June 2022 use of bottom towed fishing gear is prohibited in the Dogger Bank SAC

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Project:
Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

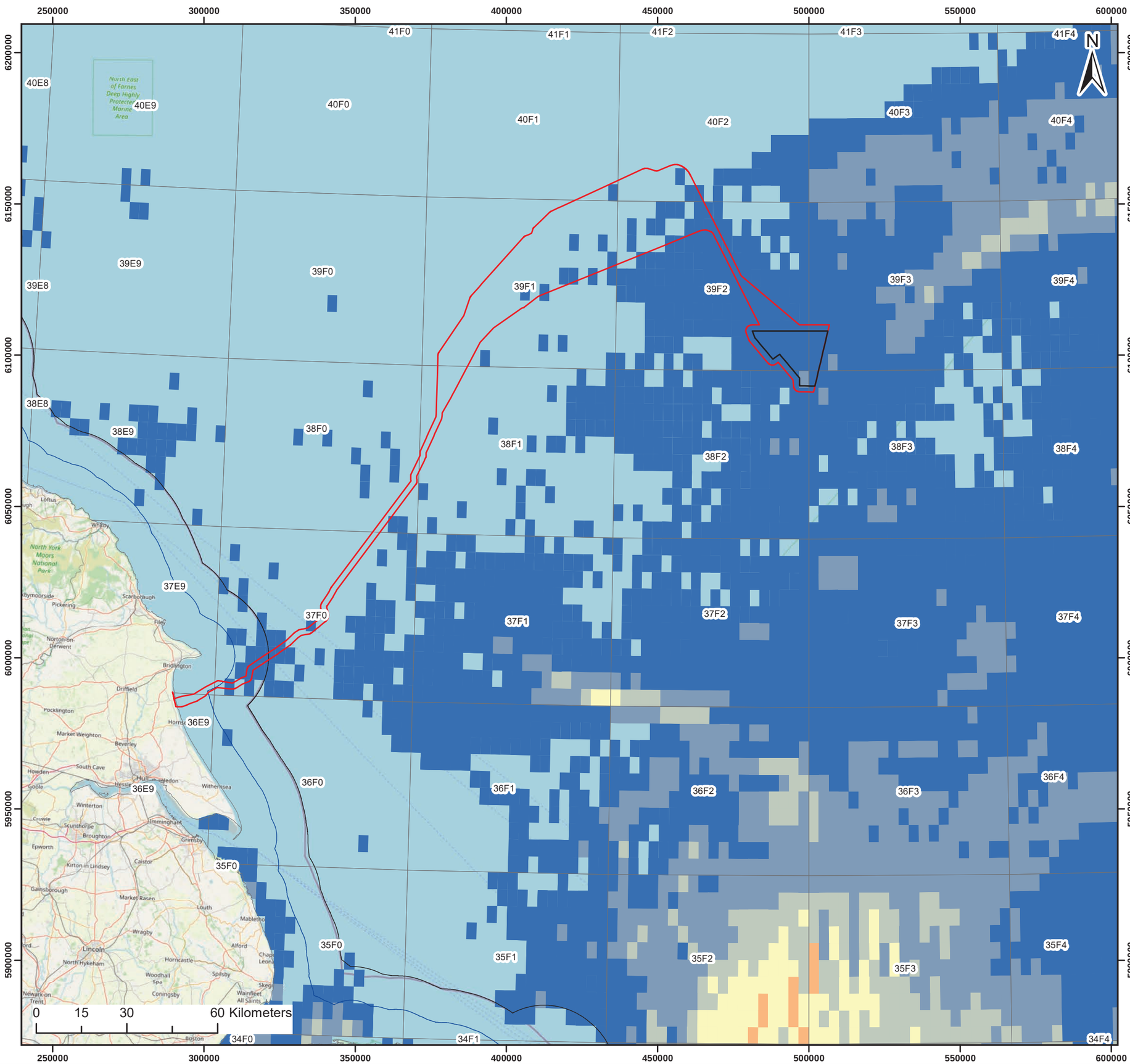
Title:
Beam trawl VMS data indicating first sales value
Annual data (for 2016-2019) for UK fishing vessels
Vessel length 15m and over

Figure:	Drawing No:				
8.13	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:2,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables

equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Beam Trawl (EU and UK vessels ≥12m)

Average Annual Surface Swept Area Ratio (2016-

- 0.0 - 0.4
- 0.5 - 1.0
- 1.1 - 1.7
- 1.8 - 3.0
- 3.1 - 5.0
- 5.1 - 9.0
- 9.1 - 24.0

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Beam Trawl Surface Swept Area Ratio
5-year average (2016-2020)
EU (including UK) fishing vessels 12m and over

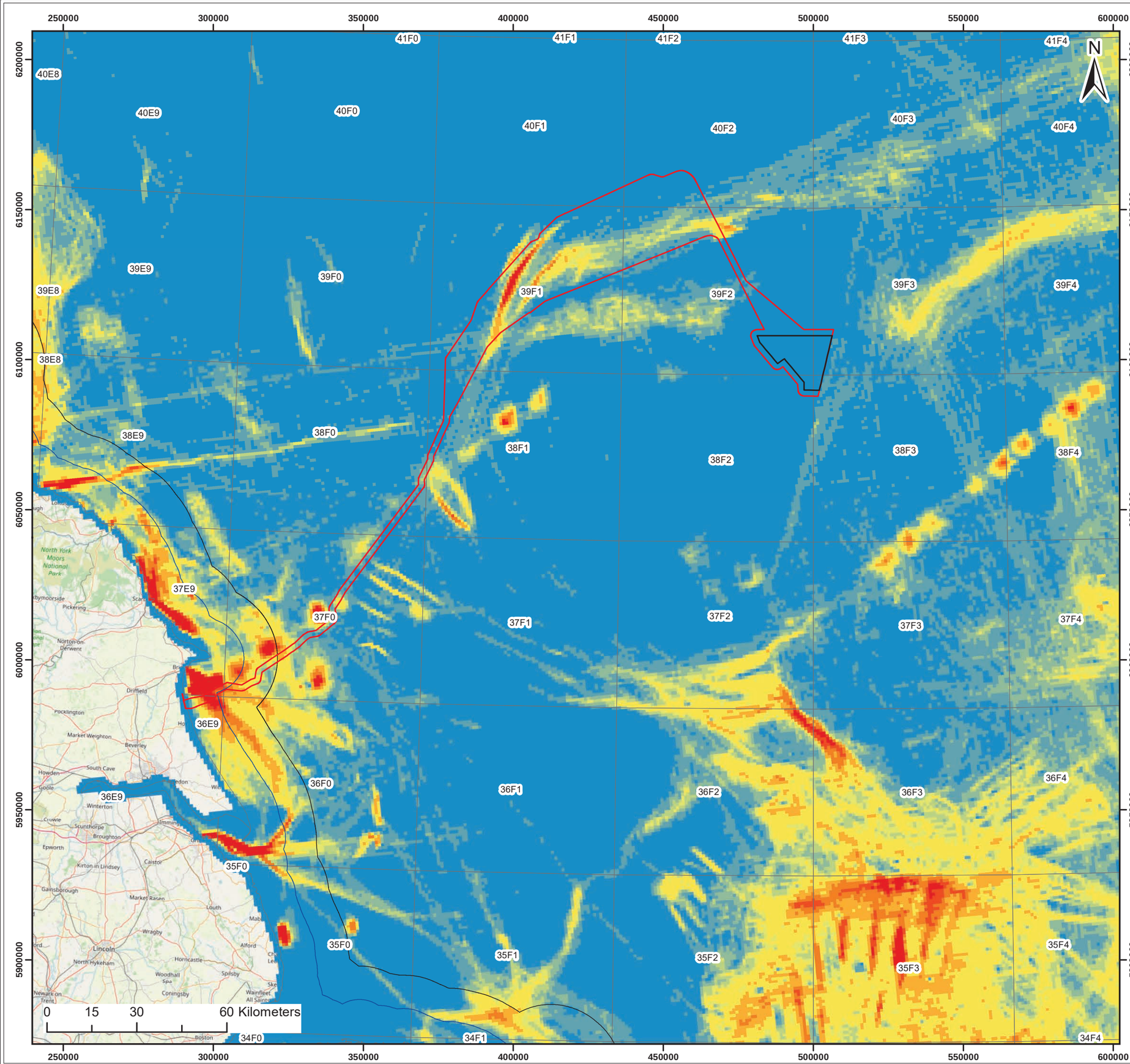
Figure:	Drawing No:
8.14	Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables

equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Fishing Vessel Route Density (2023)

(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 16,363

Source: © Haskoning DHV UK Ltd, 2023;
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

Project:
Dogger Bank D Offshore Wind Farm

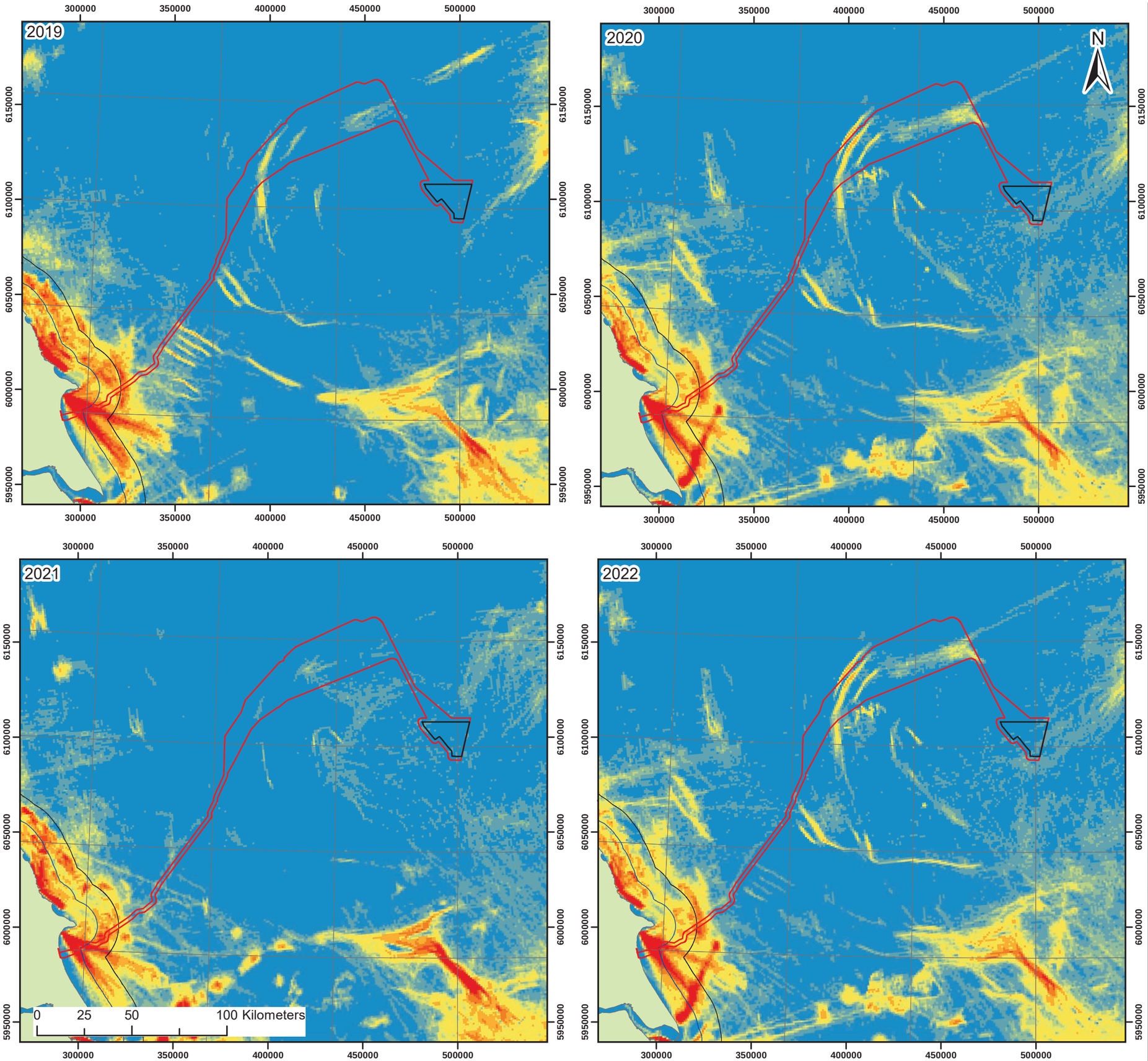
DOGGER BANK WIND FARM

Title:
Fishing vessel AIS route density indicating number of routes by fishng vessels (fishing and in transit) per square km per year 2023

