MarineSpace

Making Sense of the Marine Environment ™

Project Erebus Commercial Fisheries Assessment 2021

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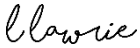
25/01/2021	Lara Lawrie	0.2	Technical Review	
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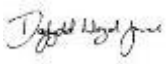
16/02/2021	Dafydd Lloyd Jones	0.6	Editorial Review	
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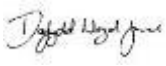
19/02/2021	Dafydd Lloyd Jones	1.0	Director Sign-off / External Document	
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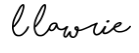
21/11/2021	Lara Lawrie	2.0	Technical Review	

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Executive Summary

MarineSpace Ltd has been commissioned by Blue Gem Wind, the developer, to undertake a desk-based study on commercial and recreational fishing activity within and around the proposed Project Erebus Floating Offshore Wind project; located approximately 35 km southwest of the Pembrokeshire coastline, in the Celtic Sea region. The array area covers an area of 43.5 km^2, in water depths of between 65-85 m. The array area is located outside of the 12 nm limit and lies within International Council for the Exploration of the Sea (ICES) Rectangle 31E4. The proposed offshore export cable runs from the array area to landfall at West Angle Bay, Pembrokeshire. The southern part of the cable lies within ICES rectangle 31E4, with the majority of the cable in 32E4.

This report presents the findings of an assessment of fisheries activity in this region which has been based on the following key data sources:

- Official Marine Management Organisation landings and activity data;
- Scientific, Technical and Economic Committee for Fisheries (landings and activity) data;
- ICES data in relation to the Project array area and offshore export cable;
- Information gathered via a series of stakeholder engagement meetings held with key representatives of the commercial fishing industry;
- Observational data from two marine traffic surveys undertaken to inform the Navigation Risk Assessment for Project Erebus;
- Automatic Identification Systems (AIS) data (July 2019 – December 2019).

The assessment has highlighted that there is a wide spatial distribution of commercial fishing activity in the Celtic Sea, with demersal and shellfish species being the most important in terms of landings by weight and value. Key demersal target species include cod, haddock, monkfish, plaice, ray, skate and sole. Key shellfish species include lobster, nephrops, crab and whelk. Pelagic fish landings from this area are mainly of herring and whiting, and of relatively less economic importance compared to demersal and shellfish species.

The Welsh (inshore) fisheries around the Pembrokeshire coast (inside the 6 nm limit) are particularly characterised by valuable potting grounds for crab, lobster, and whelk. Since 1995, the whelk fishery has developed, significantly, in Carmarthen Bay and offshore of Gower, Fishguard and Milford Haven. The bass rod and line fishery has also proved popular amongst both commercial and recreational fishermen. The otter/beam trawler fleet concentrates its efforts in the outer Bristol Channel area and Cardigan Bay and lands a mixed catch throughout the year. These trawlers fish mainly between the 6-12 nm limits, and competition for fishing grounds can be intense, especially when the sole fishery attracts visiting beam trawlers from the south coast of Devon, Cornwall and even Belgium.

The Project array area and offshore export cable corridor lie within ICES Rectangles 31E4 and 32E4. Based on the most recent 5 years of Marine Management Organisation data available at the time of writing (2015-2019), ICES Rectangle 32E4 (Welsh inshore region) had significantly higher weight and value of landings by all vessels, compared to ICES Rectangle 31E4. Shellfish were the most important species for UK vessels, in terms of landings, from 31E4 and 32E4, with the majority caught in 32E4.

Demersal species were more important for the larger vessel size class across both ICES Rectangles. With respect to individual species, whelk, crab, lobster, nephrops, sole and rays were the most important in terms of UK fleet landings in the region.

For the non-UK Fleet, between 2012-2016, Belgian, French, and Irish vessels were all active within both ICES Rectangles. Belgian vessels landed the largest proportion of total weight of fish caught in 31E4 (offshore region), whereas French vessels accounted for the majority of landings in 32E4 (inshore region). Belgian and French vessels caught a large variety of species in comparison to the Irish fleet which was also active in this area. Key species caught by the Belgian fleet were common sole, anglerfish, blonde ray, megrim, and thornback ray. Key species caught by the French fleet were rays and skates, and haddock. The top 3 species caught by the Irish fleet (whiting, nephrops and Atlantic herring) accounted for approximately 80% of the total landings from Irish vessels between 2012-2016 from ICES Rectangles 31E4 and 32E4.

Landings by weight and value varied across both 31E4 and 32E4 for UK vessels across the time periods assessed, with no obvious general trend. Variations can generally be attributed to changes of which species were caught. In terms of intra-annual variation, landings varied for all species/vessels over the period, with a clear seasonal pattern of highest weight/value of landings between April and October each year.

For the top 5 individual species landed by UK vessels in ICES Rectangles 31E4 and 32E4, the following were the key periods for landings by weight and value:

- Whelk - April to July;
- Crab (*Cancer pagarus* mixed sexes) – July to November;
- Spider crab – May to July;
- Lobster - April to October;
- Blonde ray – no clear seasonal pattern.

For the non-UK fleet, based on data only presented by quarter, the period July to September appeared to be the most important in terms of landings, especially for species such as whiting and haddock. January to March was the least productive for most species, with the exception of rays and skates.

The spatial distribution of fishing activity/value in the entire region has been assessed via review and analysis of Vessel Monitoring System data from the Marine Management Organisation and ICES. These data indicate that fishing generally occurs along all parts of the offshore cable corridor, and, to a lesser extent, at the array area. Areas of higher activity were observed in the Welsh inshore region and to the southwest of the array area (“The Smalls” fishing ground).

The Marine Management Organisation; Scientific, Technical and Economic Committee for Fisheries; and ICES data were cross-referenced with further data sources, including the UK Fishermen’s Information Mapping data and the Sea Fishing Atlas of Wales. These data are generally consistent with the official Marine Management Organisation data in that they highlight the distribution of potting activity off the Welsh coast and demonstrate otter and beam trawling activity in the inshore region and also further offshore.

Key representatives of the commercial fishing industry (UK and non-UK bodies) were also consulted through Fisheries Liaison work and formal consultations. The key observations and trends identified via review of Marine Management Organisation and European Union landings/activity data were confirmed as being sound, and in line with fisheries consultees' understanding of activity in the region. The inshore region, which the proposed offshore export cable will pass through, features a high intensity of static gear fishing, with mobile gear vessels also present, particularly between 6-12 nm.

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1. Introduction

1.1. Overview

MarineSpace Ltd has been commissioned by Blue Gem Wind (BGW), the developer, to undertake a desk-based study on commercial and recreational fisheries activity within and around the proposed Project Erebus Floating Offshore Wind (FLOW) project, located approximately 35 km southwest of the Pembrokeshire coastline, in the Celtic Sea region.

The study will be used to inform the Environmental Impact Assessment (EIA) being undertaken for this Project. Further details on the specific aims and objectives of the study are provided in Section1.3.

1.2. Project Description

The proposed Project Erebus ("the Project") is a demonstration scale FLOW development in the Celtic Sea region. The developer, BGW, is a joint venture between Simply Blue Energy and Total. BGW has been set up to develop FLOW projects in the Celtic Sea and create a new low carbon offshore energy sector in the region that contributes to climate change targets, supply chain diversification and energy security.

The offshore array area covers an area of 43.5 km^2 in water depths of between 65-85 m. The array area is located outside of the 12 nautical mile (nm) limit and lies within International Council for the Exploration of the Sea (ICES) Rectangle 31E4. An offshore export cable runs from the array area to landfall at West Angle Bay, Pembrokeshire. The southern part of the cable lies within ICES Rectangle 31E4, with the majority of the cable in 32E4 - see Figure 1.2.1: Location of the Project array area and offshore cable corridor, within the Study Area, with International Council for the Exploration of the Sea Rectangles (ICES). Admiralty Charts reproduced under licence. Not to be used for navigationFigure 1.2.1.

The Project comprises 6 - 10 Wind Turbine Generators (WTGs) with a total capacity up to 100 MW. Each WTG is housed on a semi-submersible floating platform with a mooring system comprising a maximum of 5 catenary mooring lines, up to 870 m in length. A number of anchor solutions are currently being considered, with drag embedment anchors being the preferred solution. However, suction piles and percussive/drilled piles are also being considered.

The semi-submersible floating platforms will be painted and marked in accordance with relevant marine navigation requirements and the boundaries of the array area will be clearly defined via appropriate navigation aids and buoys.

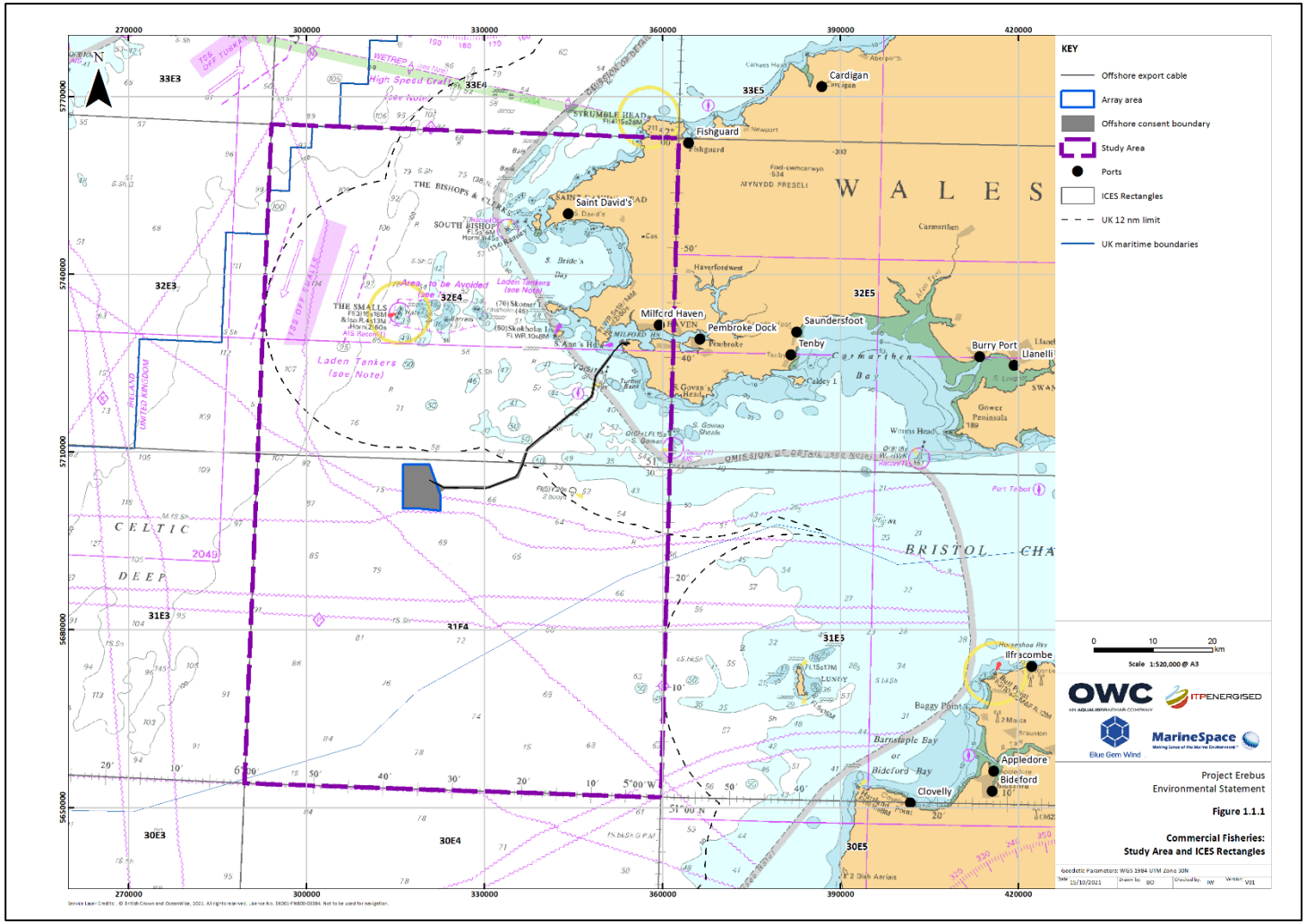
Up to 10 array cables will be required, although they may be installed as a single dynamic system with a lazy wave configuration from the semi-submersible floating platform to seabed. The offshore export cable, approximately 49 km in length, will link the array area to landfall at West Angle Bay, Pembrokeshire.

All efforts will be made to bury the offshore export cable, but if seabed conditions do not permit this, then cable protection will likely be required. This will be designed to enable trawling to continue over these features.

Onshore Project components will comprise onshore cable route from landfall and a substation in the vicinity of Pembroke Power Station.

The timeline for the Project would see offshore construction commencing and completing in 2026 and the Project then being operational for 25 years, up to the point of decommissioning.

Figure 1.2.1: Location of the Project array area and offshore cable corridor, within the Study Area, with International Council for the Exploration of the Sea Rectangles (ICES). Admiralty Charts reproduced under licence. Not to be used for navigation



1.3. Aims and Objectives

The overall aim of this assessment is to describe commercial and recreational fishing activity in and around the location of the Project array area and offshore export cable route. This information will be used to plan future survey work along the offshore export cable corridor and to inform the EIA work being undertaken in relation to the Project. To meet this overall aim, the following objectives have been defined:

- To undertake an assessment of commercial fishing activity in relation to the array area and offshore export cable corridor, using the ICES Statistical Rectangles 31E4 and 32E4 (hereafter referred to as the Study Area; 31E4 referred to as the offshore area, and 32E4 referred to as the inshore area), with particular attention to the following data:
    - Weight and value of landed catch (by vessel size class and species groups);
    - Weight and value of landed catch (by species);
    - Weight and value of landed catch by regional ports;
    - Fishing activity distribution and intensity;
    - Presence of indicative fishing grounds for fished species;
- To build upon the information from official data with additional information and knowledge obtained via direct consultation with representatives of local and regional fishing organisations. Consultation was undertaken as part of both the Fisheries Liaison work undertaken by MarineSpace during the offshore marine surveys in 2020 and also during the commercial fisheries stakeholder engagement consultations throughout Q4 2020 and Q1 2021;
- To review and assess the level of charter boat/recreational fishing (angling) that occurs in and around the array area and offshore export cable corridor.

2. Commercial Fisheries Activity within the Study Area

2.1. Regional Overview

Commercial fishing in the Celtic Sea region is widely distributed. Demersal fish and shellfish are the key target species for commercial fisheries in this region. The most important demersal target species include; cod, haddock, ling, monkfish, plaice, ray, skate and sole; whilst key shellfish species include; lobster, nephrops, crab, scallop, razor clam and whelk. Pelagic fish landings from this area are mainly of herring and mackerel, and of relatively less economic importance compared to demersal and shellfish species.

The offshore part of the Study Area (ICES Rectangle 31E4) includes the array area and offshore export cable corridor beyond 12 nm (Figure 1.2.1). This offshore area is fished by both UK and non-UK (Irish, French, Belgian, Anglo-Spanish) commercial fishing vessels (ICES, 2018). The inshore part of the Study Area (ICES Rectangle 32E4) includes the offshore export cable corridor inside of 12 nm and is known to be particularly important for potting by the local inshore fishing fleet.

Up to 31 December 2020, fisheries within UK waters, including the Celtic Sea region were managed through the European Union (EU) Common Fisheries Policy (CFP), with fisheries of some stocks managed by the North East Atlantic Fisheries Commission (NEAFC) and by coastal state agreements. Since the withdrawal of the UK from the EU on the 31 December 2020, the new EU-UK Trade and Cooperation Agreement stipulates that there will be a 5-year transition phase, whereby 25% of the EU quota for British waters will be transferred to the UK fishing fleet. At the time of writing, uncertainty still remains with respect to actual impacts of the UK's withdrawal from the CFP and how fishing activity in and around the Project may change over the lifetime of the Project.

International vessels fish waters in and around the Study Area, most commonly from Ireland, France, and Belgium but also some Anglo-Spanish vessels. Key species landed by these fleets are sole, anglerfish, thornback and blonde ray, megrim, haddock, whiting, Atlantic cod, nephrops and Atlantic herring.

2.2. Overview of the Study Area

The main Welsh fishing port in the Study Area is Milford Haven, Pembrokeshire. Milford Haven is an administrative port for 377 fishing vessels (December 2020), 94% of which are ≤10 m vessels (MMO, 2020b). Out of the 377 vessels, 97 vessels have a Pembrokeshire port as their home port (Fishguard, Milford Haven, Neyland, Porthgain, Saundersfoot, Solva, St David's, Stackpole Quay or Tenby), with the majority of these ≤10 m vessels (MMO, 2020b).

The Pembrokeshire fisheries provide jobs for approximately 100 people, and there are approximately 60 businesses in Pembrokeshire supporting the industry, including suppliers and retailers (ONS, 2020). It has been estimated that there are 8 fish suppliers based in Milford Haven, 2 in Fishguard and 1 in Tenby (Levercliff, 2020). The current processing sector is small, with processing in Pembrokeshire generally based around shellfish, such as crab and lobster; it has been suggested that there is scope for growth in the processing sector, with a new processing hub in Milford Haven.

There has been recent investment in ice machines to preserve catch, and in coastal infrastructure such as hard standings (Pembrokeshire County Council, 2015).

Around the Pembrokeshire coast there are valuable potting grounds for crab, lobster, and whelk, with mollusc fisheries also taking place in some estuaries and bays. The majority of the Pembrokeshire fishing fleet is comprised of vessels fishing within 6 nm of the coast (Pembrokeshire County Council, 2015). Inshore fishing activities are often inhibited by prevailing westerly winds during the winter (Walmsley and Pawson, 2007).

The shellfish industry in south Wales has recently been considered to be of the greatest local economic importance in terms of commercial fishing activity, partly driven by an increased demand from French and Spanish markets (Walmsley and Pawson, 2007). Netting restrictions have been introduced around much of the Welsh coast to protect salmonids and juvenile bass, although various net types are still used to catch bass, rays, cod, flatfish and crustacea. The bass rod and line fishery has also proved popular amongst both commercial and recreational fishermen since the 1980s (Walmsley and Pawson, 2007).

The intertidal regions of the Pembrokeshire coast are recognised for harvesting cockle, mussel, Pacific and native oyster, clam, and razor shell.

2.2.1. Shellfish

Most fishermen working from the Pembrokeshire coast rely heavily on potting for crab and lobster, with activity peaking during the warmer months. Generally, lobster and velvet crab are caught inshore and around the Pembrokeshire islands, whereas brown crab are caught both inshore and offshore. Pots and nets are also used for crawfish around the rocky Pembrokeshire coast, and for spider crab both inshore and offshore. Pots are also set for prawns along parts of the north Pembrokeshire coast and there is some limited potting for green crab in Milford Haven (Walmsley and Pawson, 2007).

Significant whelk fisheries have developed, since 1995, in Carmarthen Bay and offshore of Gower, Fishguard and Milford Haven. Larger vessels are active in the offshore grounds during the winter and set up to 2,000 pots each. On the inshore grounds up to 1,000 pots per boat are used. Effort is dependent upon price, which saw a general increase between 2012 - 2017, but a reduction in 2018 and 2019. Following consultation by Welsh Government in 2017, the minimum landing size for whelks was increased in both July 2019 and July 2020 (Welsh Government, 2020). Welsh Government has also announced intentions to introduce landing caps to conserve stocks and ensure the sustainability of the Welsh whelk fishery.

In Cardigan Bay several local and some visiting boats, mainly Scottish, dredge for scallop, particularly in winter, landing into Fishguard and Milford Haven (Walmsley and Pawson, 2007); there are restrictions which drive this seasonality of the scallop fisheries, such as The Scallop Fishing (Wales) (No.2) Order 2010, which prohibits the taking of scallops between 1 May to 31 October. Trawlers target native oyster in winter in Swansea Bay and Milford Haven. Cuttlefish are caught in pots in spring along the coast from Milford Haven to St Brides Bay (Walmsley and Pawson, 2007).

2.2.2. Demersal Fish

Since the 1980s, the ray fishery has expanded along the south Welsh coast, and trawlers concentrate their efforts between 3-6 nm offshore. Flatfish and rays (principally thornback) are taken in fixed nets and otter and beam trawls from spring through to the end of the year. Boats using gill nets and otter trawls take cod and whiting during the winter months. Large-meshed tangle nets are used for rays and large flatfish such as turbot. In many areas, Welsh Government (previously South Wales Sea Fisheries Committee) byelaws prohibit netting between April and October, and a Minimum Mesh Size (MMS) of 100 mm is in place for all nets, except trawls and purse seines.

A mixed catch is landed throughout the year by the trawler fleet along the south Welsh coast, which focuses its efforts in the outer Bristol Channel and Cardigan Bay. These trawlers mainly fish inshore and are mostly <10 m; competition outside 6 nm from the coast can be intense, especially when the sole fishery attracts visiting beam trawlers from the south coast of Devon, Cornwall, and Belgium.

The majority of otter trawling effort along the south Welsh coast is by Devon and Cornish vessels operating twin rig gear. There is also Belgian activity in the 6-12 nm zone (Walmsley and Pawson, 2007).

2.2.3. Pelagic Fish

Bass are increasingly caught in fixed and drift nets, by rod and line, on longlines and, more recently, in high lift trawls, throughout the year along the south Welsh coast. Mullet are sometimes taken as a bycatch in nets. The bass rod and line fishery has expanded since the late-1980s, due to numerous netting restrictions, and the low cost of fishing gear contrasting with the high demand for this species. The popularity of bass angling has also increased demand for sandeel as bait, and many rod and line fishermen also utilise sandeel nets to collect this species in shallow sandy bays to provide bait for their bass fishing activity. Mackerel are caught in drift nets and by hand-lining and the charter angling sector is highly dependent on mackerel during the summer. Sprats are occasionally taken in mid-water trawls and inshore in gill nets (Walmsley and Pawson, 2007).

2.3. Data Sources and Methodology

To characterise current commercial and recreational fishing in the vicinity of the Project array area and offshore export cable, a variety of data sources were used:

- Marine Management Organisation (MMO) UK fleet landings by selected ICES Rectangle (2015-2019) (MMO, 2020a);
- MMO UK and foreign fleet landings into the UK by Port (2015-2019) (MMO, 2020b);
- European Commission – Scientific, Technical and Economic Committee for Fisheries (STECF) non-UK landings by ICES Rectangle (2012-2016) (STECF, 2018);
- MMO fishing activity data for UK vessels (≥15 m), using Vessel Monitoring Systems (VMS) data (2016-2019) (MMO, 2021a);
- MMO fishing landings to UK ports (2016-2019) (MMO, 2021b);
- ICES fishing activity data for mobile bottom contacting gear vessels (>12 m) using VMS data (2014-2017) (ICES, 2017);
- UK Fishing Information Mapping data (UKFIM) (2013) (Crown Estate and NFFO, 2013);

- Natural Resources Wales (NRW) – Sea Fishing Atlas of Wales (2010) (NRW, 2010);
- Data from consultations with relevant stakeholders;
- Data from 2 x 14-day Project-specific marine traffic surveys undertaken in 2020 (NASH Maritime, 2021);
- Automatic Identification Systems (AIS) data (July 2019 – December 2019) (NASH Maritime, 2021).

The data used in this report have been reviewed with the following limitations and assumptions:

- MMO landings data weight and value by species should be treated with caution, as they are likely to be inflated due to duplication of species under different common names and grouping at higher taxonomic levels;
- It is to be noted that some species are landed in only 1 of the years covered by the data, while other species are repeatedly landed over the time period. Factors such as quota availability, market value, changes in target species availability and management measures are likely to influence the temporal trends observed in landings and value;
- The low spatial resolution of VMS data presents uncertainty in the exact position of the fishing footprint – data are shown either by ICES Rectangle or ICES Subrectangle;
- Smaller vessels are excluded from the analysis of VMS data, as only vessels with a beam greater that 12 m (ICES, 2017) or 15 m (MMO, 2021a) are captured. However, this is not thought to be a concern for the Project array area due to the distance offshore;
- The deployment of static gears or a run with mobile gear may not be fully represented within the VMS data. This is due to processing of the VMS data, which obtains a proxy of effort based on time, position, and a certain speed; however, vessel speed is not as accurate an indicator of fishing activity, since it does not identify whether fishing is occurring or not;
- Assumed removal of certain information prior to receipt, such as the MMO removing data where the vessel speed falls outside a certain range that is assumed for fishing activity, dependant on vessel and gear type;
- There is a delay with data being processed by the MMO, STECF and ICES, so the most recent data that have been made publicly available have been used;
- The Sea Fishing Atlas of Wales data are purely indicative and give a general indication of where fishing is thought to have occurred, based on anecdotal comments received by the former Countryside Council for Wales from a variety of sources. Due to the age of the data, there is a low level of confidence, but they have been used alongside official data sources and information from consultations;
- The 2 x marine traffic surveys undertaken by NASH Maritime (2021) were supplemented with 6 months of AIS data to provide a non-Covid-19 influenced dataset.

Where relevant, other issues related to the data presented in the report, are addressed in the document.

2.4. MMO Landings Data (UK Vessels)

The MMO publishes summaries of fishing activity for UK commercial fishing vessels that are deemed to have been fishing within a specified calendar year (this dataset includes vessels registered in the

Isle of Man and the Channel Islands). These summaries have been aggregated by month of landing, the ICES Rectangle where fishing activity took place, the length group of the vessel, and the gear group used. For each aggregation level, the quantity (tonnes) of live weight fish landed, the actual landed weight (tonnes), and value (sterling) of live weight fish landed are given for specific species, with the remaining species combined into a composite group based on the species group to which they are classified.

Data compiled by the MMO were reviewed for the most recently available 5 years, which covers a period of 2015-2019, and were filtered to show only landings from ICES Statistical Rectangles 31E4 and 32E4 (Figure 1.2.1). Data were filtered further to show data by vessel size class, species group and gear types.

2.4.1. Landings Weight and Value by Vessel Size Class and ICES Rectangle

The data interrogated allow for investigation of the contribution made by the different size classes to the total weight and value of catches from ICES Rectangles 31E4 and 32E4. Figure 2.4.1, Table 2.4.1 and Table 2.4.2 illustrate the contribution of the >10 m vessels and the ≤10 m vessels to catches from ICES Rectangles 31E4 and 32E4.

Figure 2.4.1: Total weight (tonnes) of landings and total value (£) of landings from ICES Rectangle 31E4 and 32E4 (2015-2019) based on vessel size classes (UK vessels) (Source: MMO, 2020a)

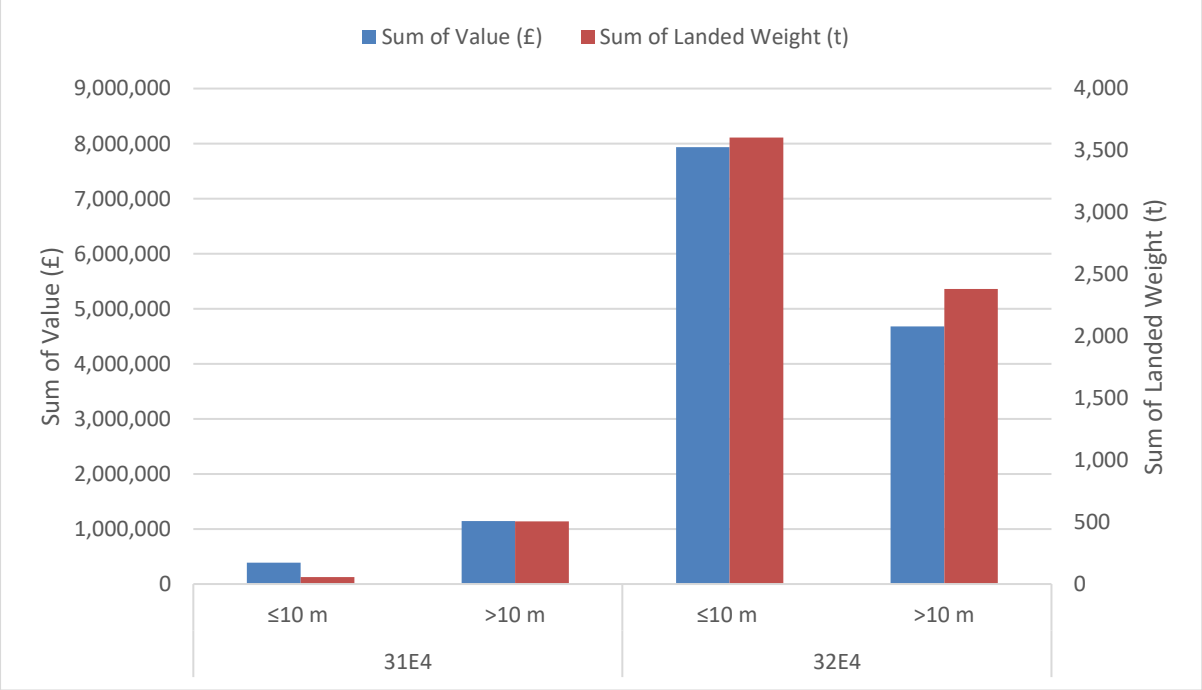


Figure 2.4.1 indicates that there is a relatively consistent relationship between the total weight of fish landed and the value of the catch across the separate vessel size classes and ICES rectangles.