Figure:	Drawing No:				
8.15	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:1,250,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Fishing Vessel Route Density

(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 15,661

Source: © Haskoning DHV UK Ltd, 2023;
Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

Project: Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

Title: Fishing vessel AIS route density indicating number of routes by fishng vessels (fishing and in transit) per square km per year 2019 to 2022

Figure:	Drawing No:				
8.16	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:2,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor

Spring

Summer

Autumn

Winter

N

0 20 40 80 Kilometers

Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Fishing Vessel Route Density (2022)

(Routes per Square km per year)

- 0 - 10
- 11 - 20
- 21 - 30
- 31 - 40
- 41 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 16,363

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

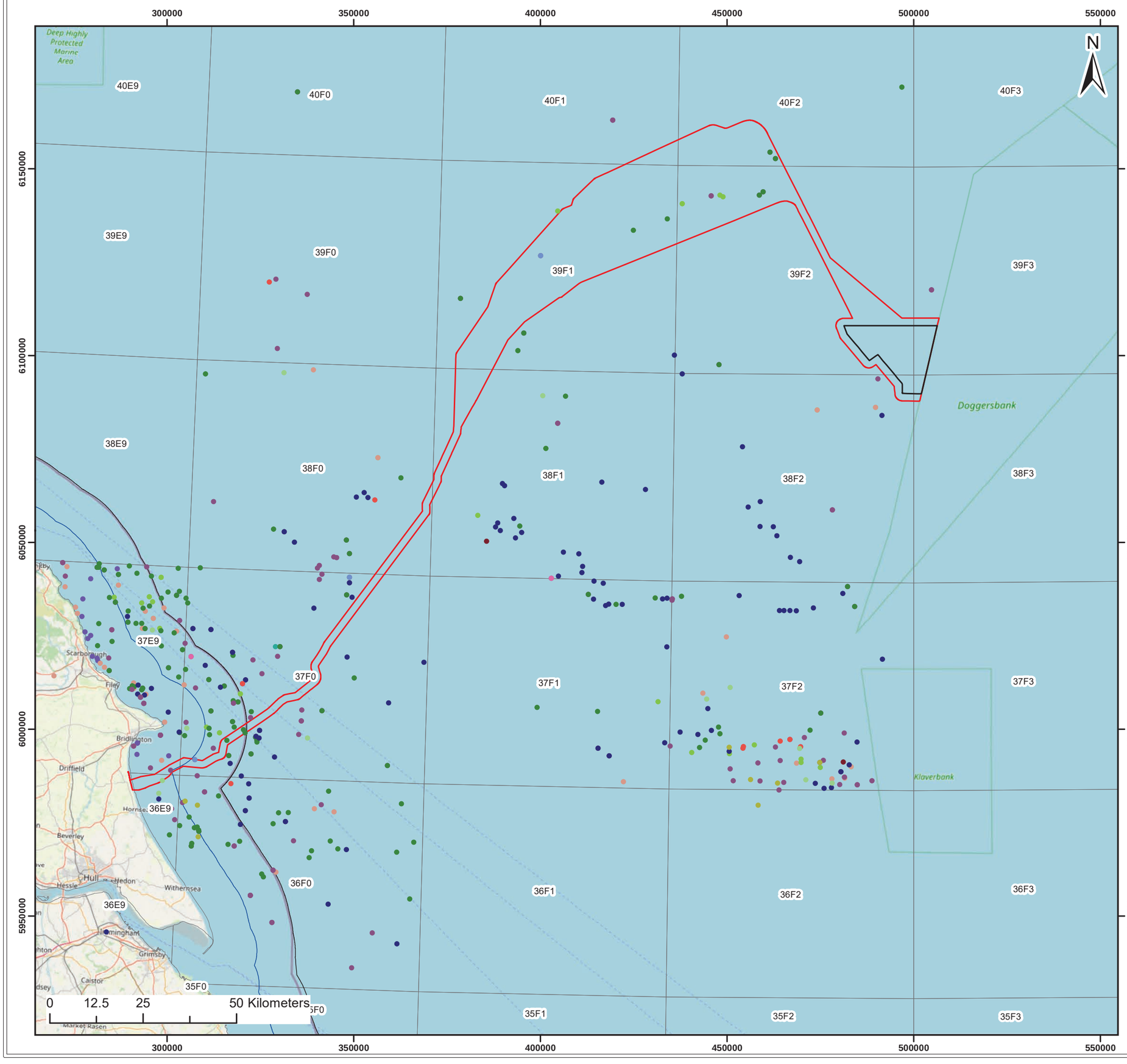
Title: Fishing vessel AIS route density indicating number of routes by fishng vessels (fishing and in transit) per square km per season, 2022

Figure:	Drawing No:				
8.17	Rev 1.0				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
R01	26/08/2024	FN	SM	A3	1:2,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables

equinor



Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Gear

- Beam trawler
- Demersal seine
- Demersal trawler
- Gill netter
- Industrial trawler
- Other dredge
- Pelagic trawler
- Potter
- Purse seine
- Rod and line
- Scallop dredge
- Trawler (all)
- Unknown

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Fisheries Surveillance Data
2018-2022 by Gear Type

Figure: 8.18

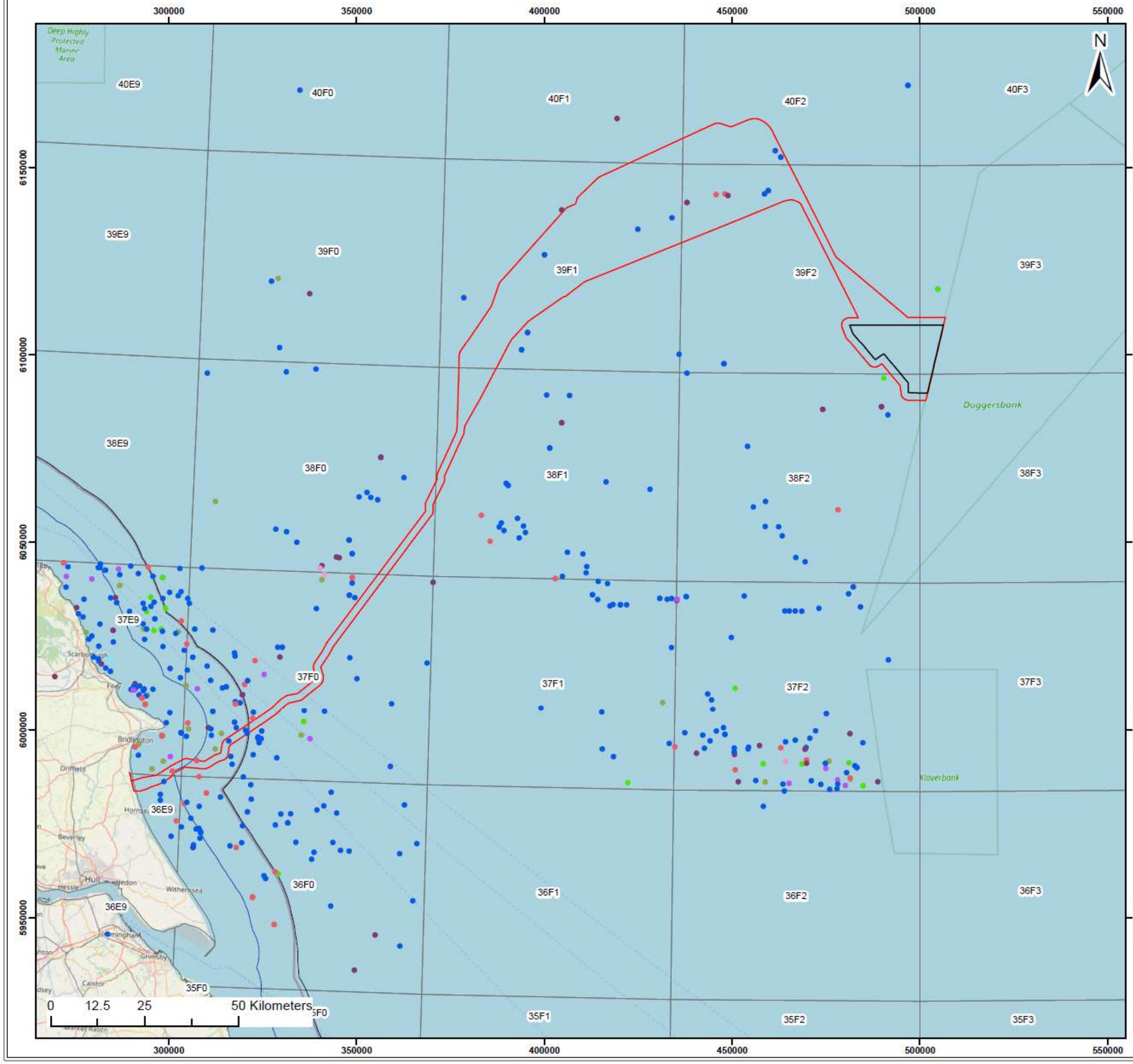
Drawing No: Rev 1.0

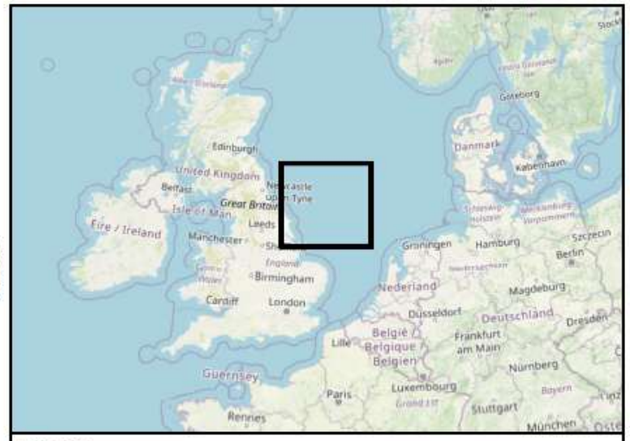
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables

equinor





Legend:

- DBD Array
- Offshore PEIR Boundary
- 12 NM limit
- 6 NM limit

Nationality

- BEL
- DEU
- DNK
- FRA
- GBR
- NLD
- PRT
- SWE

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Fisheries Surveillance Data
2018-2022 by Vessel Nationality

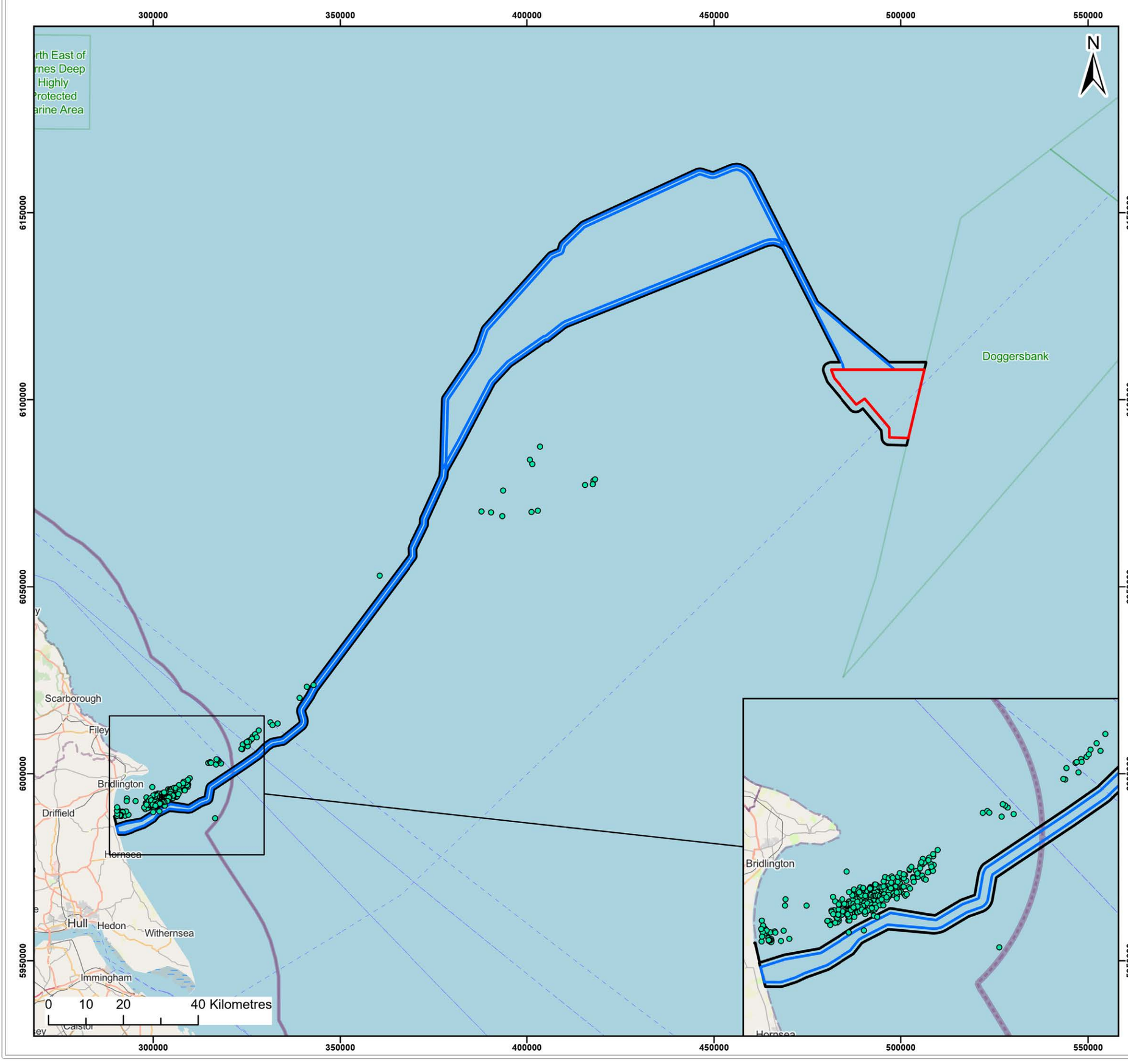
Figure: 8.19

Drawing No: Rev 1.0

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
R01	26/08/2024	FN	SM	A3	1:1,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- Dogger Bank D Array Area
- Offshore Development Area
- Offshore PEIR Corridors
- Static fishing gear observations

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

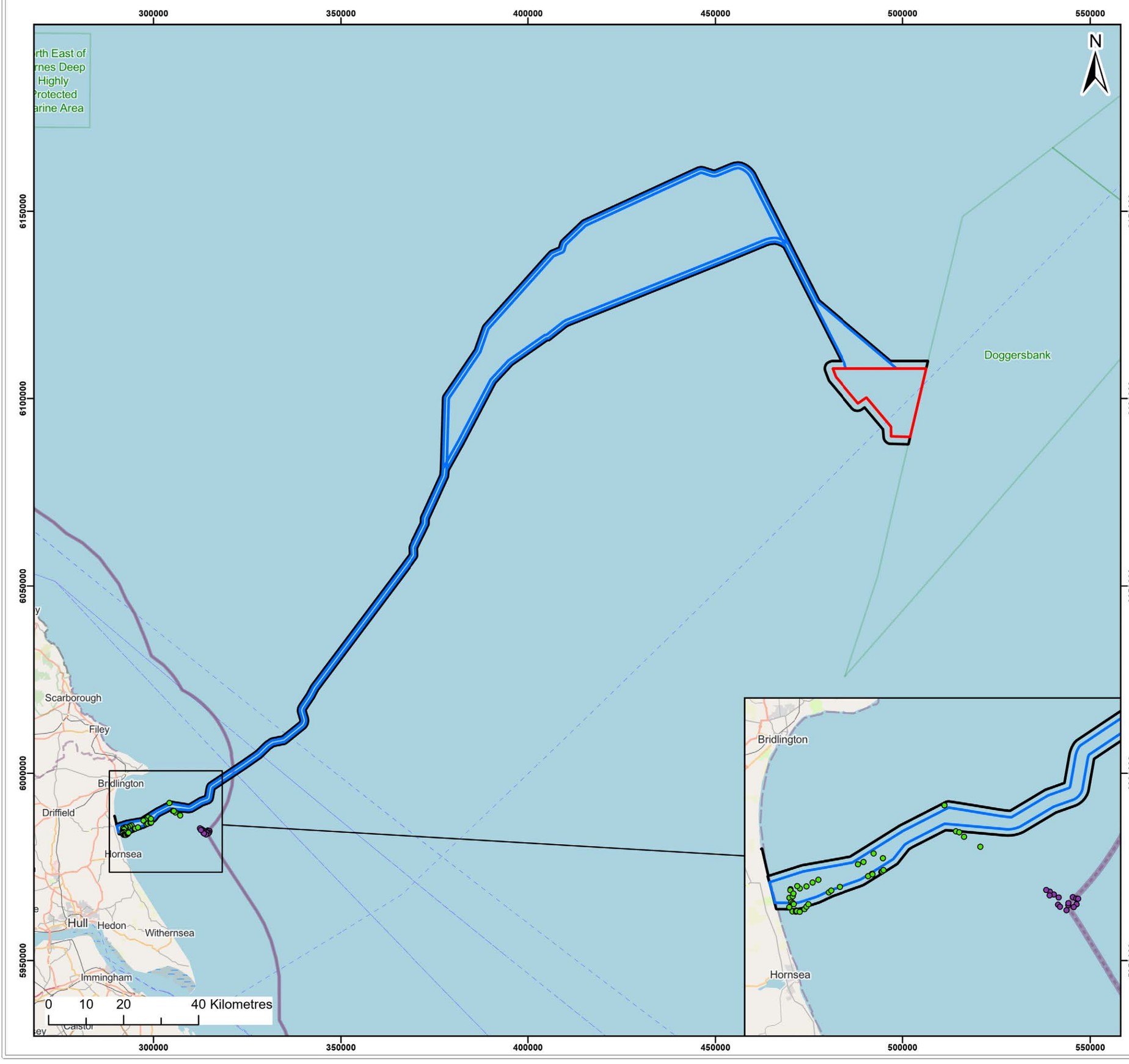
Title:

Static fishing gear observations in Dogger Bank A and Dogger Bank B (2021 to 2023) (Source: Brown and May Marine, static fishing gear observation surveys in 2021, 2022 and 2023)

Figure:	Drawing No:				
8.20	PC6250-RHD-XX-OF-DR-GS-0530				
Revision:	**Date:**	**Drawn:**	**Checked:**	**Size:**	**Scale:**
01	25/02/2025	JH	AB	A3	1:1,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor



Legend:

- Dogger Bank D Array Area
- Offshore Development Area
- Offshore PEIR Corridors
- Static fishing gear observations 2023
- Static fishing gear observations 2024

Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK WIND FARM

Title:

Static fishing gear observations in Dogger Bank D (Source: SSE, geophysical survey static fishing gear observations & survey recce static fishing gear observations)

Figure:	8.21	Drawing No:	PC6250-RHD-XX-OF-DR-GS-0550		
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	04/02/2025	JH	AB	A3	1:1,000,000

Co-ordinate system: WGS 1984 UTM Zone 31N

sse Renewables equinor

8.6 UK Fisheries Activity Assessment

8.6.1 Landings Trends, Fishing Grounds and Key Species

123 The trends in landed value by UK-registered fishing vessels from the commercial fisheries study are presented in **Plate 8-1** for gear type, **Plate 8-2** for species and **Plate 8-3** by ICES rectangle.

124 UK landings are dominated by vessels targeting shellfish with pots and traps. UK vessels also target king scallop with dredges, herring with pelagic trawls, and plaice and mixed demersal species, and Nephrops with demersal trawls.

125 The average annual first sales value of UK landings from the Study Area between 2018 and 2023 was approximately £30 million, with over 80% of this being associated with landings from three ICES rectangles: 36F0 (does not overlap Project Development Area), 37E9 and 37F0. Less than 7% of UK landings by value were attributed to ICES rectangles that overlap the Array Area.

126 Based on the landings data presented here and spatial data presented above, UK-registered vessels active in the offshore ECC are primarily targeting lobster, crab and whelk with pots and king scallop with dredges. There is expected to be sporadic pelagic and relatively low levels of demersal trawl activity across the offshore ECC. UK vessel fishing activity across the Array Area is expected to be very limited based on the enactment of a byelaw restricted use of towed fishing gears.

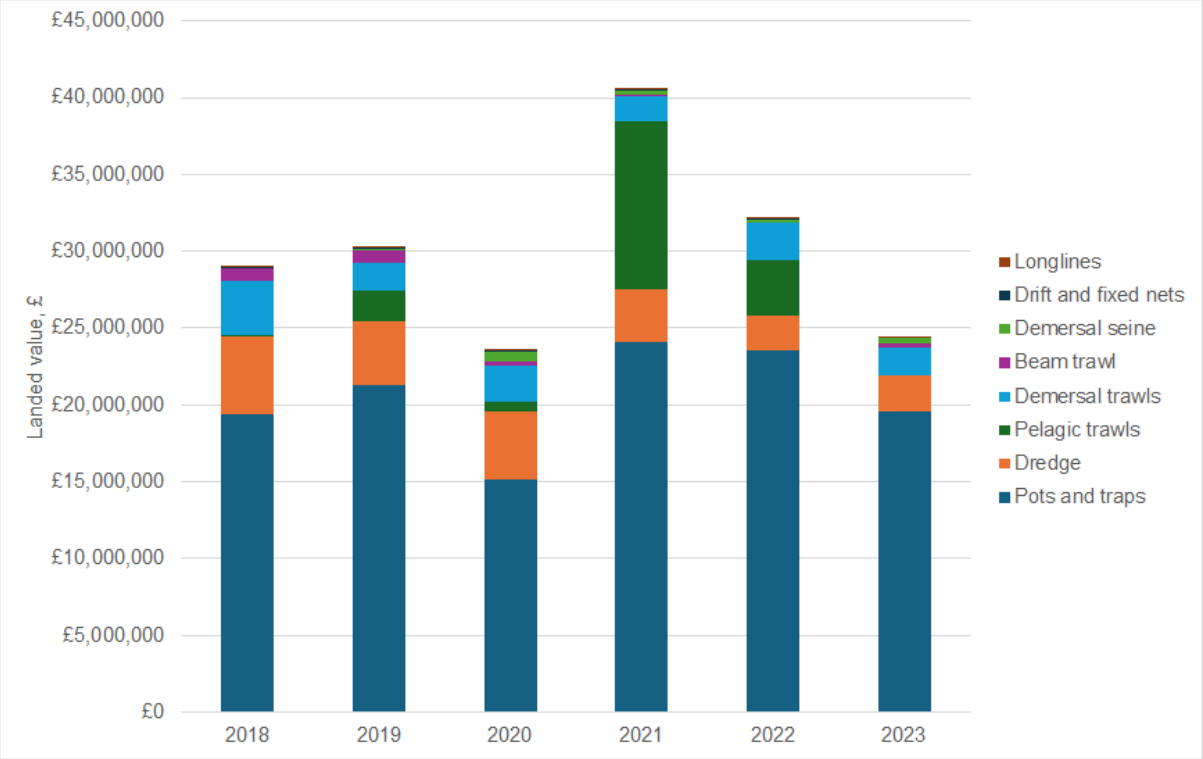


Plate 8-1: Landed value of all landings by UK registered vessels from the Study Area indicating gear type (MMO, 2024)