Vessels of the smaller (<10 m) size class contributed marginally more to the overall weight and value of fish landed, with the majority of this catch taken from ICES Rectangle 32E4, within which the majority of the offshore export cable is proposed. As might be expected, vessels of the larger size

class (>10 m) contribute more to the overall weight and value of fish landed in ICES Rectangle 31E4, where the array area is located; this is to be expected given the distance from the coastline to 31E4 and 32E4, the relative ability of larger and smaller vessels to travel to fishing grounds and the actual fishing capabilities of the different vessel sizes/types.

The maximum weight landed between 2015-2019 was 3,604 tonnes, by the <10 m vessels within 32E4, whereas the minimum weight was 57 tonnes, landed by the <10m vessels within 31E4. The total value of landings corresponds with the landings weight across both rectangles during the 2015-2019 time period assessed via this study. The maximum value landed throughout this time period was £7,936,256 by <10 m vessels within 32E4. The minimum value of £385,509 was landed by <10 m vessels within 31E4.

Table 2.4.1: Total landings (tonnes) from ICES Rectangle 31E4 and 32E4 (2015-2019) based on vessel size classes (UK vessels) (Source: MMO, 2020a)

ICES Rectangle	Vessel Size Class	2015	2016	2017	2018	2019	Total (tonnes)
31E4	≤10 m	3.44	0.86	16.93	19.02	16.48	56.73
31E4	>10 m	91.32	171.74	51.56	25.92	166.18	506.72
32E4	≤10 m	610.06	598.68	1,052.74	794.56	548.24	3,604.28
32E4	>10 m	392.51	466.88	679.61	540.65	302.56	2,382.20
Total Landed Weight (tonnes)		1,097.33	1,238.15	1,800.84	1,380.15	1,033.45	6,549.93

Table 2.4.2: Total value of landings (£) from ICES Rectangle 31E4 and 32E4 (2015-2019) based on vessel size classes (UK vessels) (Source: MMO, 2020a)

ICES Rectangle	Vessel Size Class	2015	2016	2017	2018	2019	Total (£)
31E4	≤10 m	4,309.48	7,228.21	35,166.57	185,925.38	152,879.77	385,509.41
31E4	>10 m	160,978.91	287,848.42	156,589.36	90,403.54	449,943.45	1,145,763.68
32E4	≤10 m	1,200,217.30	1,357,632.83	2,067,195.33	1,844,280.73	1,466,929.68	7,936,255.87
32E4	>10 m	656,985.82	769,354.68	1,110,585.86	1,221,568.10	921,961.38	4,680,455.84
Total Sum of Value (£)		2,022,491.51	2,422,064.14	3,369,537.12	3,342,177.75	2,991,714.28	14,147,984.80

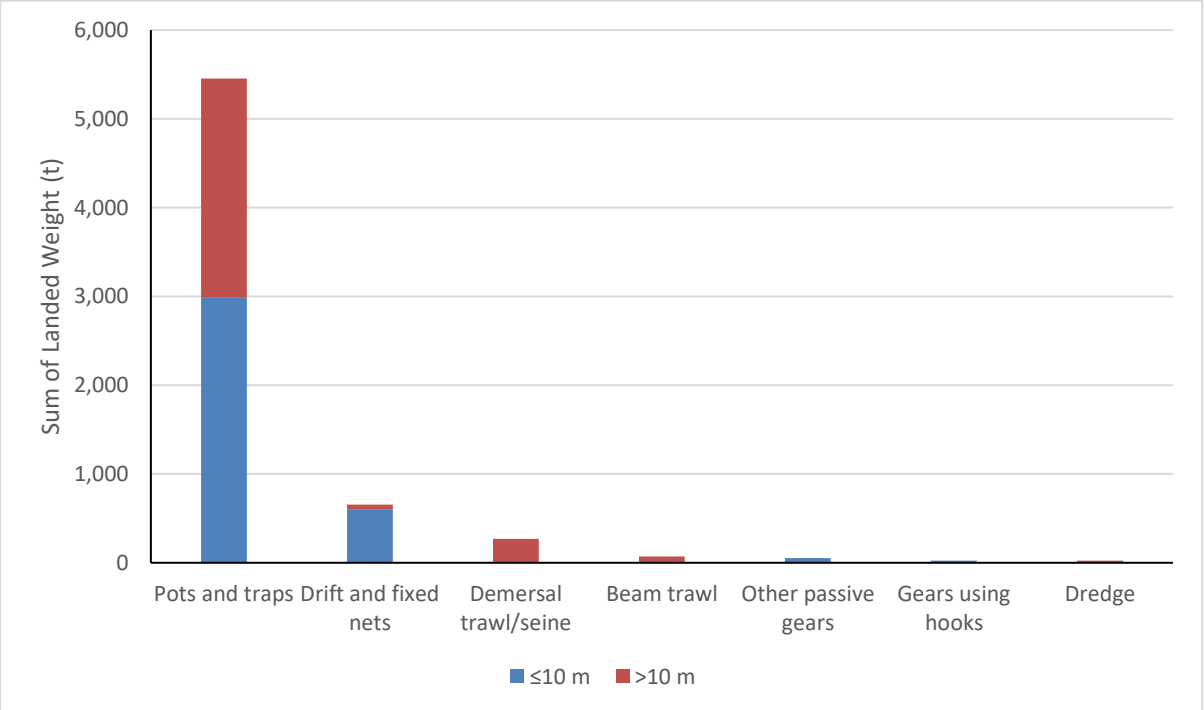
2.4.2. Landings Weight and Value by Gear Type

The data interrogated in this study provides information on the types of fishing gear used by the UK ≤10 m and >10 m fleets in ICES Rectangles 31E4 and 32E4; these data are illustrated in Figure 2.4.2. The data show that 7 identifiable gear types were recorded as being used to target fish stocks, specifically:

- Pots and traps;
- Drift and fixed nets;
- Demersal trawl/seine;
- Beam trawl;
- Gears using hooks;
- Other passive gears;
- Dredge.

Of these 7 types of gear, approximately 84% of total landings from the Study Area by the ≤10 m and >10 m UK fleets were recorded as having been taken using pots and traps (Figure 2.4.2); this indicates the importance of the shellfish industry in the region, noting that pots and traps predominantly target shellfish such as crab, lobster, and whelk. Drift and fixed nets were used mainly by the ≤10 m fleet. Demersal trawlers consisted mostly of vessels >10 m in length. These data also provide a useful indication of the types of species being targeted by the fishing fleets, which is discussed in more detail in Section 2.4.3 and 2.4.4.

Figure 2.4.2: Total landings (tonnes) based on gear type in ICES Rectangles 31E4 and 32E4 across 2015-2019 (UK vessels) (Source: MMO, 2020a)



2.4.3. Landings Weight and Value by Species Group and Vessel Size Class

The MMO data were used to determine the most important species groups in terms of the total weight landed and value of landings from the different vessel size classes in ICES Rectangles 31E4 and 32E4 (2015-2019). The data are presented in Figure 2.4.3 and Figure 2.4.4.

The data show that in terms of the weight of species landed and value of landings from the region, shellfish were the most important for UK vessels, with the majority caught by both vessel size classes in 32E4. Demersal species were more important for the >10 m size class across both ICES Rectangles. Pelagic species contributed significantly less than demersal and shellfish, for both 31E4 and 32E4, although no data existed across the time period for pelagic species caught by >10 m vessels landed into 32E4. The maximum weight of landed fish, and maximum value of landed fish were from shellfish, landed by the ≤10 m vessel size class from 32E4.

Figure 2.4.3: Sum of landings weight from ICES Rectangles 31E4 and 32E4 (2015-2019), displayed by vessel size class and species group (UK vessels) (Source: MMO, 2020a)

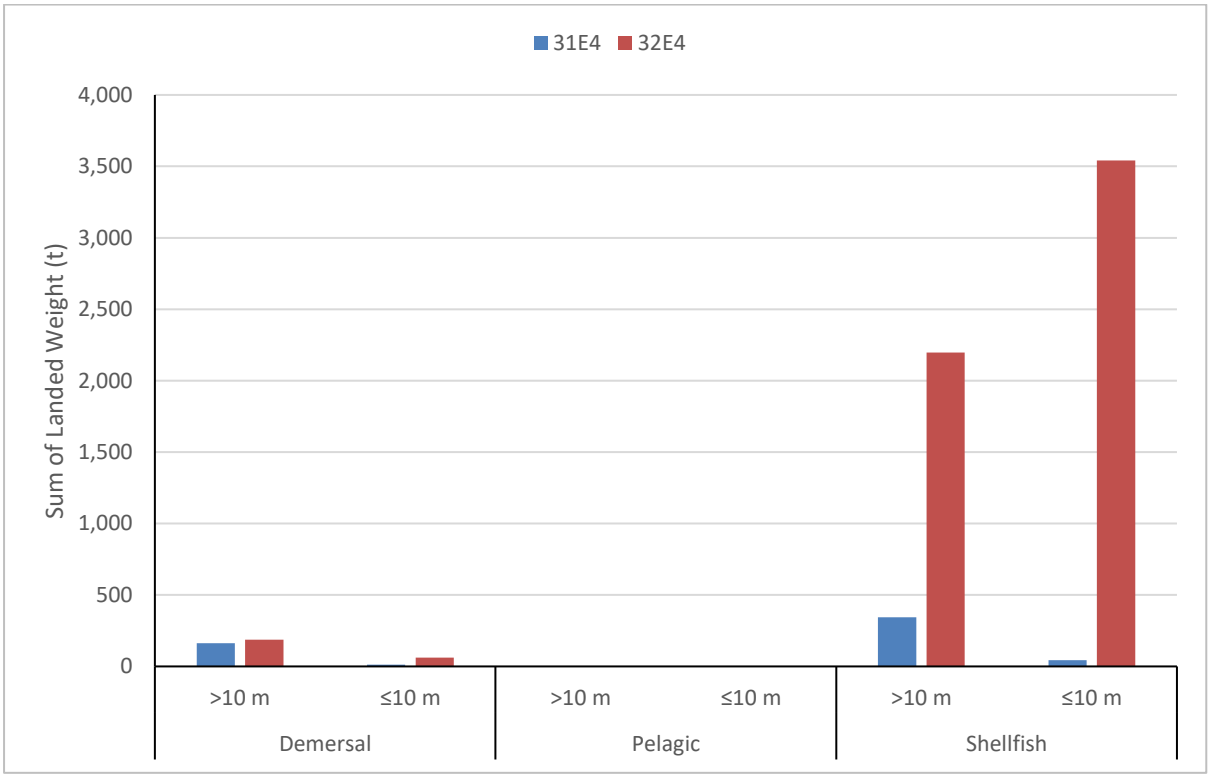
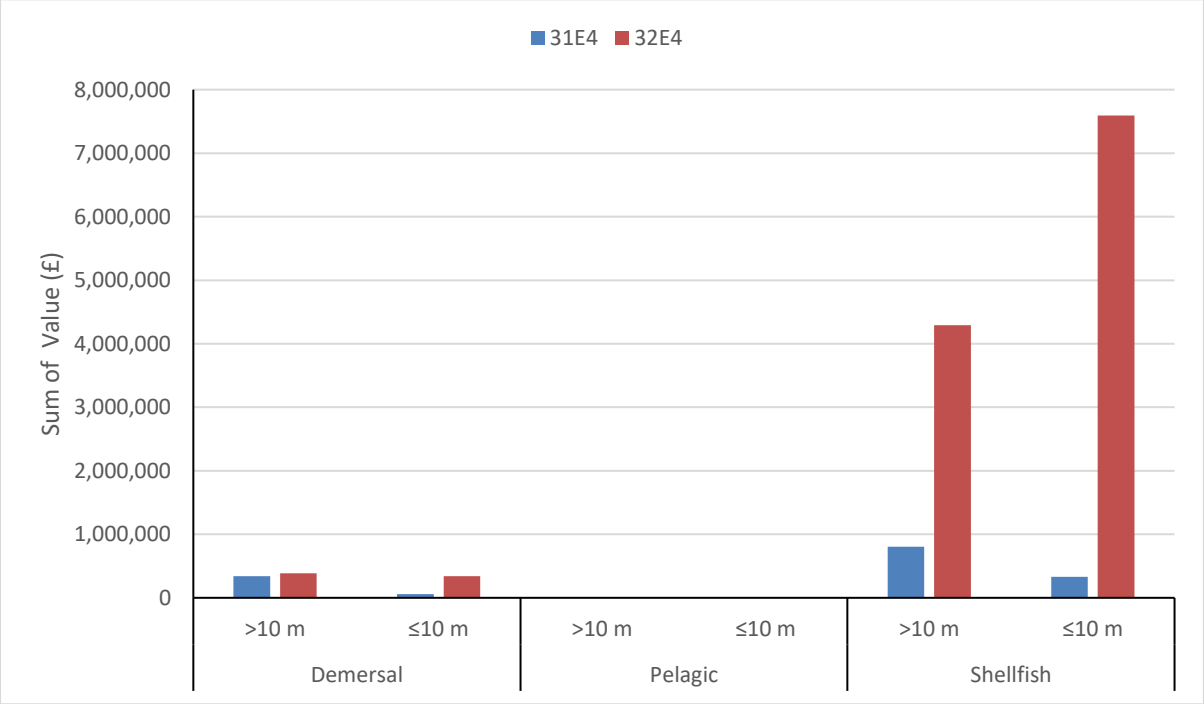


Figure 2.4.4: Sum of landings value from ICES Rectangles 31E4 and 32E4 (2015-2019), displayed by vessel size class and species group (UK vessels) (Source: MMO, 2020a)



2.4.4. Landings Weight and Value by Species

The MMO data were used to determine the most important species in terms of the total weight landed and value of landings in ICES Rectangles 31E4 and 32E4 (2015-2019); vessel size classes were aggregated for these analyses. A total of 59 species classes were landed from 31E4 (**Error! Reference source not found.**) and 70 species classes were landed from 32E4 (**Error! Reference source not found.**). However, these data were believed to contain some inaccuracies and inflated figures, due to duplication of species under different common names and grouping at higher taxonomic levels.

Total landed weight and value for each species class were determined for the 2015-2019 time period within the respective ICES Rectangles. Species were then filtered to identify the species with the highest landed weights and corresponding values (Figure 2.4.5 and Figure 2.4.6), to identify the most commercially important species. Only the top 10 species were considered for this analysis, given that they contributed 93% of the total weight and 91% of the total value of catches in 31E4 and 97% of the total weight and 94% of the total value of catches in 32E4.

Within ICES Rectangle 31E4 (Figure 2.4.5), crab (C.P. mixed sexes[1]) was the species with the greatest weight of landings (308 tonnes), which also resulted in the largest value of landings (£576,544) for the period 2015-2019.

[1] C.P. mixed sexes = *Cancer pagarus* (brown/edible crab) mixed sexes)

The next 6 most commercially important species landed in terms of weight had significantly lower landings (ranging from 23-31 tonnes) than crab (C.P. mixed sexes); they were nephrops (Norway lobster), blonde ray, whiting, lobster, thornback ray and haddock. Lobster caught in 31E4 varied from the overall trend, with relatively low weight but high value (27 tonnes and £362,822). This highlights the high market value of this particular species.