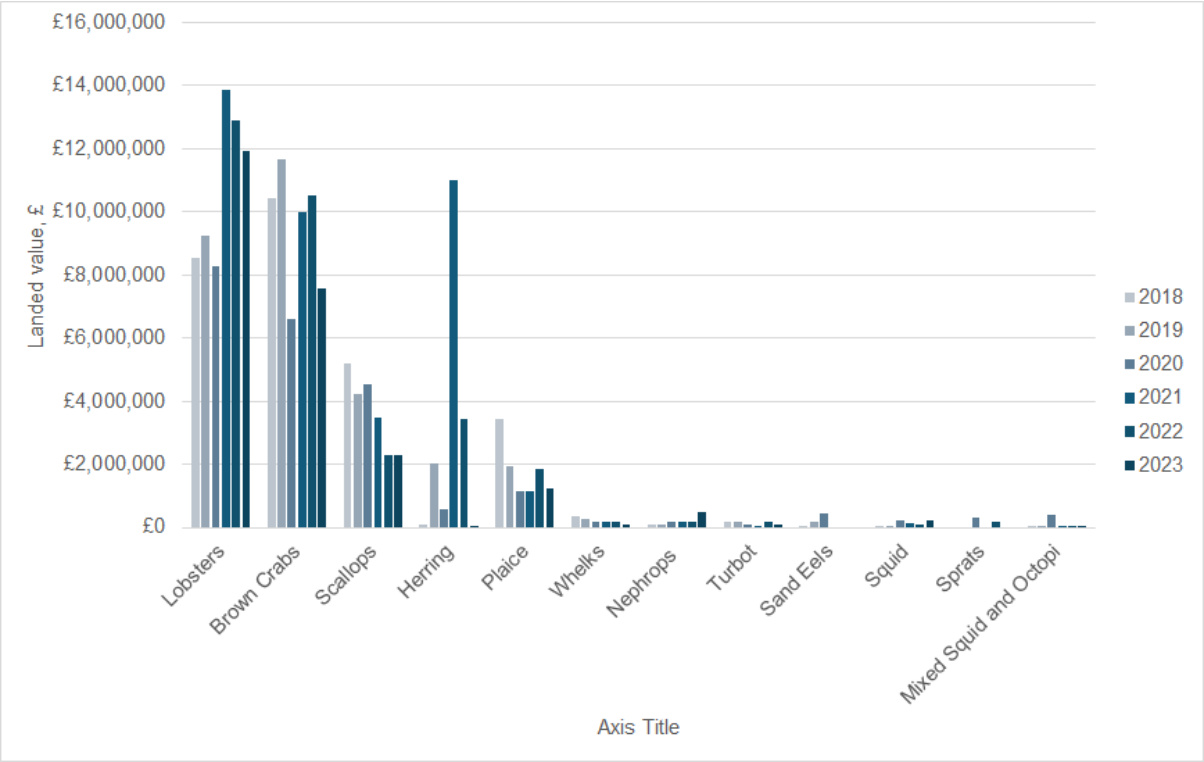


Plate 8-2: Landed value of landings by UK registered vessels from the Study Area indicating key species (MMO, 2024)

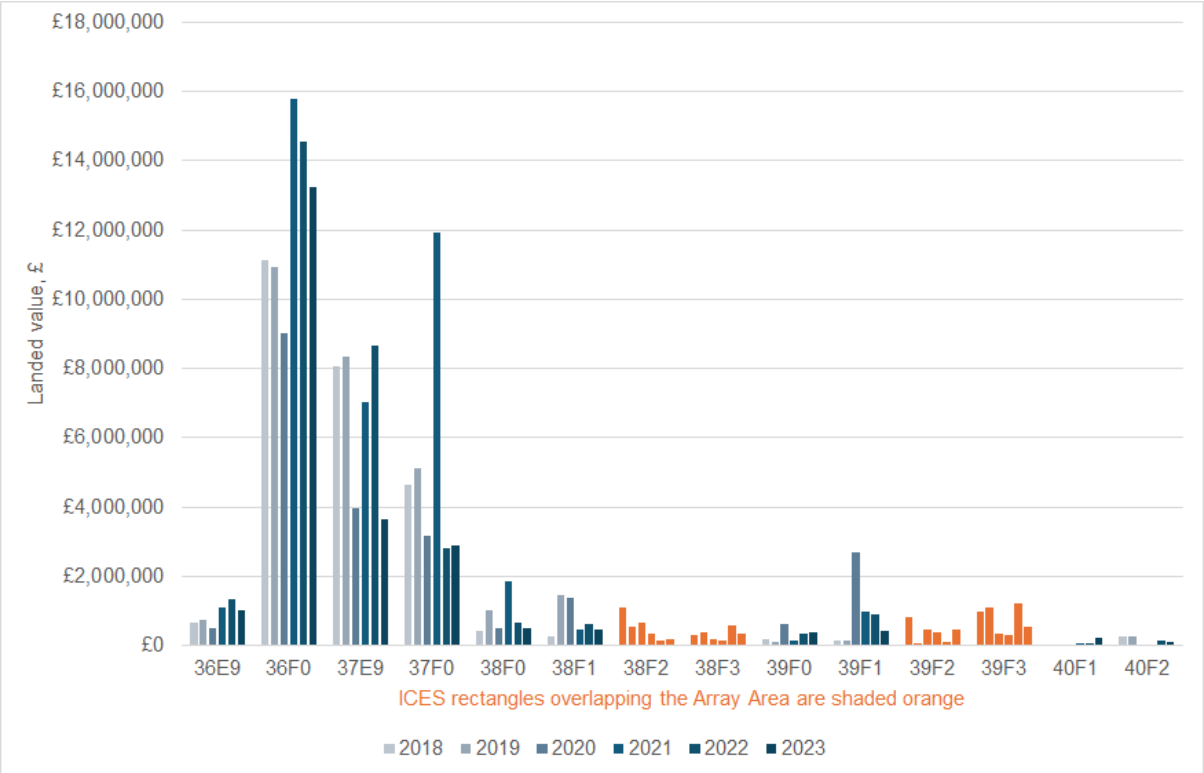


Plate 8-3: Annual average landed value of landings by UK registered vessels from the Study Area indicating ICES rectangles (MMO, 2024)

8.6.2 Ports and Vessel Fleets

127 Approximately 74% of landings values are attributable to English-registered vessels, and 24% to Scottish-registered vessels. The potting fleet active in the Study Area is comprised entirely of English vessels, whilst the dredge and trawl fleets are comprised of both English and Scottish vessels. Approximately half of the landings made from the Study Area are associated with vessels of under 15 m length, these primarily being potting vessels and smaller dredgers operating inshore. Pelagic trawlers, demersal trawlers, beam trawlers and demersal seiners making landings from the Study Area are all over 15 m in length.

128 The MMO provides landings statistics by port of landing, which can be attributed to ICES rectangles. Data shows that UK vessels active in the Study Area land at several local UK ports including Bridlington, Scarborough, Grimsby, and Hartlepool (**Plate 8-4**). Bridlington port is the most significant port for crab and lobster potting vessels on the Yorkshire/Humber coast. Landings of demersal species are made to Dutch ports and of pelagic species to Scottish ports.

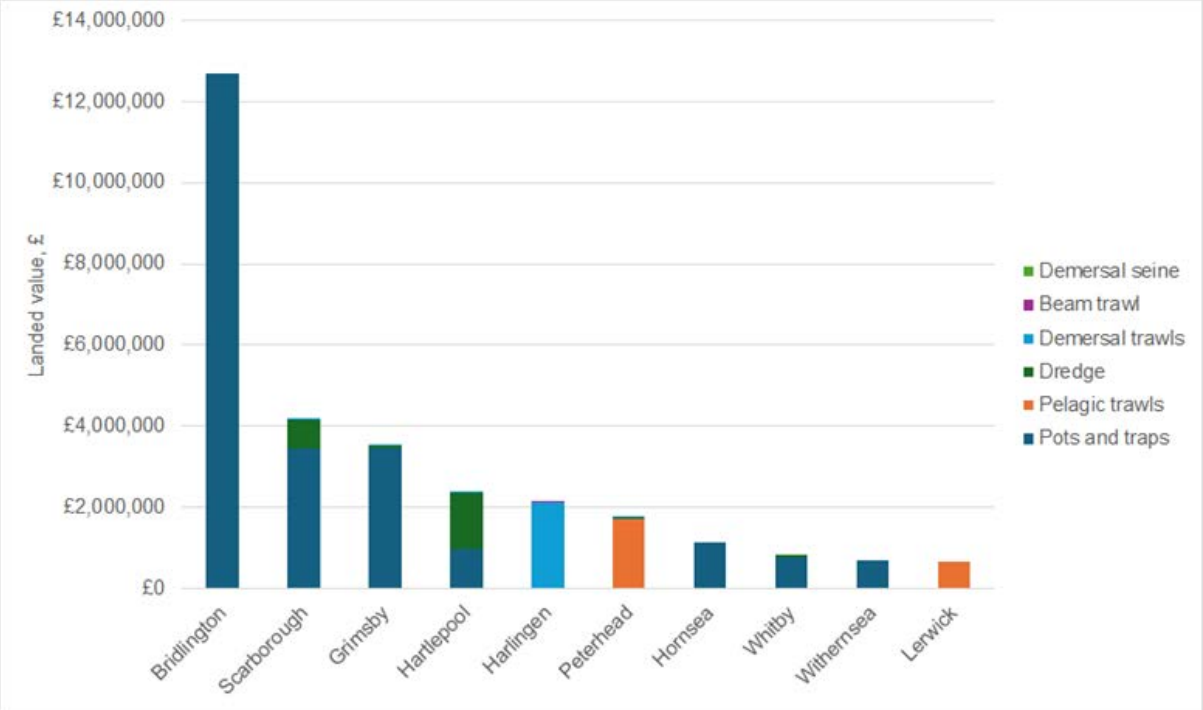


Plate 8-4: Value of landings to ports from the Study Area in 2022 (MMO, 2023)

8.7 EU Fisheries Activity Assessment

8.7.1 Danish Fishing Activity

129 Danish registered vessels operate within the Study Area. Landings are predominately by large demersal trawlers targeting plaice with more sporadic, large landings of herring by pelagic trawlers (see **Plate 8-6**). Pelagic landings are sporadic, reflecting the nature of pelagic fisheries, which are not associated with specific habitat types, and therefore are targeted across a wide area.

130 Historically a significant Danish sandeel fishery was present in and around the Study Area (see **Plate 8-5**), landing on average 90,000 tonnes of sandeel per year between 2003 and 2016, but this is no longer active in the commercial fisheries study area in light of the UK Government prohibition of the fishing of sandeels within English waters of ICES Area 4.

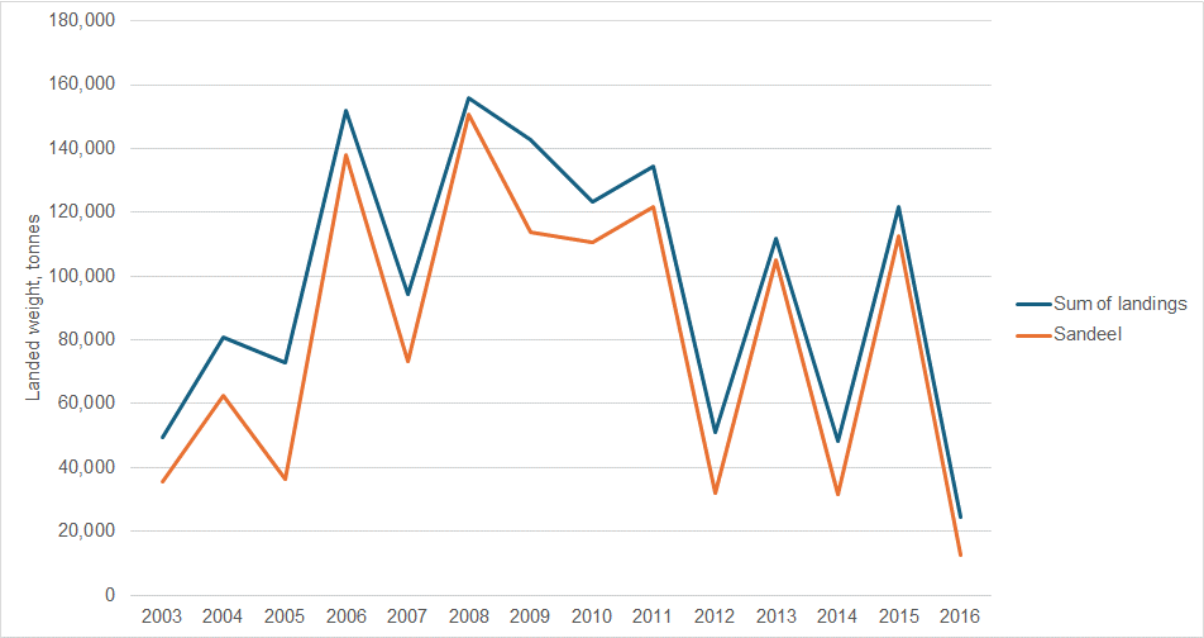


Plate 8-5: Landed weight by Danish registered vessels from the Study Area, noting the contribution of sandeel landings to the landings total (Source: EU DCF, 2022)

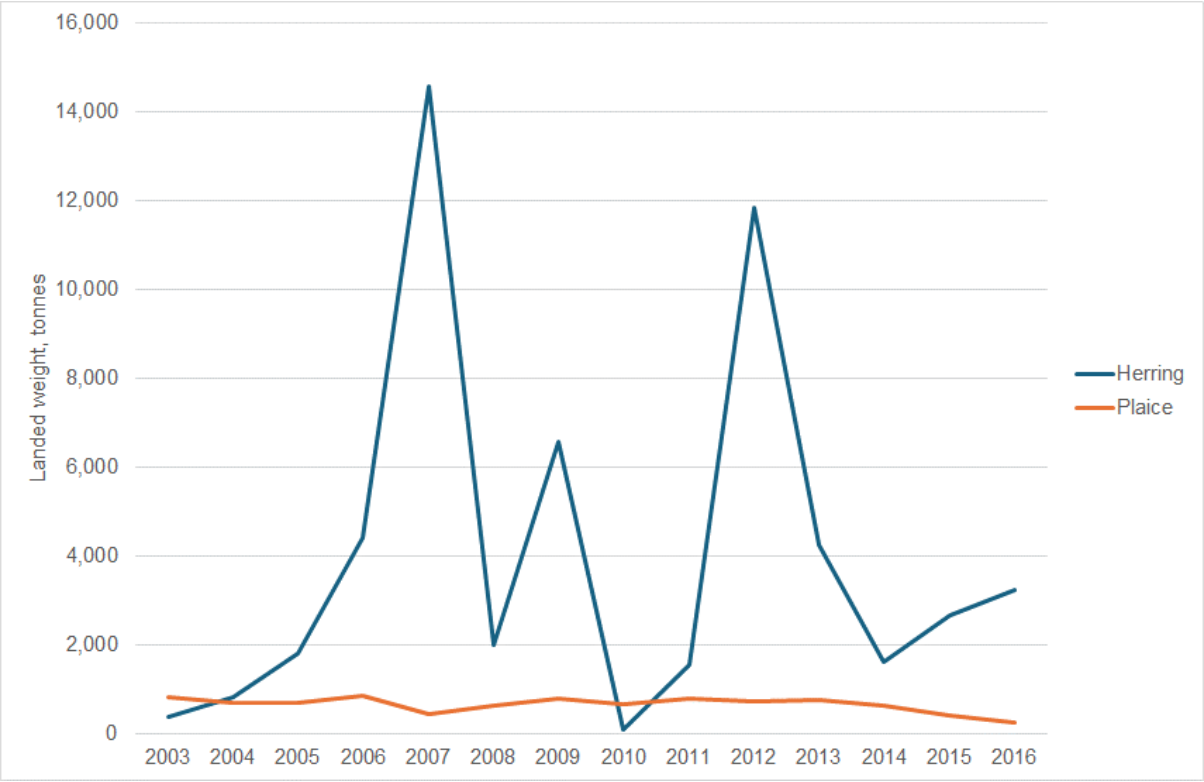


Plate 8-6: Landed weight of key species by Danish registered vessels from the Study Area, not inclusive of sandeel and sprat landings (Source: EU DCF, 2022)

8.7.2 Dutch Fishing Activity

131 Dutch registered vessels operate within the Study Area (see landings data in **Plate 8-7**). Landings are predominately by large beam trawlers targeting plaice (**Plate 8-8**) with more sporadic, large landings of herring by pelagic trawlers. The significant peaks and troughs in herring landings seen in the data are reflective of pelagic fisheries targeting highly mobile shoaling fish, and the wide-ranging nomadic nature of pelagic trawl fisheries whereby target species can be caught across very wide geographic extents, and catches from individual trawls can be substantial where a large shoal is encountered.

132 Dutch fishing vessels have no historic fishing rights within the 6 nm and 12 nm limit and so their activity is focused across the offshore ECC beyond 12 nm and the Array Area, and landings by Dutch vessels are most significant from ICES rectangle 37F0 (offshore ECC).

133 VMS data indicate that Dutch beam trawling occurs at moderate to high levels across wide sections of the Southern North Sea. VMS data indicate limited EU beam trawl activity within the Project Development Area.

134 Dutch vessels active in the Study Area are understood to land their catch in a number of ports including Ijmuiden, Harlingen, Urk, and Scheveningen.

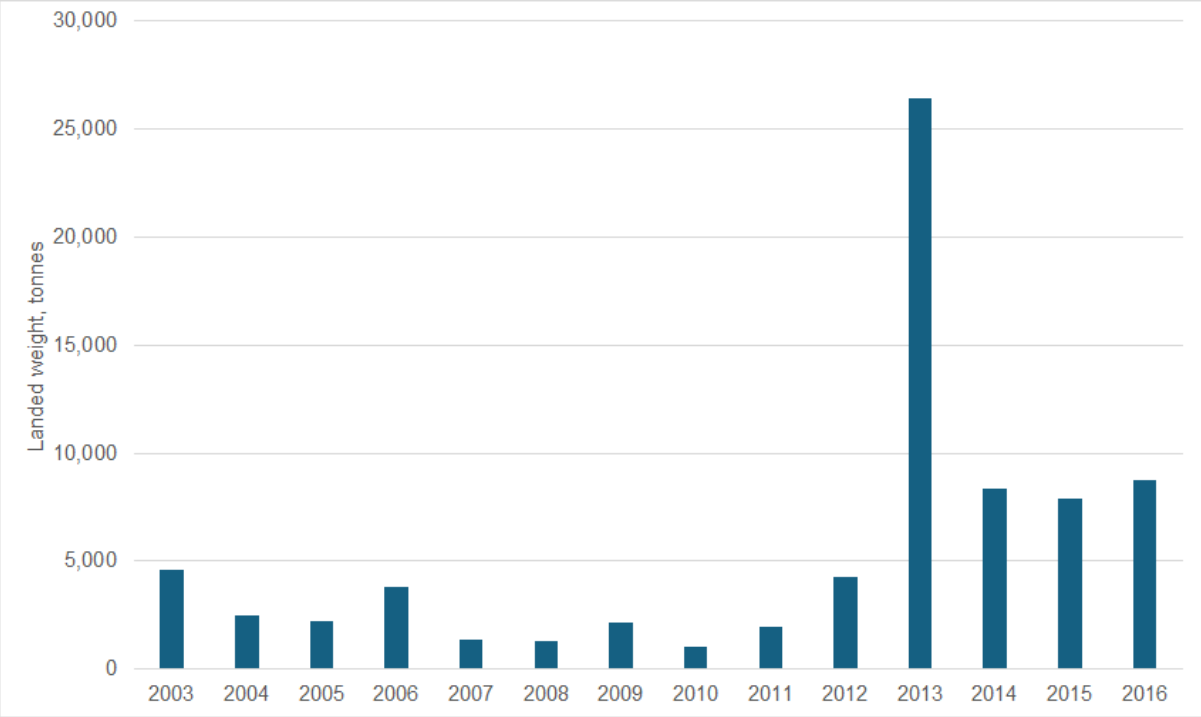


Plate 8-7: Landed weight by Dutch registered vessels from the Study Area (Source: EU DCF, 2022)

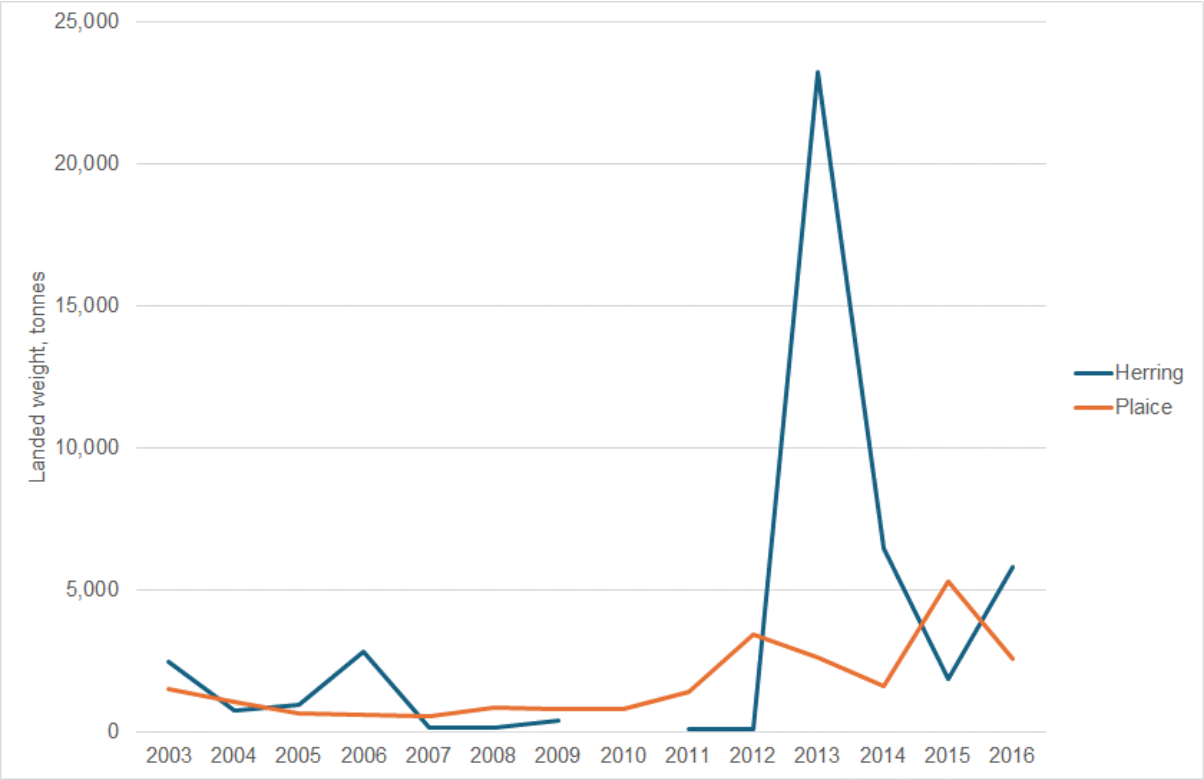


Plate 8-8: Landed weight of key species by Dutch registered vessels from the Study Area (Source: EU DCF, 2022)