Within ICES Rectangle 32E4 (Figure 2.4.6), whelk was the species with the greatest weight of landings (3,393 tonnes), which also resulted in the second largest value of landings (£3,803,536) for the period 2015-2019. The next 4 most commercially important species landed, in terms of weight, were crab (C.P. mixed sexes), spider crab, lobster and periwinkle. Lobster landed from 32E4 was the dominant species in terms of value (£4,462,899) with a corresponding weight of 352 tonnes. Another notable species that varied from the overall trend with relatively low weight, but relatively high value was bass (37 tonnes and £295,688).

Figure 2.4.5: Top 10 species caught in ICES Rectangle 31E4 (2015-2019) based on highest weight (tonnes) and corresponding value (£) (UK vessels) (Source: MMO, 2020a)

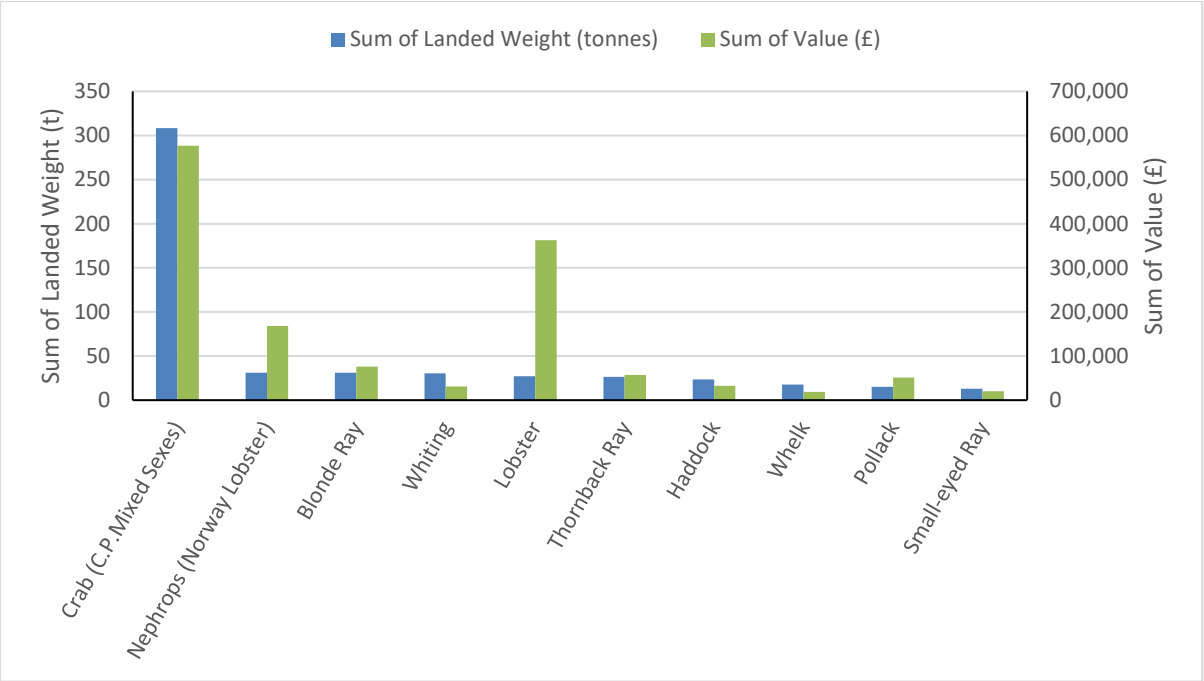
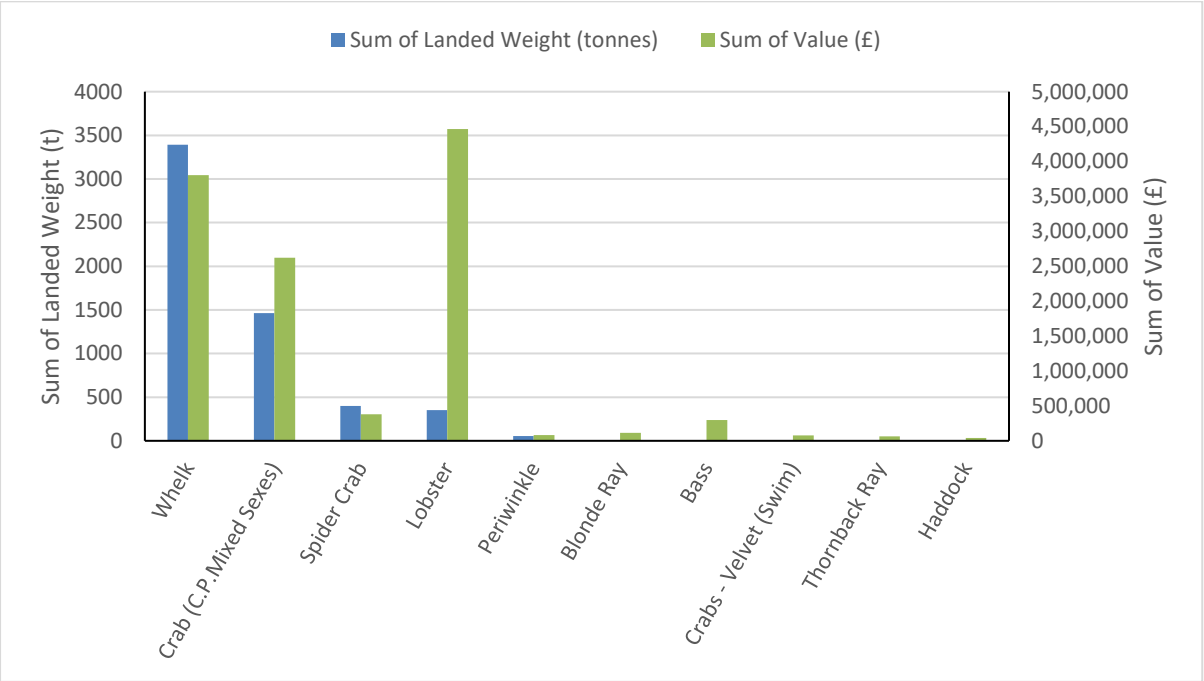


Figure 2.4.6: Top 10 species caught in ICES Rectangle 32E4 (2015-2019) based on highest weight (tonnes) and corresponding value (£) (UK vessels) (Source: MMO, 2020a)



2.4.5. Temporal Variation in Landings

The MMO data show that between 2015-2019, the sum of landed weight across ICES Rectangles 31E4 and 32E4 varied from a minimum of 1,033 tonnes in 2019 to a maximum of 1,801 tonnes in 2017 (Figure 2.4.7). The sum of landed value varied from a minimum of £2,022,491 in 2015, to a maximum of £3,369,537 in 2017 (Figure 2.4.8).

Figure 2.4.7: Annual trends in sum of landings weight (2015-2019) for ICES Rectangle 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)

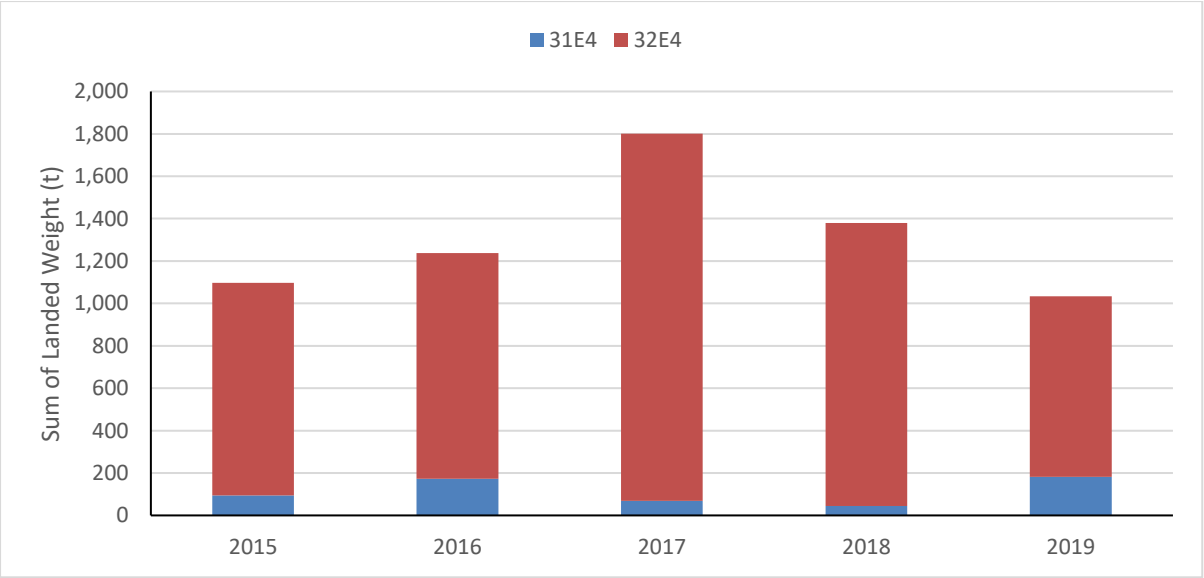
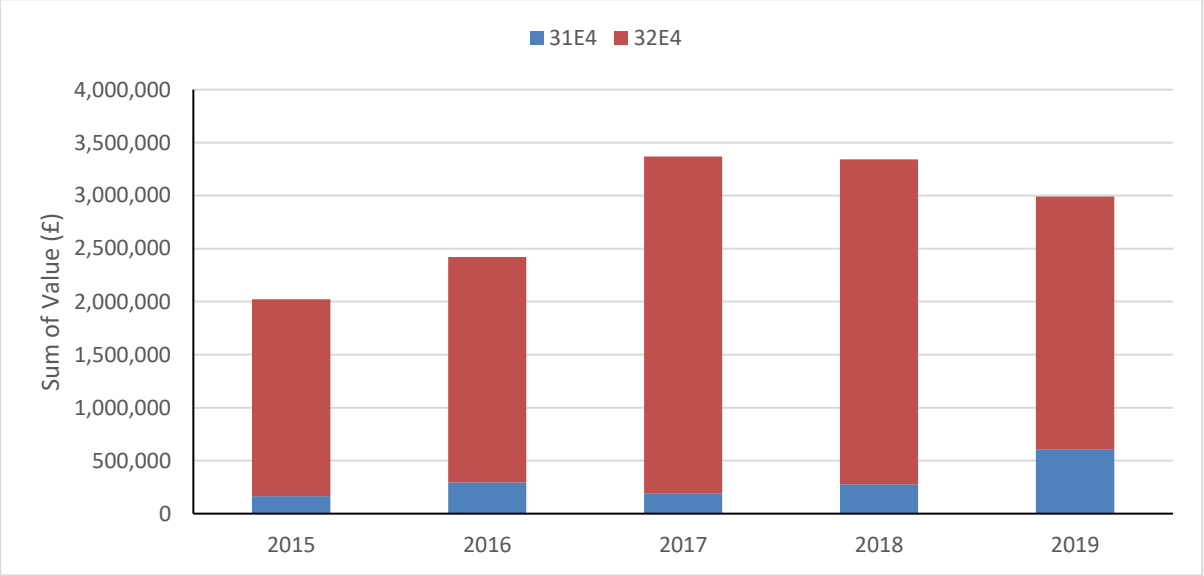


Figure 2.4.8: Annual trends in sum of landings value (2015-2019) for ICES Rectangle 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)



Across both ICES Rectangles (31E4 and 32E4), the seasonal (intra-annual) range in landed weight (2015-2019) varied from 302 tonnes in February to 791 tonnes in June (Figure 2.4.9). The landed value followed a similar trend with the minimum value of £645,817 in February and maximum value of £1,800,695 in July (Figure 2.4.10). With respect to individual rectangles, 32E4 (inshore region) mirrored the overall trend with peak landings in June and July, whereas 31E4 (offshore region) had greater landings in August-October than in June-July. Very limited fishing takes place in 31E4 during January-March, which is likely due to temporal closures in the area, as well as weather conditions offshore.

Figure 2.4.9: Seasonal trends in sum landings weight (2015-2019) for ICES Rectangle 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)