8.7.3 Swedish Fishing Activity

135 Swedish registered vessels operate within the Study Area (see landings data in **Plate 8-9**). Historically Swedish vessels targeted a sandeel fishery in and around the Study Area but this is no longer active in light of the UK Government prohibition of the fishing of sandeels within English waters of ICES Area 4. Landings data indicates that Swedish pelagic trawlers make sporadic landings of herring, though noting that landings from the Study Area have shown a declining trend since 2007 (**Plate 8-10**).

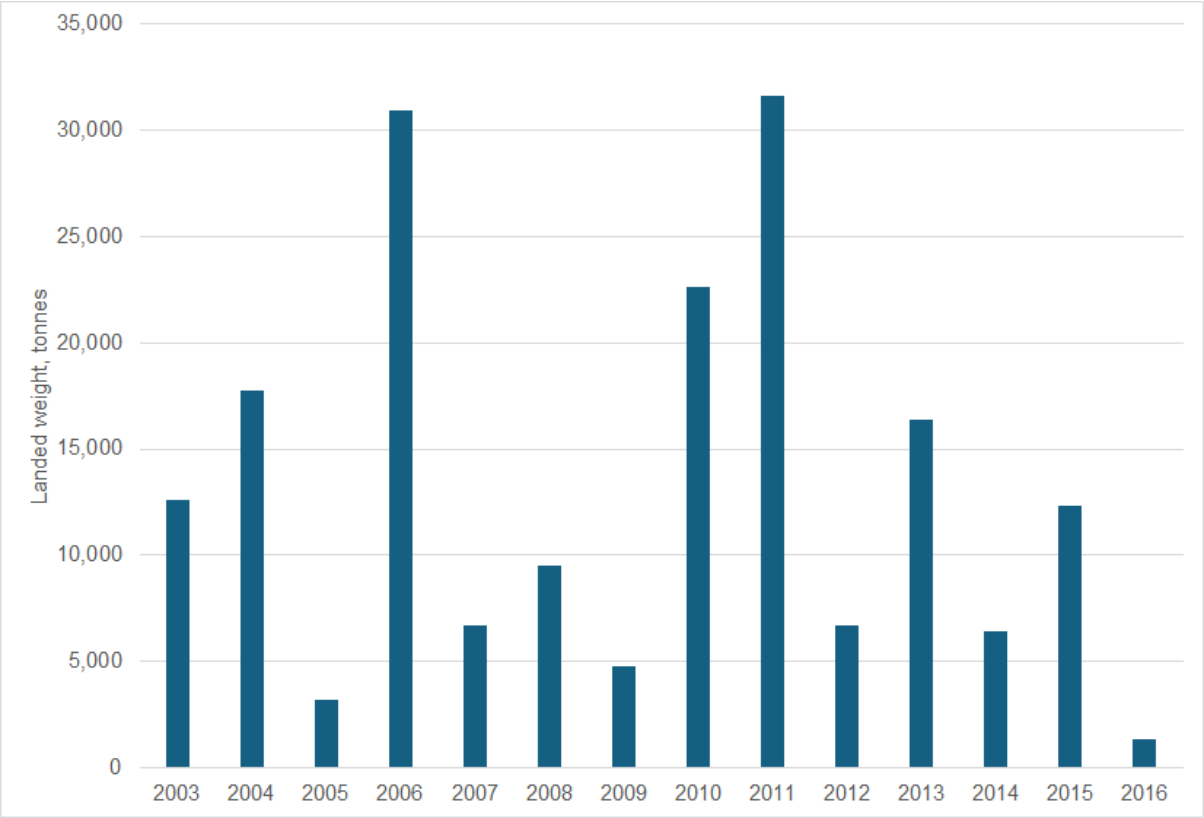


Plate 8-9: Landed weight by Swedish registered vessels from the Study Area (Source: EU DCF, 2022)

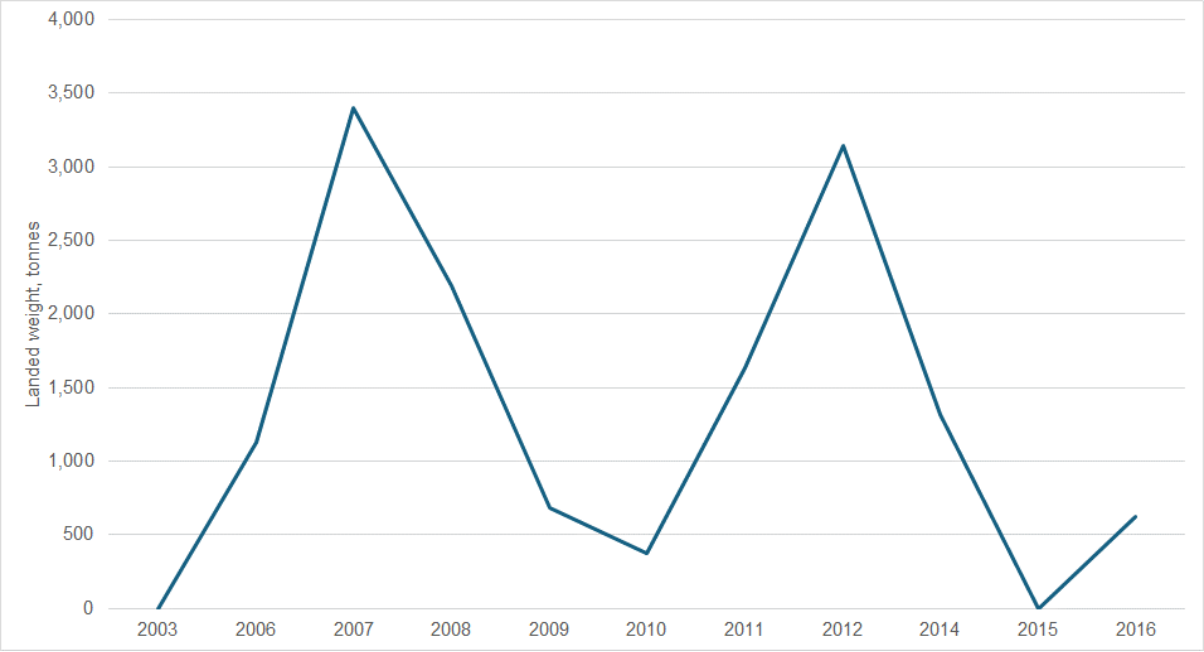


Plate 8-10: Landed weight of herring by Swedish registered vessels from the Study Area (Source: EU DCF, 2022)

8.7.4 German Fishing Activity

136 German registered vessels operate within the Study Area (see landings data in **Plate 8-11**). Historically German vessels targeted a sandeel fishery in and around the Study Area but this is no longer active in light of the UK Government prohibition of the fishing of sandeels within English waters of ICES Area 4.

137 Landings data indicates that German pelagic trawlers make sporadic landings of herring, and demersal trawlers target plaice but with very limited landings from the Study Area (**Plate 8-12**).

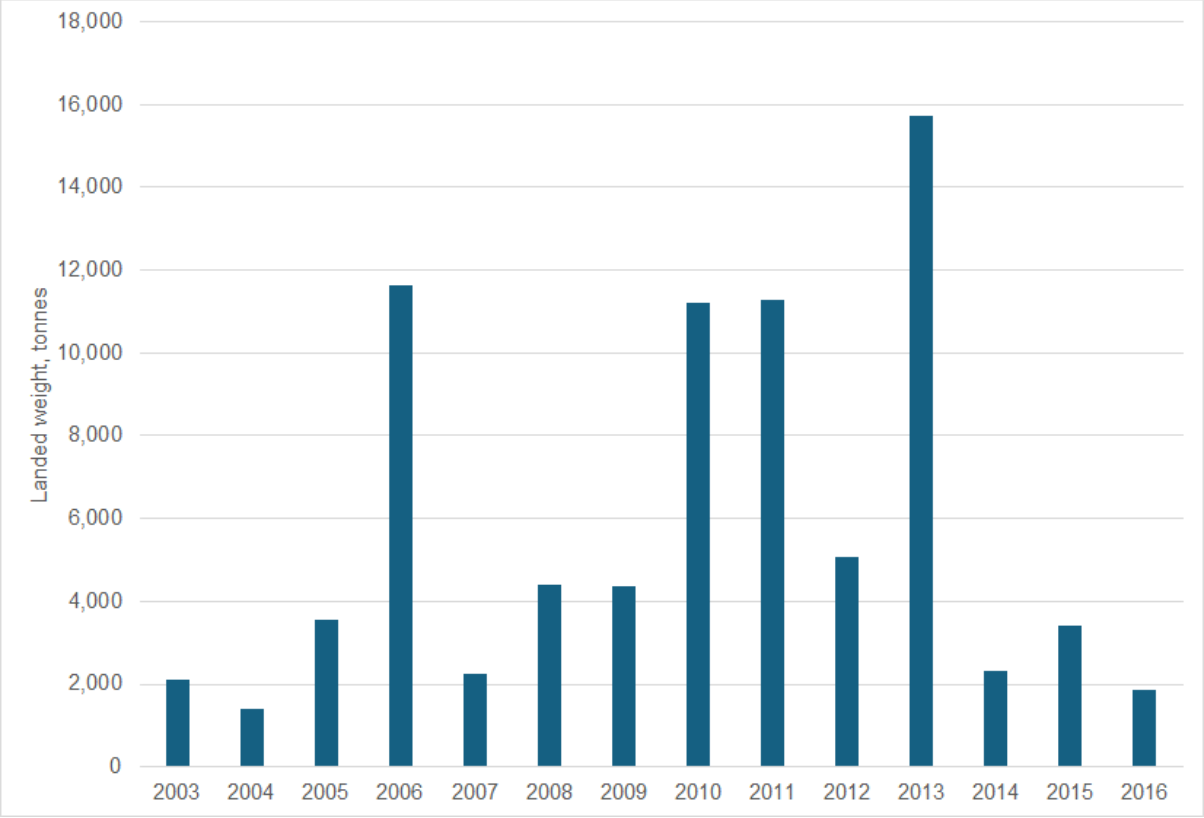


Plate 8-11: Landed weight by German registered vessels from the Study Area (Source: EU DCF, 2022)

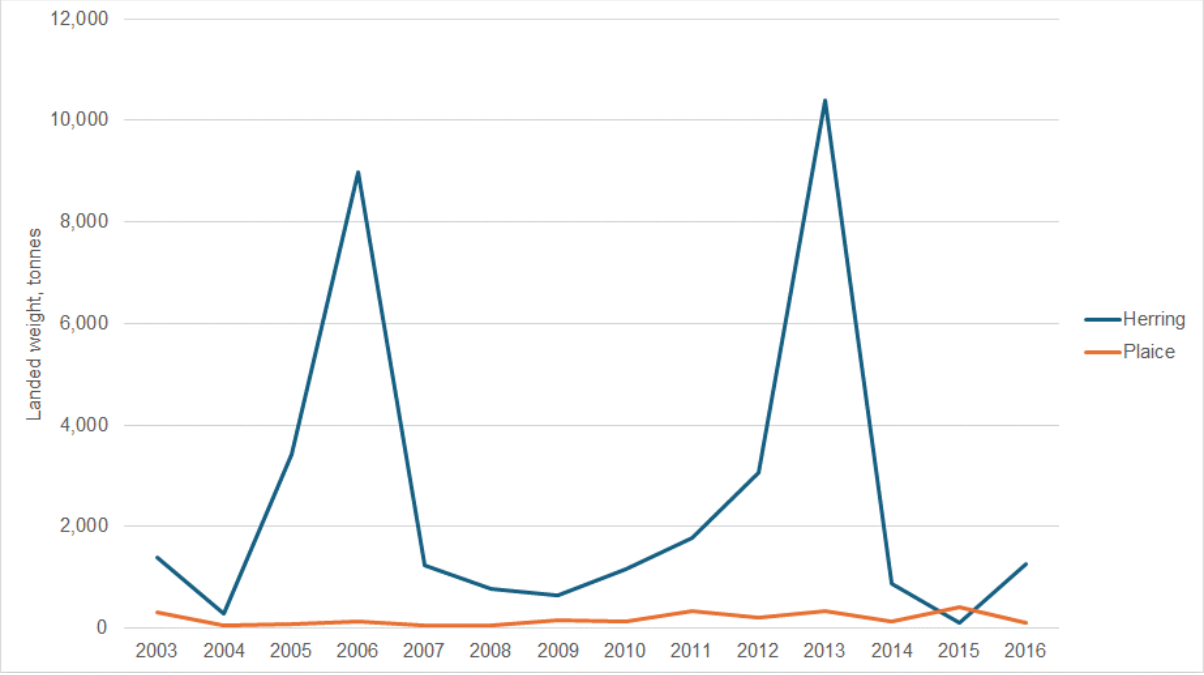


Plate 8-12: Landed weight of key species by German registered vessels from the Study Area, not inclusive of sandeel and sprat landings (Source: EU DCF, 2022)

8.7.5 French Fishing Activity

138 In the Study Area, French vessels have fishing rights to fish between the UK's 6 nm and 12 nm limit. French vessels active in the area are understood to be predominantly demersal otter

trawlers, with some pelagic trawl activity. Vessels primarily target whiting and mackerel, with occasional catches of large volumes of herring (**Plate 8-13** and **Plate 8-14**).

139 French fishing vessels active in the area are understood to be based out of Boulogne and Etaples predominantly and mostly active in spring and summer months.

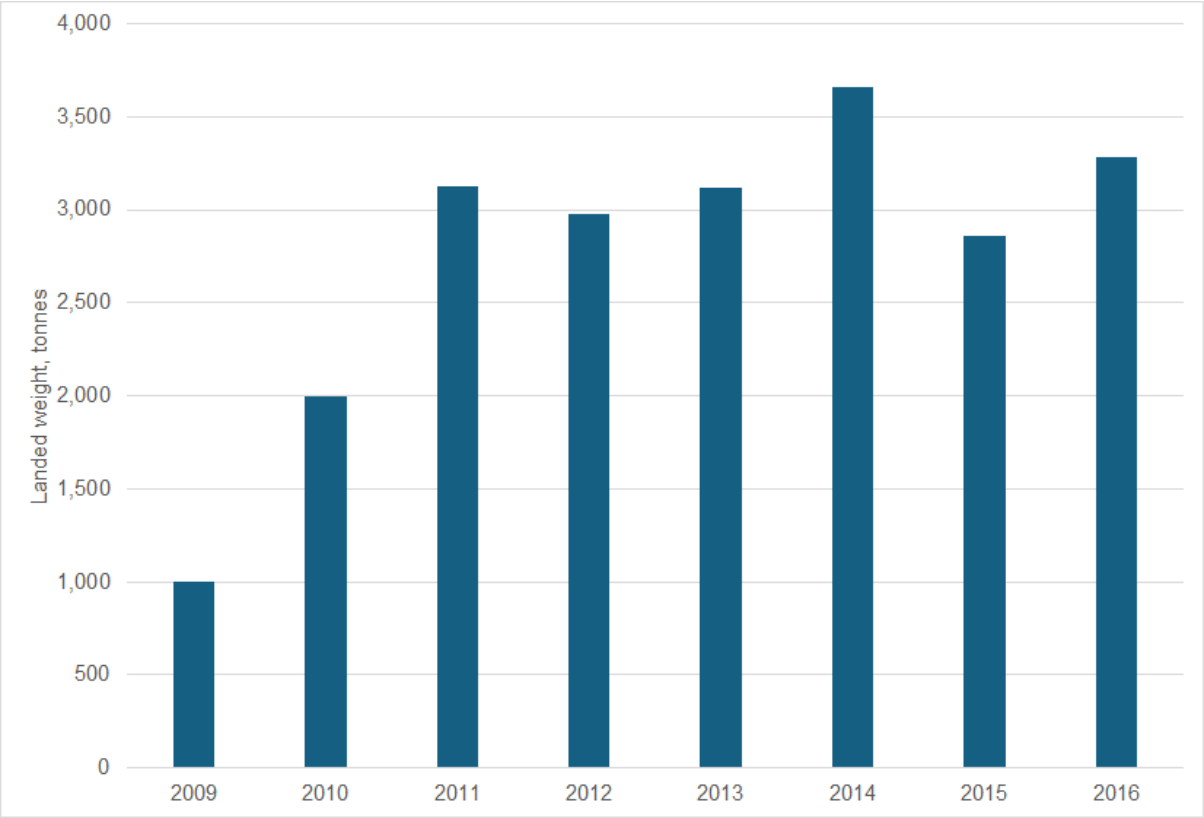


Plate 8-13: Landed weight by French registered vessels from the Study Area (Source: EU DCF, 2022)

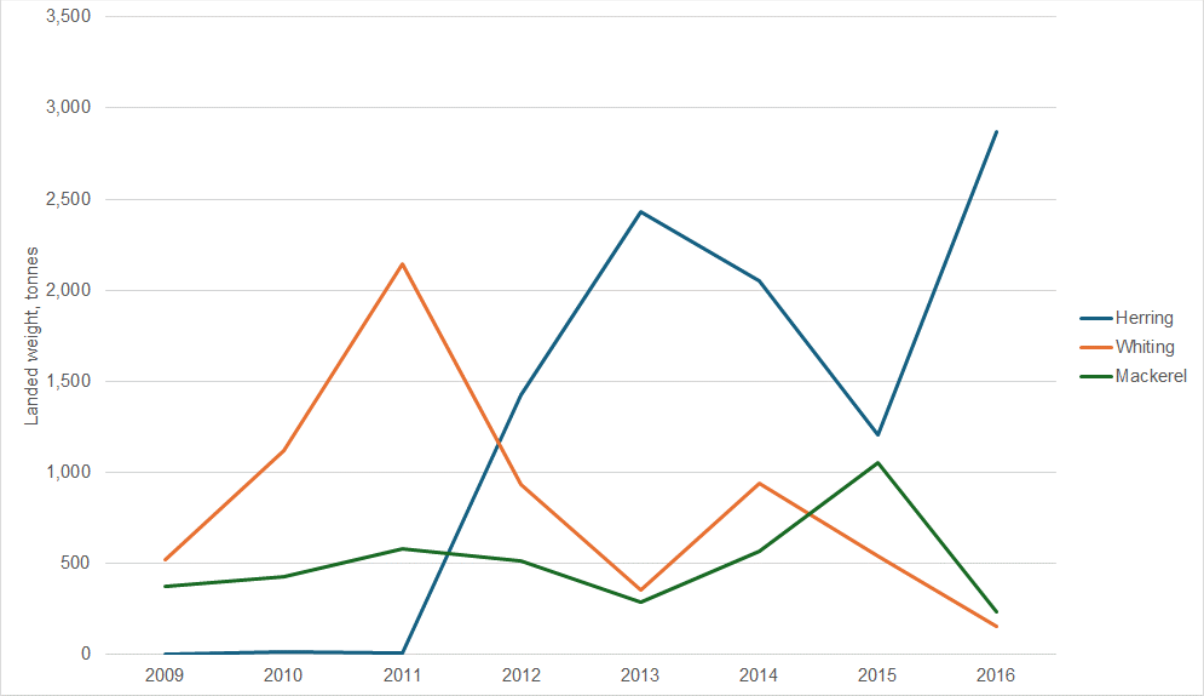


Plate 8-14: Landed weight of key species by French registered vessels from the Study Area (Source: EU DCF, 2022)

8.7.6 Belgian Fishing Activity

140 The principal methods used by the Belgian fleet in the Study Area (see landings data in **Plate 8-15**) are beam trawling and demersal otter trawling. It is understood that some vessels are able to operate both gears. Belgian vessels in this area target a range of species, but primarily sole and plaice (**Plate 8-16**).

141 Belgian vessels have historic fishing rights in the Study Area between the UK's 6 nm and 12 nm limits. VMS data indicate that Belgian beam and otter trawlers have wide operational ranges, targeting grounds in the southern North Sea, the English Channel, the Celtic Sea and the Irish Sea. VMS data indicate potential for low levels of beam trawl activity within Project boundaries.

142 Belgian vessels active in the Study Area are understood to land their catch in a number of ports including Zeebrugge, Oostende, and Nieuwport.