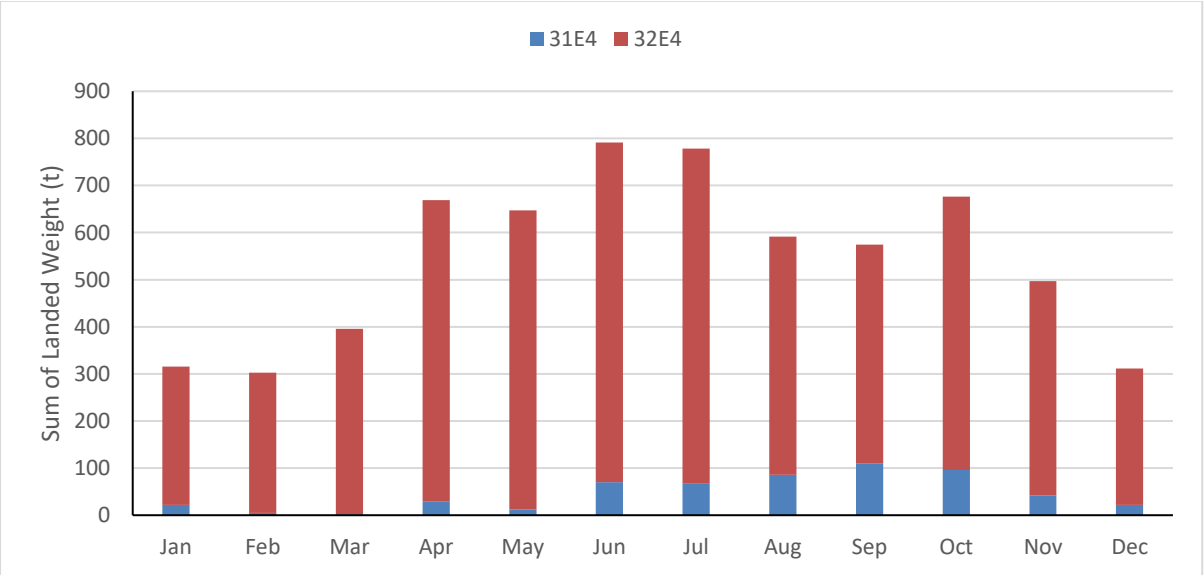
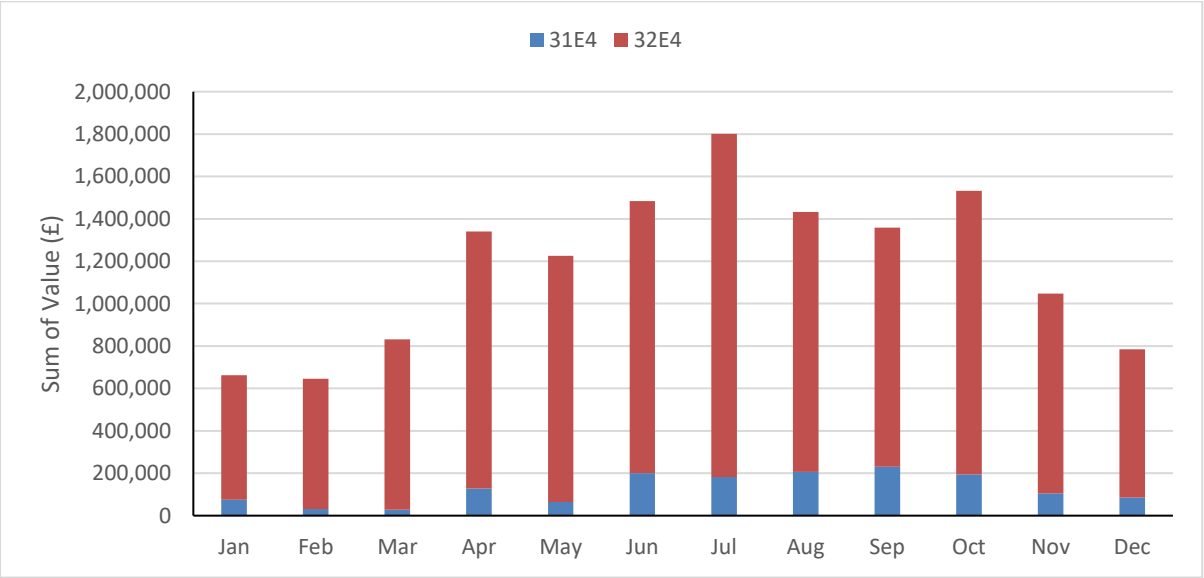
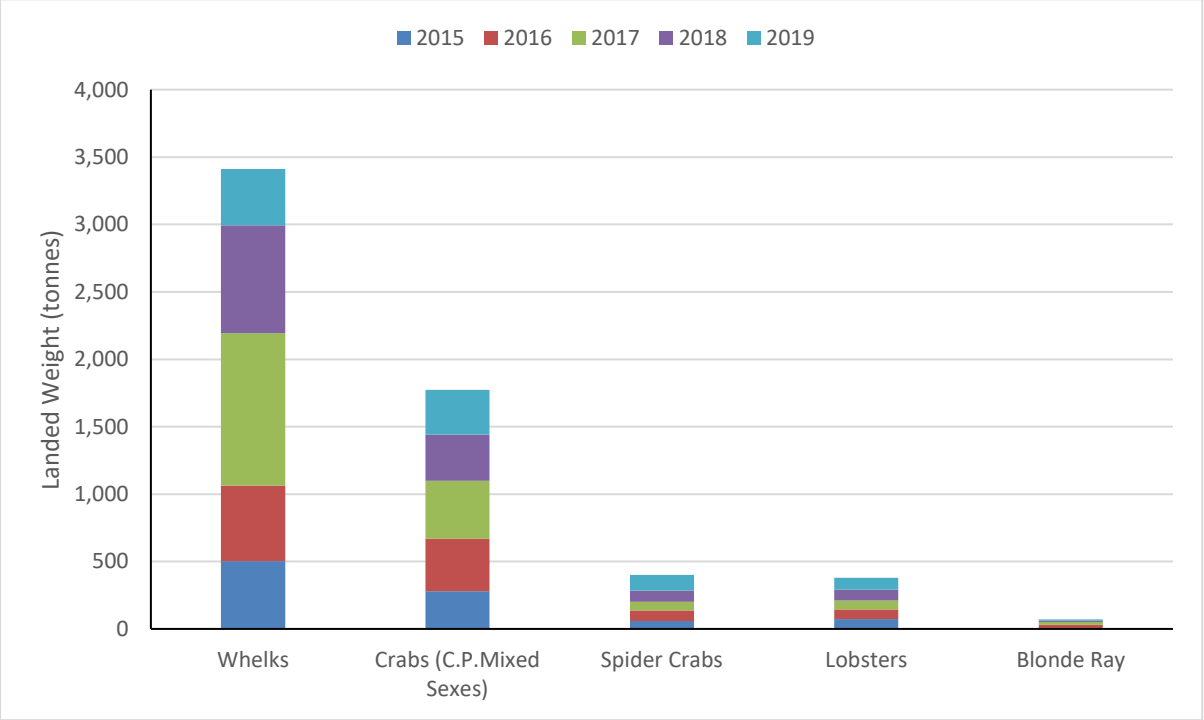


Figure 2.4.10: Seasonal trends in sum landings value (2015-2019) for ICES Rectangle 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)



The species data were analysed further to identify notable trends in the temporal variation of the top 5 most commercially important species. Overall, whelk and crab (C.P. Mixed Sexes) made up the dominant 2 species in terms of landed weight across all years and rectangles, and hence account for most of the variation between years (Figure 2.4.11). Whelk appeared to be of particular importance in terms of landed weight during 2017, which explains why 2017 had the greatest weight recorded overall. The reduction in landed weight of whelk during 2019 could have been influenced by various factors such as a reduction in the number of vessels fishing for whelk, an increase in the minimum landing size, or adverse weather conditions (Welsh Government, 2020).

Figure 2.4.11: Annual trends in top 5 species by sum of landings weight (2015-2019) for ICES Rectangle 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)



The most important months for landings of whelk during 2012-2019 were April to July inclusive, with a landed weight range across these months from 41 to 212 tonnes (Figure 2.4.12). Landed weight of whelk showed relatively similar seasonal trends across the 2015-2019 period. However, in 2016 the peak occurred slightly later in the year, and landed weights from May to December in 2019 were noticeably lower. The minimum landed weight of whelk occurred during December 2015 at 4.71 tonnes and maximum during April 2019 at 212 tonnes.

Crab (C.P. mixed sexes) landings, in terms of weight, were most prominent during July to November inclusive, with a landed weight range across these months of 19 to 117 tonnes (Figure 2.4.13). Landed weight of crab showed relatively similar seasonal trends across the 2015-2019 period, but with a slightly later peak during 2016. The minimum landed weight of crab (C.P. mixed sexes) was 4.52 tonnes and occurred during January 2018.

Spider crab landings, in terms of weight, were most prominent during May to July inclusive, with a landed weight range across these months of 9 tonnes to 33 tonnes (Figure 2.4.14). Landed weight of spider crab was notably higher during May and June of 2019. The minimum landed weight of spider crab occurred in 2015 (0.16 tonnes).

Lobster landings, in terms of weight, were most prominent during April to October inclusive, although this species is landed all year round and appears to have much less of a strong seasonal trend (Figure 2.4.15). The range in weight during the key months was 4 to 16 tonnes (Figure 2.4.15) and the minimum of 0.67 tonnes occurred in December 2015.

Blonde ray landings, in terms of weight, did not show a notable seasonal trend between 2015-2019 (Figure 2.4.16). Landings were noticeably high in January and April of 2017 and in October of 2016. There were months of some years where no blonde ray was landed, notably 2018 where none was caught between June to November.

Figure 2.4.12: Seasonality of landed weight (tonnes) of whelk (2015-2019) for ICES Rectangles 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)

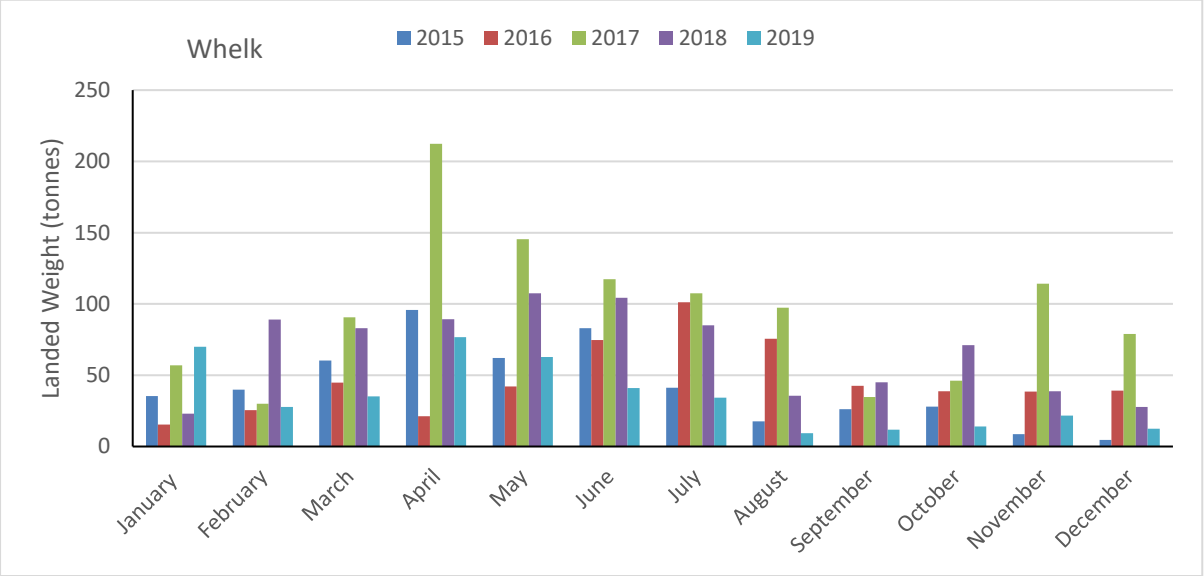


Figure 2.4.13: Seasonality of landed weight (tonnes) of crab (C.P. mixed sexes) (2015-2019) for ICES Rectangles 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)

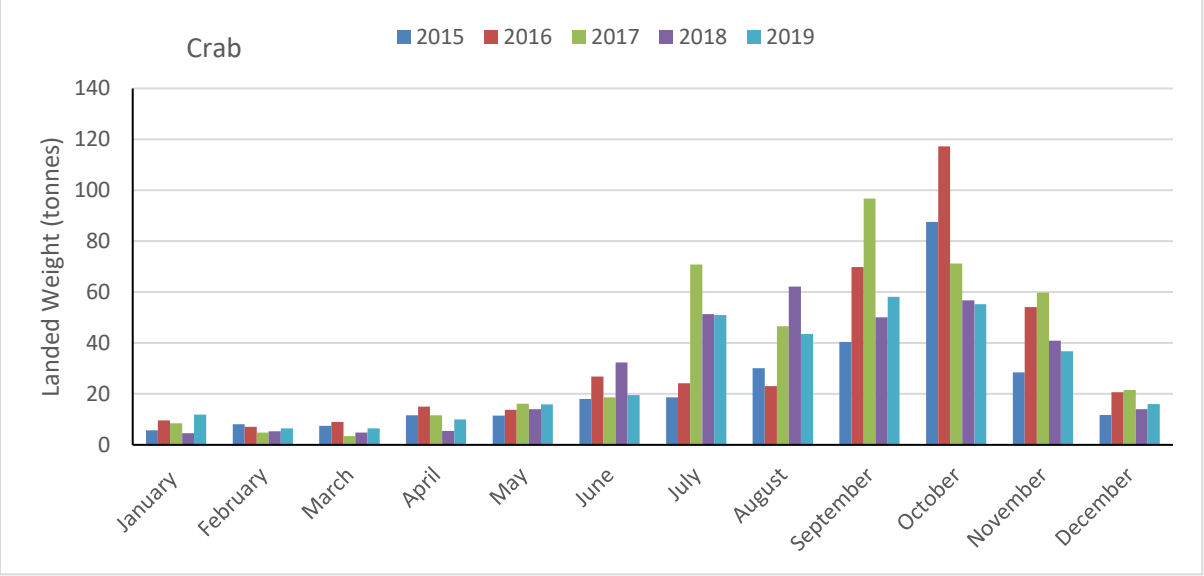


Figure 2.4.14: Seasonality of landed weight (tonnes) of spider crab (2015-2019) for ICES Rectangles 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)

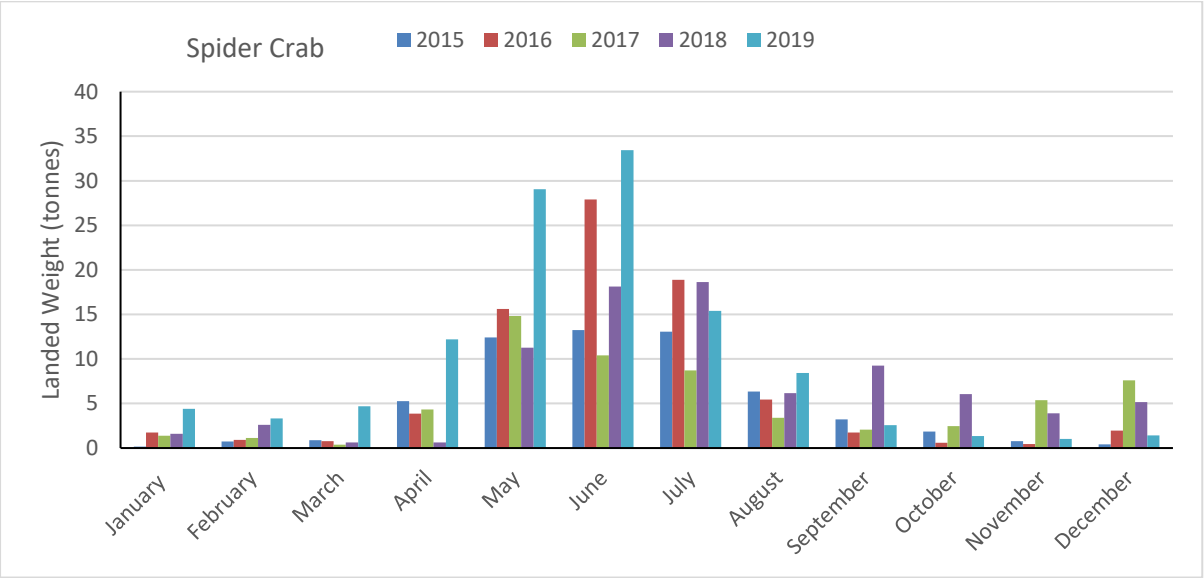


Figure 2.4.15: Seasonality of landed weight (tonnes) of lobster (2015-2019) for ICES Rectangles 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)

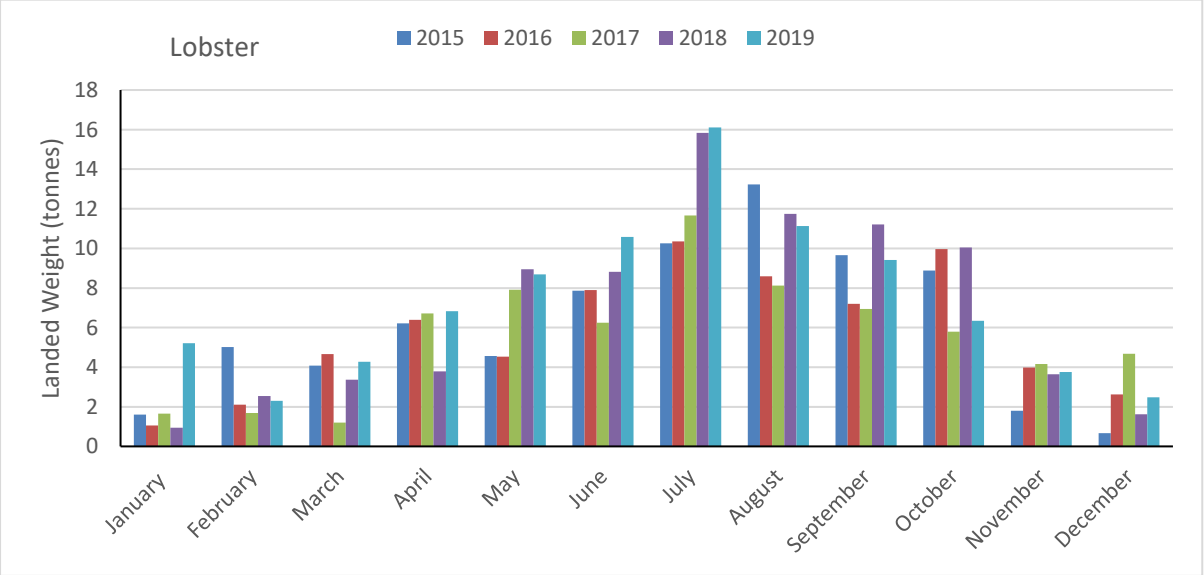
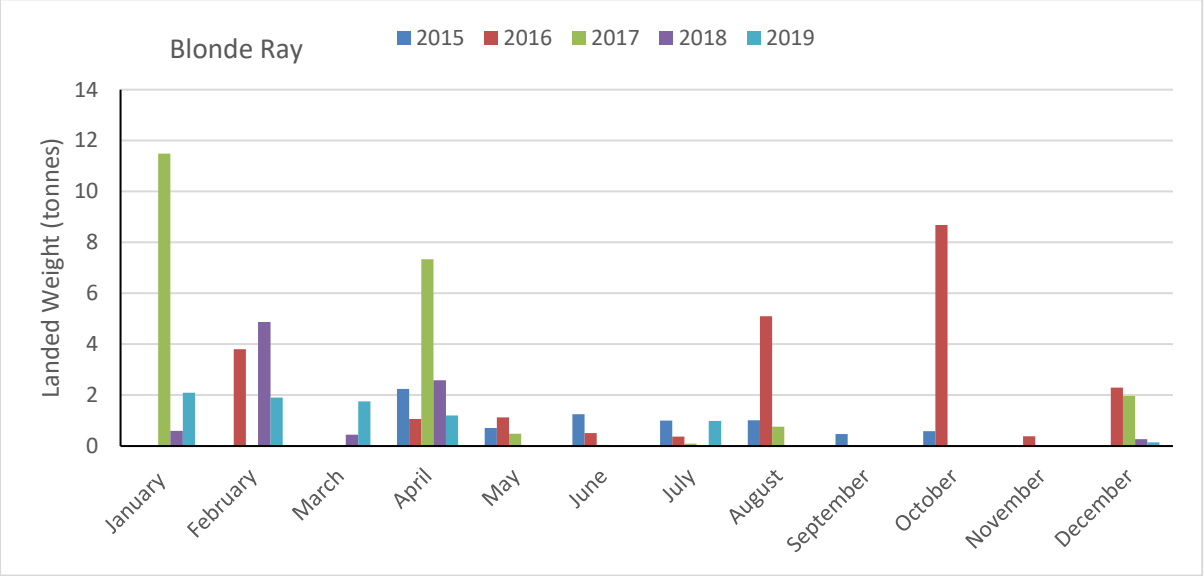


Figure 2.4.16: Seasonality of landed weight (tonnes) of blonde ray (2015-2019) for ICES Rectangles 31E4 and 32E4 (UK vessels) (Source: MMO, 2020a)



2.5. MMO Landings Data (UK and Foreign vessels)

2.5.1. Landings by Regional Port

Landing's data compiled by the MMO (MMO, 2020b) were reviewed for the period January 2015 to December 2019 and filtered to just show landings into Welsh ports closest to the offshore cable corridor. The landings dataset provides summaries of fishing activity for both UK commercial fishing vessels landing into the UK and abroad, as well as foreign registered commercial fishing vessels landing into the UK, that are deemed to have been fishing within a specified calendar year.

The ports used in this analysis were Milford Haven and Saundersfoot, as they were identified as the closest ports with relatively high fishing effort (Section 2.7.6 and Figure 2.7.18). Data were sorted by port and filtered to analyse details within different vessel size class, species group and nationality of vessels. The data were further sorted by species to then analyse the most important commercial species, in terms of landed weight and value, into each port. This enabled a more detailed analysis of fishing activity from ports most likely to be affected by the Project.

2.5.1.1. Milford Haven

Vessels >10 m were dominant, in terms of landed weight, at the port of Milford Haven. Demersal and shellfish were the key species groups landed into Milford Haven with total landed weights, between 2015-2019, of 13,118 and 3,767 tonnes respectively (Figure 2.5.1). Belgian and English vessels landed the majority of demersal species in Milford Haven, whereas Welsh vessels landed the majority of shellfish species (Belgian, English and Jersey vessels also made notable landings of shellfish species). Vessels >10 m from the Isle of Man, Jersey, Northern Ireland, and Scotland also landed catch into Milford Haven, but total landed weights between 2015-2019 were significantly less than Belgian, English, and Welsh vessels. Note that the landings classified as 'unknown' were mostly Belgian beam trawlers and are therefore likely to be within the >10 m vessel size class.

Landed weights in the ≤10 m vessel size class were lower, although shellfish (a total of 837 tonnes) landings were still important, caught by mostly English and Welsh vessels, and Belgian vessels to a lesser extent. It is noted that 0.15 tonnes were caught by ≤10 m Scottish vessels between 2015-2019.

For both vessel size categories, the pelagic species group was the least dominant by weight and value of landings.

A total of 82 species were landed at Milford Haven during 2015-2019 (Figure 2.5.2). The top 5 species in terms of landed weight were sole, megrim, whelk, monk or angler and crab (C.P. mixed sexes). The landing weight of these 5 species ranged from 2,445 to 1,559 tonnes. In terms of value, sole was the key species landed with a total value of £23,990,273. This reflects the role of the beam trawl fishery which operates out of Milford Haven.

Figure 2.5.1: Total landings (tonnes) into Milford Haven port (2015-2019) displayed by species group, vessel length and nationality (Source: MMO, 2020b)

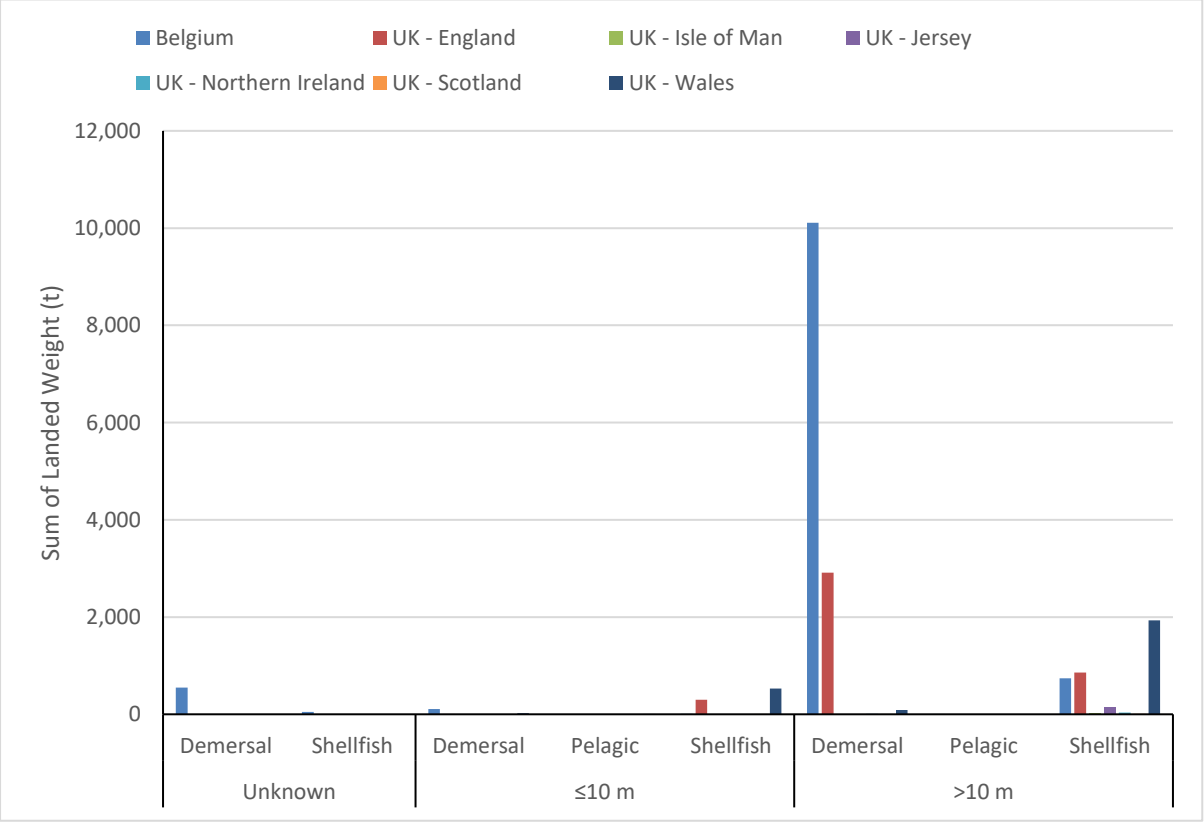
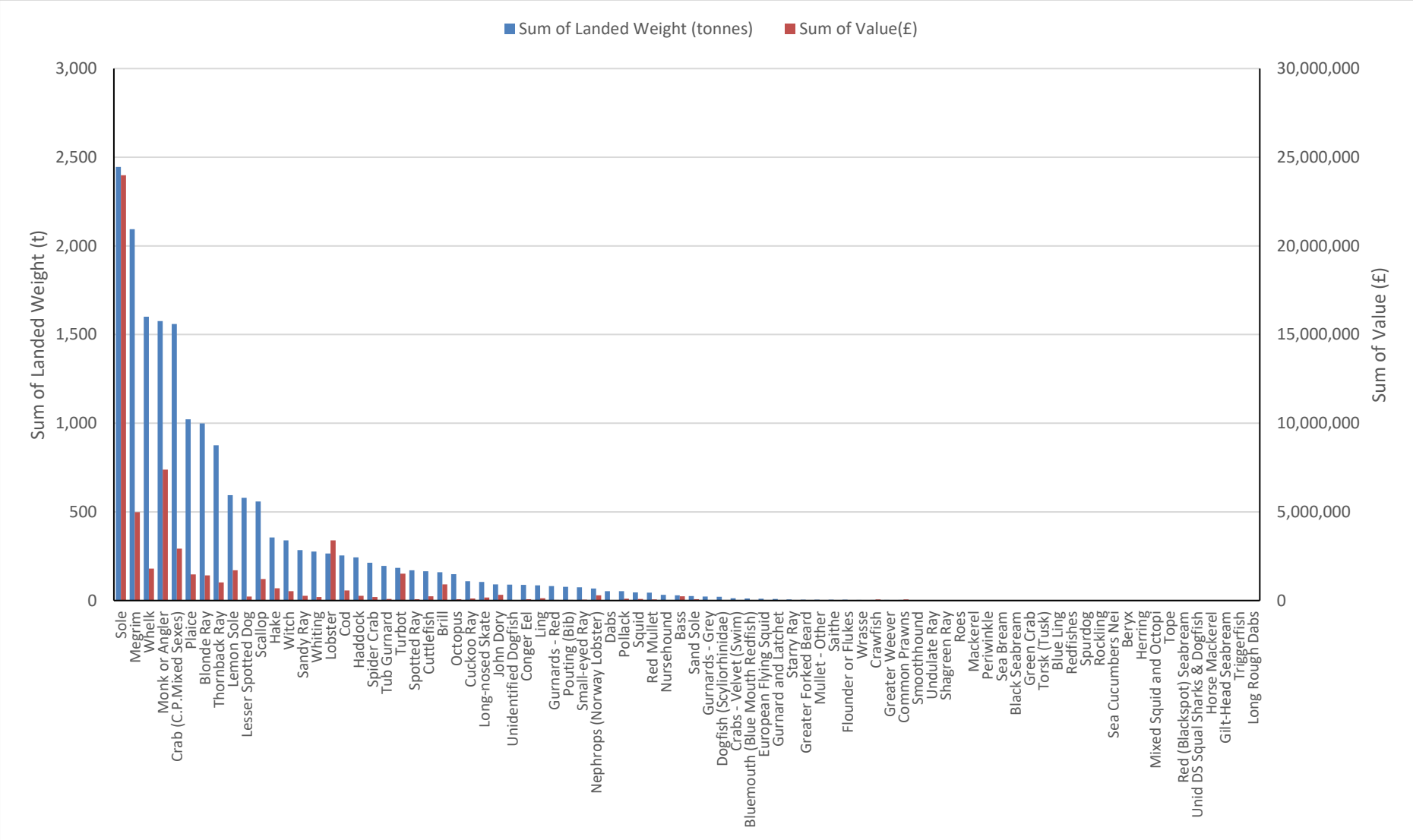


Figure 2.5.2: Total weight (tonnes) and value of landings into Milford Haven port (2015-2019) displayed by species class (Source: MMO, 2020b)



2.5.1.2. Saundersfoot

Vessels ≤10 m were dominant at the port of Saundersfoot in terms of landed weight and the key species group was shellfish, with total landed weight between 2015-2019 of 5,756 tonnes (Figure 2.5.3). Welsh vessels landed the majority of shellfish species landed into Saundersfoot, with some English vessels also landing shellfish species.

Shellfish was the only species group landed in Saundersfoot by the >10 m vessel size class, with a total landed weight across between 2015-2019 of 1,614 tonnes. The only >10 m vessels landing catch into Saundersfoot were from Wales.

A total of 16 species were landed at Saundersfoot during 2015-2019 (Figure 2.5.4). Whelk was the dominant catch at Saundersfoot, accounting for 98.5% of the landed weight (7,297 tonnes) and 94% of the value (£8,158,143). Bass was a notable species landed in Saundersfoot due to the higher relative value in comparison to weight landed.