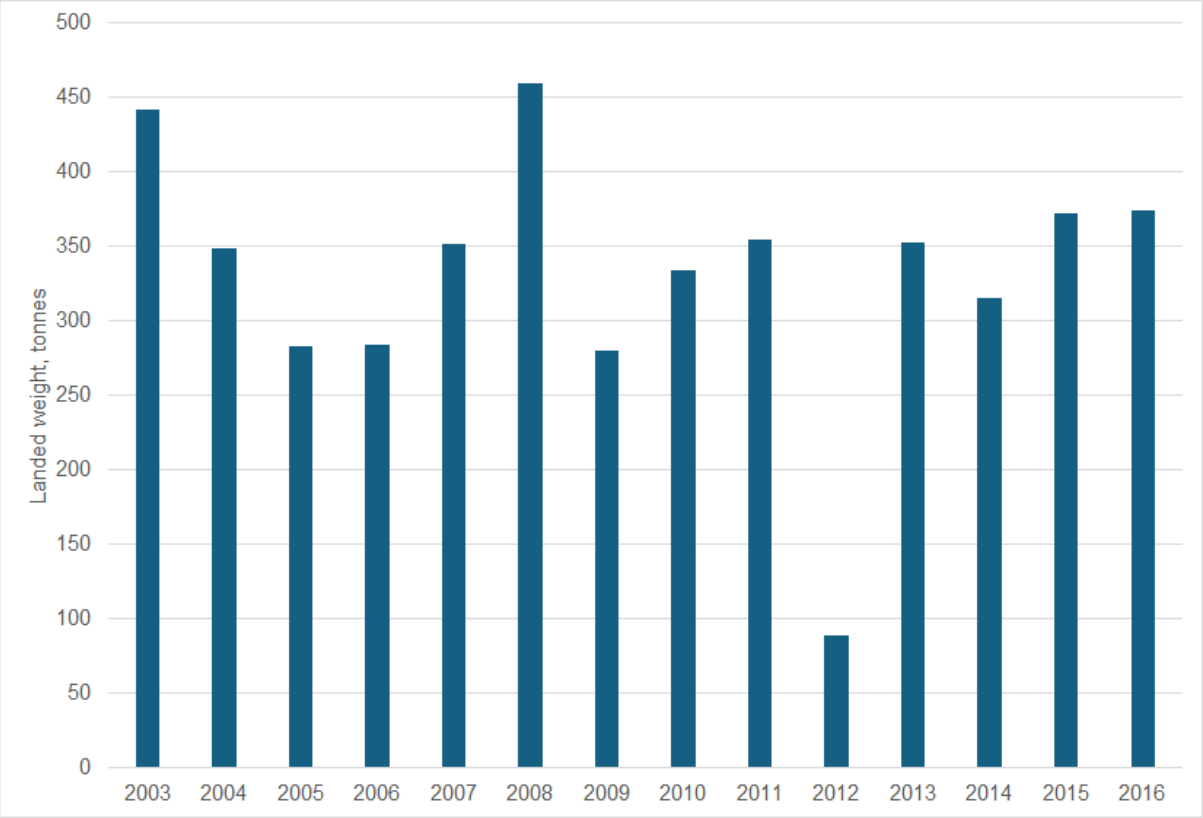


Plate 8-15: Landed weight by Belgian registered vessels from the Study Area (Source: EU DCF, 2022)

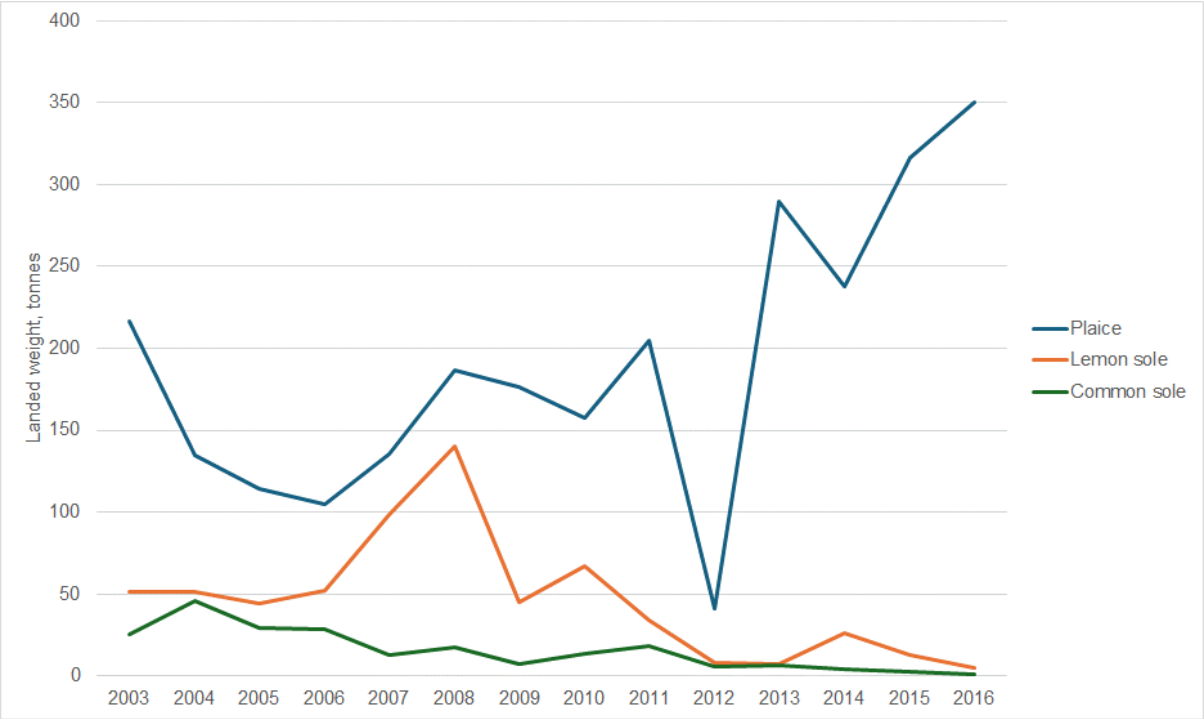


Plate 8-16: Landed weight of key species by Belgian registered vessels from the Study Area (Source: EU DCF, 2022)

9. Future Baseline

143 Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. This includes the following:

144 Market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, including the 2020 to 2021 COVID pandemic;

- Market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;
- Stock abundance: fluctuation in the biomass of individual species stocks in response to status of the stock, recruitment, natural disturbances (e.g. due to storms, sea temperature etc.), changes in fishing pressure etc.;
- Fisheries management: including new management for specific species where overexploitation has been identified, or changes in TACs leading to the relocation of effort, and/or an overall increase/decrease of effort and catches from specific areas. A recent example of how fisheries management can change the baseline relates to sandeel: the sandeel fishery has significantly reduced in the UK EEZ over the past five years, with quotas relevant for this area (i.e. sandeel area 4) very low. It is noted that the UK Government has prohibited UK vessels from catching sandeel from the North Sea from the period 2021 to 2023. As of 2024, catching sandeel from the North Sea has been prohibited for all UK and non-UK vessels in the UK EEZ;
- Environmental management: including the potential restriction of certain fisheries within protected areas. A recent example of how fisheries management measures can change the baseline is described in this report in relation to the Dogger Bank SAC and prohibition of certain methods of fishing within the SAC;
- Improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g. by moving from beam trawl to demersal seine; and

145 Sustainability: with seafood buyers more frequently requesting certification of the sustainably of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries management and wider environmental impacts.

146 The variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and forms the principal reason for considering up to five years (and in some cases, ten years) of key baseline data. Given the time periods assessed, the future baseline scenario would typically be reflected within the current baseline assessment undertaken. However, in this case, existing baseline data do not capture any potential changes in commercial fisheries activity resulting from the withdrawal of the UK from the EU.

147 Following withdrawal of the UK from the EU, a Trade and Cooperation Agreement (TCA) has been agreed between parties, applicable on a provisional basis from 1st January 2021. The TCA sets out fisheries rights and confirms that from 1st January 2021 and during a transition period until 30th June 2026, UK and EU vessels will continue to access respective EEZs (12 nm to 200 nm) to fish. In this period, EU vessels will also be able to fish in allocated parts of UK waters, typically between 6 nm to 12 nm, where historic rights allow access by the fishing fleets of authorised EU Members States and subject to licence issue.

148 Access rights of foreign vessels to UK EEZ waters will remain until at least the end of 2026 with reducing quotas, after which rights will be subject to the conclusion of negotiated agreements. In addition to access rights, the TCA requires that 25% of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period. Overall, the biggest gains for UK fleets targeting the North Sea are for pelagic and demersal stocks, including mackerel, sole and herring. Across the Study Area, where UK fisheries primarily target non-quota shellfish species, it is expected that fleets are unlikely to be impacted by quota transfers. It is possible that UK vessels will seek to exploit additional quota-species opportunities, but vessels would need to access quota holdings. There has been limited change in the overall UK share for plaice and sole, some of the key fisheries targeted by non-UK vessels, notably Dutch and Belgian trawlers.

149 Market changes have the potential to impact fishing activity in the Study Area; some of the catch landed by UK vessels is exported to EU markets (e.g., brown crab) and potential tariff/non-tariff barriers could affect which species are targeted and to what extent. A key species landed by potters in the area, is whelk, which is primarily exported to non-EU countries, including Korea,

Taiwan and Singapore. The trade in UK landed whelk has therefore not been as affected by the Brexit process and associated implications on shellfish exports in comparison to other species. In terms of future baseline scenarios, it is therefore possible, for example, that the UK fleet will more heavily target whelk given that prices have increased in recent years and they are exported to non-EU countries.

150 In relation to the effects of the COVID pandemic, MMO annual reporting notes that the effects of the pandemic on the UK fishing industry were felt from March 2020. The MMO UK Sea Fisheries Statistics 2021 report observes that an increase in overall UK landings quantity and value in 2021 (relative to 2020) largely reflected recovery from the COVID period and additional quota available to the UK fleet after leaving the EU (MMO, 2022).

151 Fisheries and environmental management measures have recently influenced commercial fishing activity within the study area, with changes in activity not fully captured within the available baseline datasets. Notable measures include the introduction of the Dogger Bank SAC byelaw in 2022, prohibiting use of towed fishing gears across a significant portion of the Project Development Area, and closure of the sandeel fishery in 2024. These measures can reasonably be expected to have fully ceased the use of bottom towed fishing gear within the Array Area, and resulted in a decrease in the use of bottom towed fishing gear across the commercial fisheries study area, though the extent to which this is reflected in landings values and volumes is yet to be confirmed as more up-to-date fisheries datasets are published. It is possible that in the future these management measures could be removed or altered, thus altering patterns of fishing activity again, though there is no current basis to assume that will be the case.

152 Commercial fisheries receptors (i.e. relevant fishing fleets) could theoretically be impacted by climate change over the lifetime of the Project. Increased sea temperature/change in pH levels have the potential to affect the distribution of commercially targeted fish and shellfish stocks in the Study Area. Changes may result from changes in seabed habitat or natural disturbance events. Changes would be expected to have limited effects on mobile species, but with potential for effects on substrate-dependent species such as herring and sandeel, and on shellfish. Changes may in turn affect commercial fishing activity in the Study Area over the long-term; for example, altering fishing methods, targeted grounds and seasonal patterns in activity. An increase in storm events may also directly impact fishing activity in the Study Area, with changes with seasonal fishing patterns in response to changes in weather and periods of safe fishing conditions.

153 Taking all of the above into account, fishing activity within the Study Area is likely to remain broadly consistent with the current baseline in terms of the fleets and Member States in operation, noting however that a sandeel fishery is no longer present and that bottom towed fishing gear may not be used within the Dogger Bank SAC byelaw area.

10. Summary

154 In summary, based on the data gathered to inform this scoping exercise, the key fleets operating across the Study Area are identified in **Table 10-1**.

Table 10-1: Summary of fishing fleets active in the Study Area, and identified as commercial fisheries EIA receptors

Fishing Fleet	Array Area	Offshore Export Cable Corridor
UK fishing fleets		
UK potting	Very limited potting activity.	English registered vessels, under and over 10 m length, targeting lobster and brown crab, and to a lesser extent whelk.
UK dredge	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	English and Scottish registered vessels, mostly over 10 m length, targeting king scallop.
UK pelagic trawl	No current bottom towed (or semi-pelagic) gear activity based on enactment of Dogger Bank Byelaw in 2022.	English and Scottish registered vessels, over 15 m length, targeting herring.
UK demersal otter trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	English and Scottish registered vessels, mostly over 10 m length, targeting plaice and Nephrops.
UK beam trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Low levels of English registered vessels, mostly over 10 m length, targeting plaice.
UK demersal seine	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	English and Scottish registered vessels, mostly over 10 m length, targeting squid, whiting and mullets.
Non-UK fishing fleets		
Danish pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Sporadic landings of herring.
Danish demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice.
Dutch pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Sporadic landings of herring.
Dutch beam trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice.
Swedish pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Sporadic landings of herring.
German pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Sporadic landings of herring.
German demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice.

Fishing Fleet	Array Area	Offshore Export Cable Corridor
French demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting whiting and mackerel.
French pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Sporadic landings of herring.
Belgian beam trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice and sole.
Belgian demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank Byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice and sole.

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