Figure 2.5.3: Total landings (tonnes) into Saundersfoot port (2015-2019) displayed by species group and vessel length (Source: MMO, 2020b)

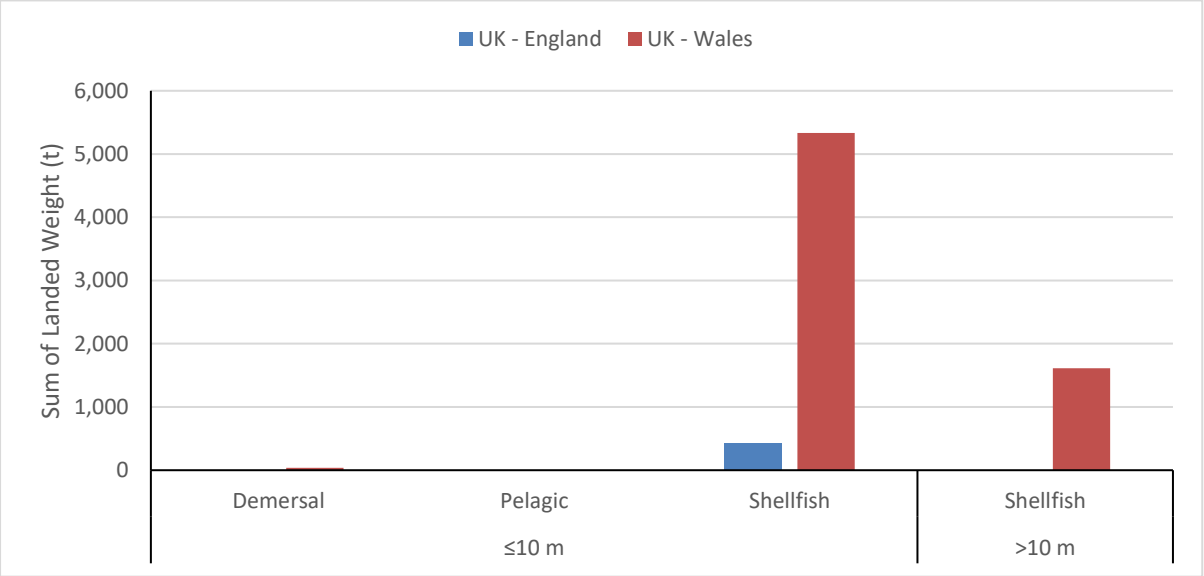
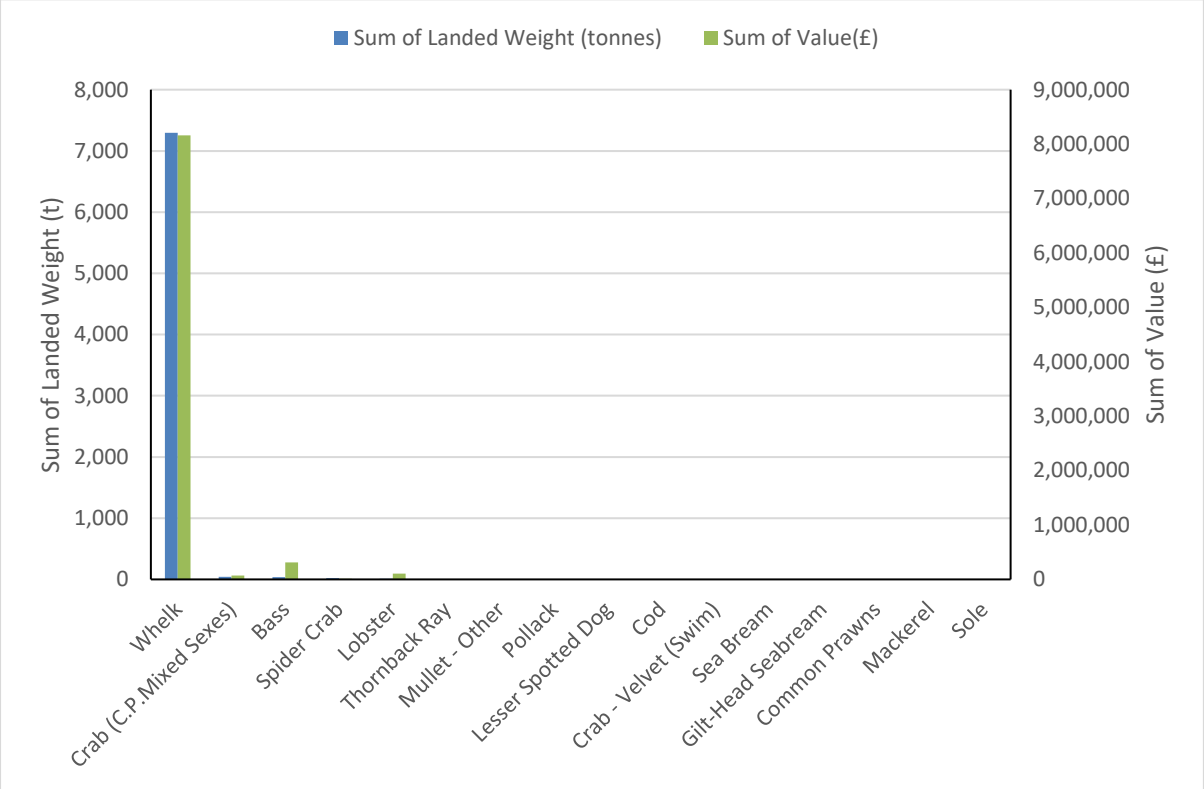


Figure 2.5.4: Total weight (tonnes) and value of landings into Saundersfoot port (2015-2019) displayed by species class (Source: MMO, 2020b)



2.6. EU Scientific, Technical and Economic Committee for Fisheries Landings Data (Non-UK Vessels)

Data on other EU fishing activity in and around the Project have been obtained from the website of the EU Scientific, Technical and Economic Committee for Fisheries (STECF) (STECF, 2017). These data have been provided by EU Member States following the 2017 Fisheries Dependent Information data call to support fishing effort regime evaluations. The data describe the total landed weight in tonnes and the effective fishing effort in hours fished, by species and by nation per year. Data regarding the seasonality of fishing (recorded by annual quarter) and the gear types used were also provided. The data (STECF, 2017) from 2012-2016 were filtered to show landings and effort data from ICES Rectangles 31E4 and 32E4; more recent data are not available to date.

These non-UK data are not in a format that allows direct comparison with the data provided by the MMO, but they do provide a good overview of fishing activity and trends in this region. It is noted that changes in fishing activity from non-UK vessels is likely to change due to the new EU-UK trade agreement as discussed in section **Error! Reference source not found.**.

Landings from vessels registered on the Isle of Man and Jersey have been captured within the MMO datasets and are thus not included within these analyses.

2.6.1. Vessel Nationality and Vessel Size Class

Vessels from Belgium, France and Ireland were active across both ICES Rectangle 31E4 and 32E4. A total of 21,559 tonnes was caught by the non-UK fleet in 31E4 between 2012-2016, with Belgian vessels landing the largest proportion of total weight of fish caught in ICES Rectangle 31E4 (Figure 2.6.1). A total of 10,273 tonnes was caught in 32E4, with French vessels landing the largest proportion of total weight from 32E4 (Figure 2.6.2).

Data assessed in this study were divided into 3 classes, dependent on the length of the fishing vessel (<10 m, 10-15 m and >15 m). Data were interrogated to determine the size of vessels active in the region by each non-UK country. As expected, no non-UK vessels <10 m were active across 31E4 and 32E4; and the largest proportion of vessels was from the >15 m class (Figure 2.6.3). The smaller 10-15 m vessels were predominantly from Irish ports, reflecting the closer proximity of home ports to this fleet.

Figure 2.6.1: Sum of landings weight (tonnes) within ICES Rectangle 31E4, across 2012-2016 (non-UK vessels) (Source: STECF, 2017)

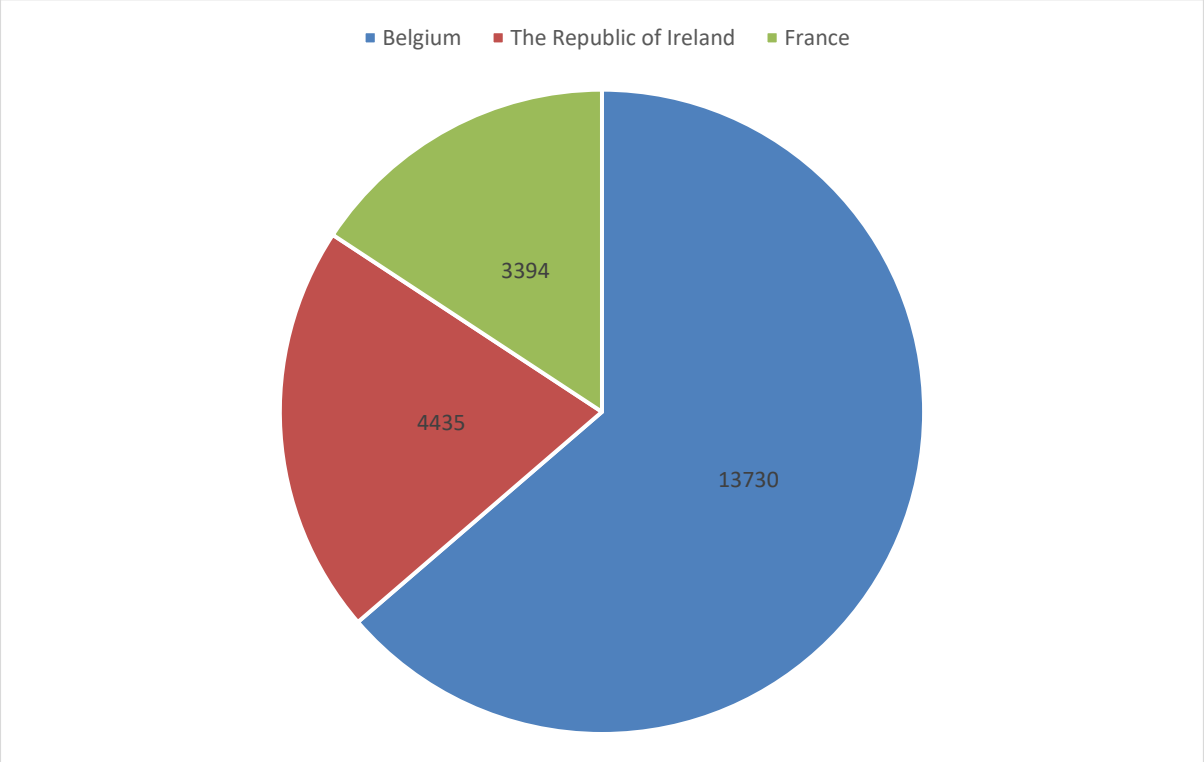


Figure 2.6.2: Sum of landings weight (tonnes) within ICES Rectangle 32E4, across 2012-2016 (non-UK vessels) (Source: STECF, 2017)

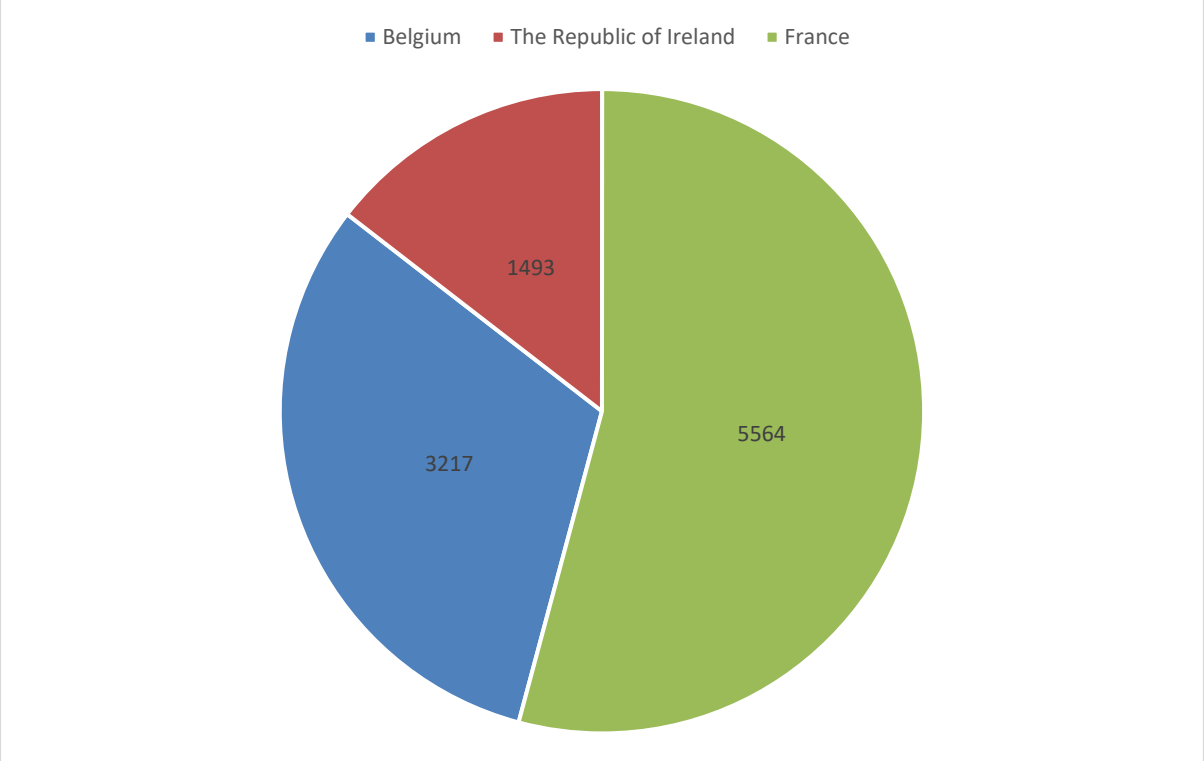
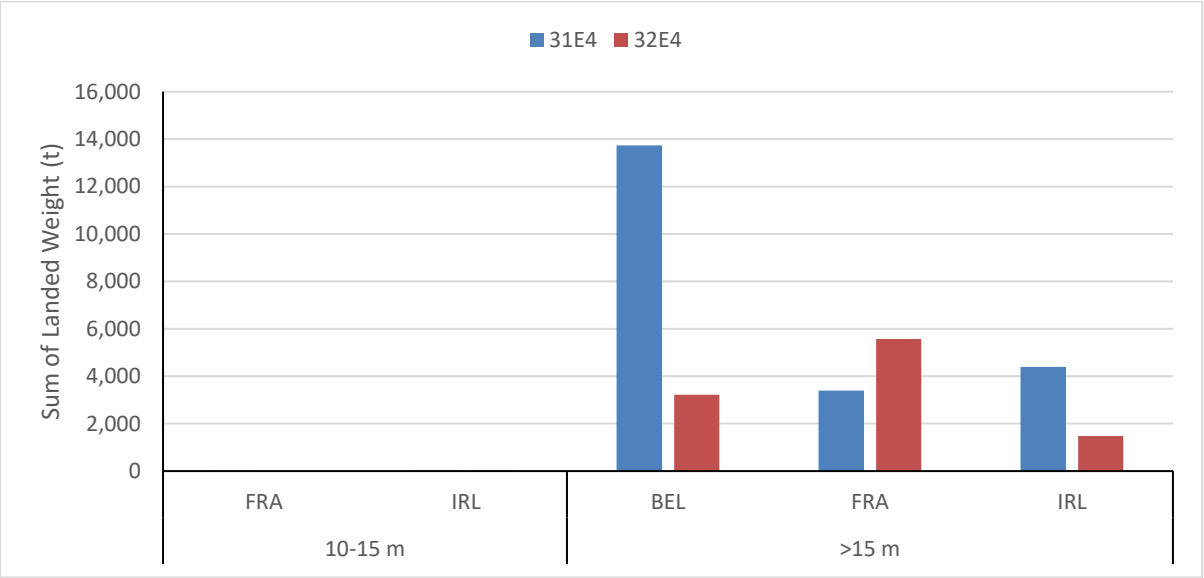


Figure 2.6.3: Sum of landings weight (tonnes) by vessel size class (2012-2016) (non-UK vessels) (Source: STECF, 2017)



2.6.2. Landings by Gear Type

The STECF data interrogated in this study provide information on the fishing gear used by fleets operating in the region. The data showed that 7 identifiable gear types were recorded as being used to target fish stocks, specifically:

- Beam trawls;
- Bottom trawls/seines;
- Dredge;
- Gill nets;
- Otter trawl;
- Pelagic trawl;
- Trammel nets.

Of these 7 types of gear, the majority of total landings from the Study Area were recorded as having been caught by vessels utilising beam trawl and bottom trawl/seines; this is in contrast with UK vessels, which predominantly used pots (especially within 32E4), see section 2.4.2. Further investigation regarding the species targeted is presented in section 2.6.3. The spatial distribution of vessels using the different gear types within the respective ICES Rectangles is discussed in section 2.7.5.

The data indicate that Belgian vessels almost exclusively utilised beam trawls and bottom trawls/seines across both ICES Rectangles 31E4 and 32E4 (Figure 2.6.4). This would suggest that the Belgian fleet is targeting demersal species. Beam trawls are known to catch a wide variety of bottom dwelling fish which would result in a varied catch containing flatfish, gadoids, and cartilaginous species.

Figure 2.6.5 illustrates that French fleets showed a wider variety of gear types than Belgian vessels. French vessels use primarily bottom trawls/seines but also uses, to a lesser degree, pots, otter trawl, gill nets and trammel nets.

Bottom trawls/seines are also the dominant gear type used by the Irish fleet (Figure 2.6.6), with pelagic trawls the secondary gear type. This would suggest the Irish vessels are fishing the region for both demersal and pelagic species.

It is worth commenting on the general implications of the results of the gear type analysis. Firstly, the use of beam trawls and otter trawls, along with dredges, indicates that the seabed supports a range of species that live on or just above the seabed. Secondly, the use of pelagic trawls, and the predominance of landings using industrial fishing vessels >15 m (section 2.6.1) in length indicates that the region is important for pelagic fish. Additionally, use of these gear types suggests that the seabed across the region has areas of seabed whose character is conducive to towing bottom fishing gear i.e., sediment rather than rock.

Figure 2.6.4: Total landings (tonnes) from Belgian vessels based on gear type in ICES Rectangles 31E4 and 32E4, across 2012-2016 (Source: STECF, 2017)

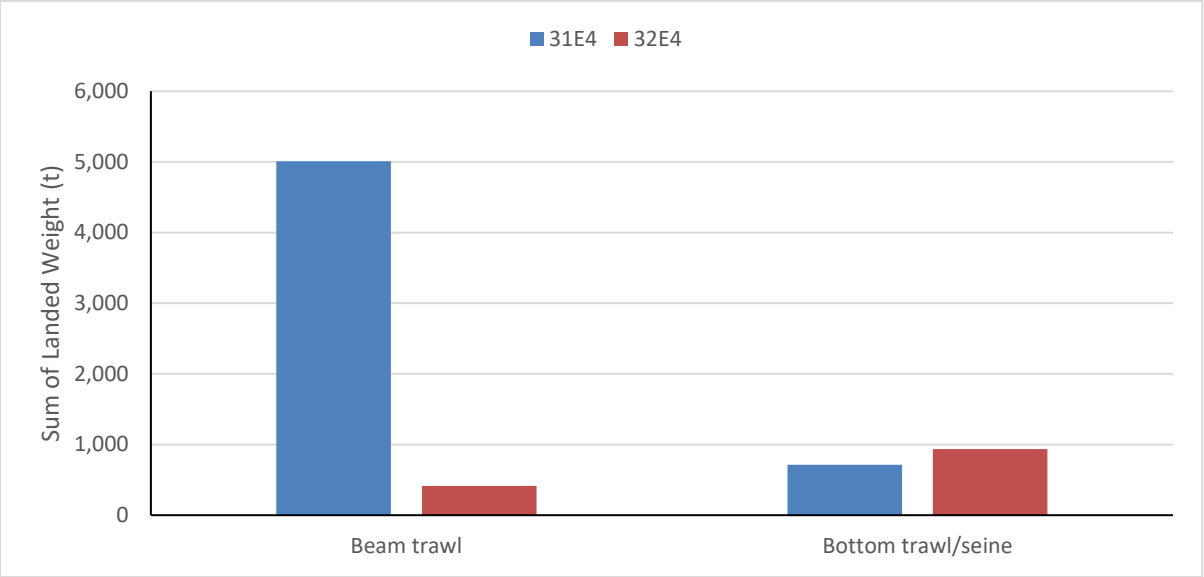


Figure 2.6.5: Total landings (tonnes) from French vessels based on gear type in ICES Rectangles 31E4 and 32E4, across 2012-2016 (Source: STECF, 2017)

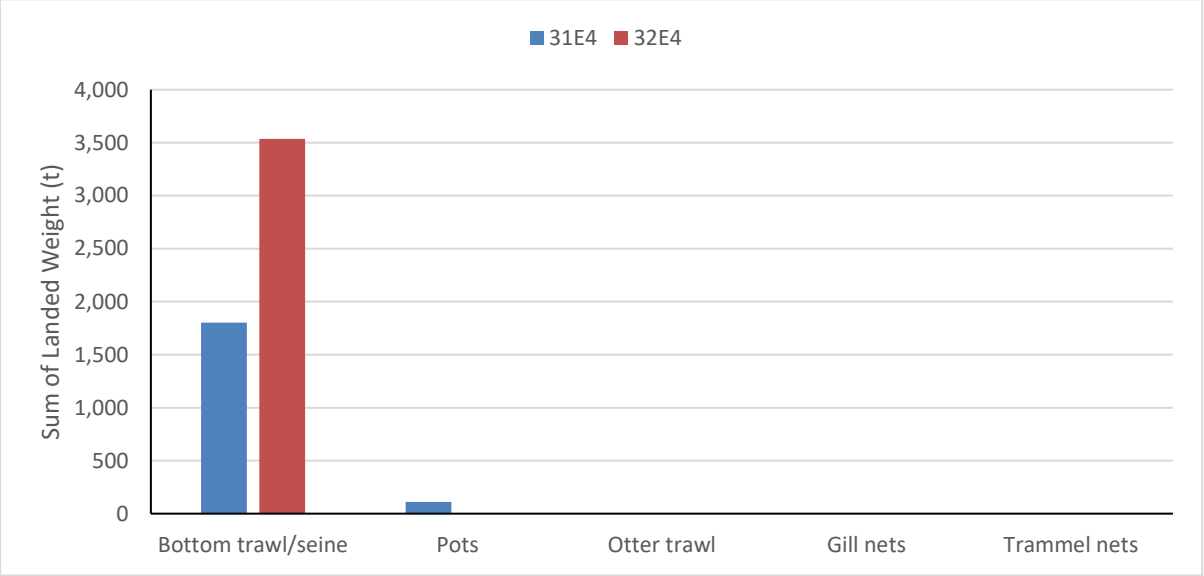
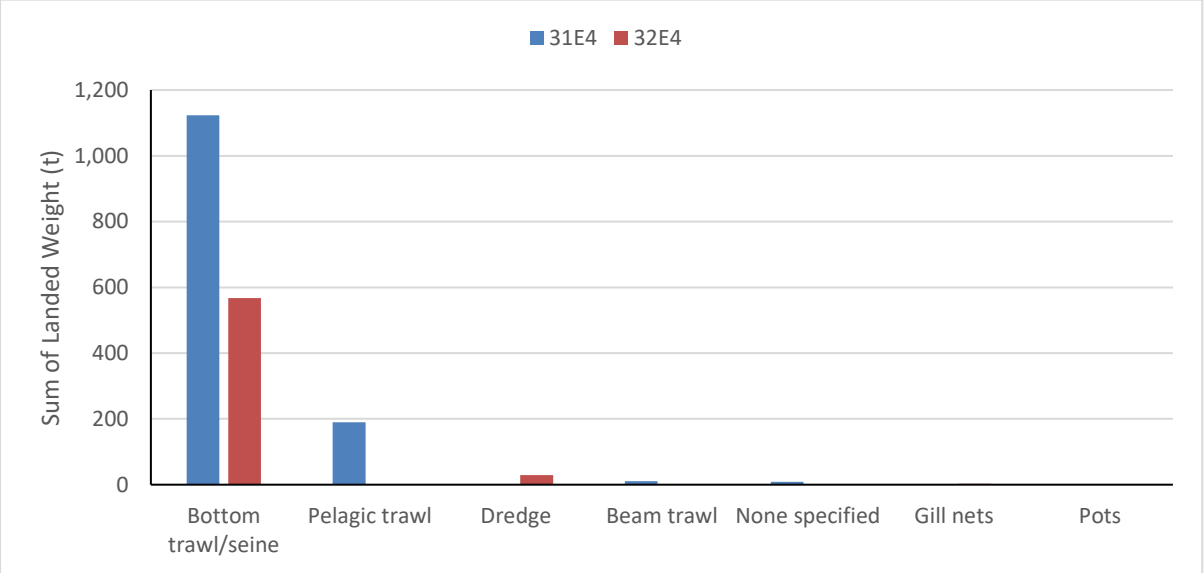


Figure 2.6.6: Total landings (tonnes) from Irish vessels based on gear type in ICES Rectangles 31E4 and 32E4, across 2012-2016 (Source: STECF, 2017)



2.6.3. Landings Weight by Species

A total of 58 species were landed by Belgian vessels during 2012-2016 (Figure 2.6.7). The top 20 species constituted approximately 93% of the total Belgian catch landed during the monitoring period. The top 5 species (common sole, anglerfish, blonde ray, megrim, and thornback ray) constituted approximately 54% of the total Belgian tonnage landed from the region. Data from Belgian vessels shows that the fleet's main targets were demersal species from ICES Rectangle 31E4, and similar species were caught in both rectangles. There was a large variety of species caught by the Belgian fleet and, given the understanding that the Belgian fleet almost exclusively use beam

and bottom trawls, this suggests that other species may have been caught as bycatch during fishing for the main target species.

A total of 71 species were landed by French vessels during 2012-2016 (Figure 2.6.8)[2]. The top 20 species constituted approximately 97% of the total French catch landed during the monitoring period. The top 5 species (rays and skates, haddock, whiting, anglerfish, and Atlantic cod) constituted approximately 77% of the total French tonnage landed from the region. Data from French vessels show that the fleet targets mostly demersal species, with the majority of landings from ICES Rectangle 32E4. The tonnages of other species caught are only very small, and it is considered likely that these species are being caught as bycatch during fishing for the main target species.

A total of 31 species were landed by Irish vessels during 2012-2016 (Figure 2.6.9). The top 10 species constituted 96% of the total Irish catch landed during the monitoring period. The top 3 species (whiting, Norway lobster and Atlantic herring) constituted approximately 80% of the total Irish tonnage landed from the region. Whiting was caught in equal weights by Irish vessels in both ICES Rectangle 31E4 and 32E4, whereas Norway lobster was caught predominantly in 31E4, and Atlantic herring was caught exclusively in 31E4.

[2] The 'other' species category is only prominent during 2012 and may possibly be a result of raw data inaccuracies, and therefore, these data should be treated with caution.

Figure 2.6.7: Total landings (tonnes) from Belgian vessels within ICES Rectangles 31E4 and 32E4, displayed by species (Source: STECF, 2017)

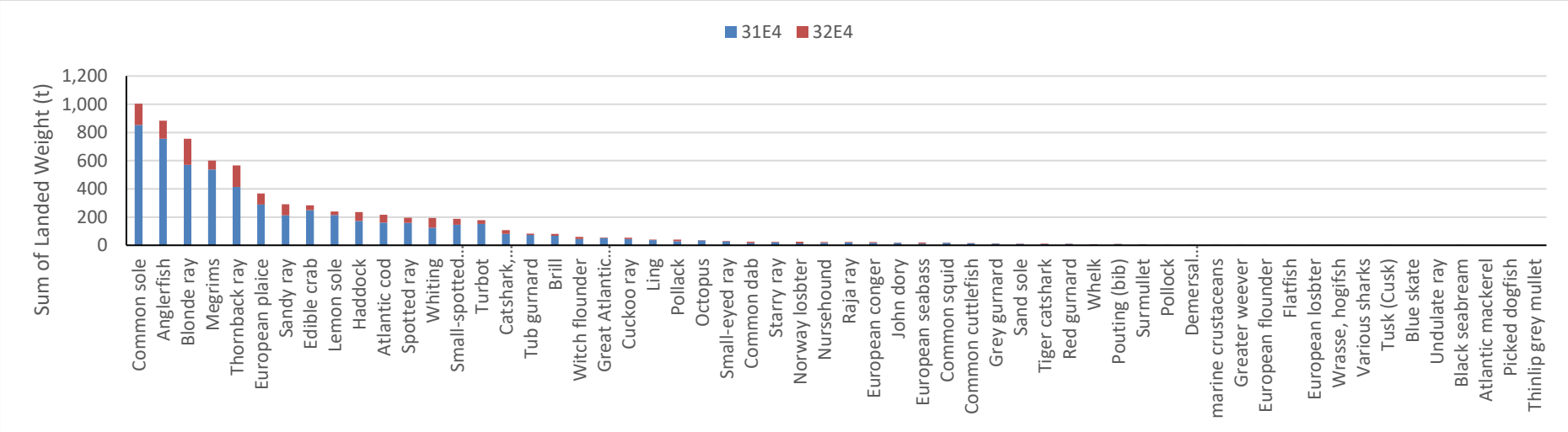


Figure 2.6.8: Total landings (tonnes) from French vessels within ICES Rectangles 31E4 and 32E4, displayed by species (Source: STECF, 2017)

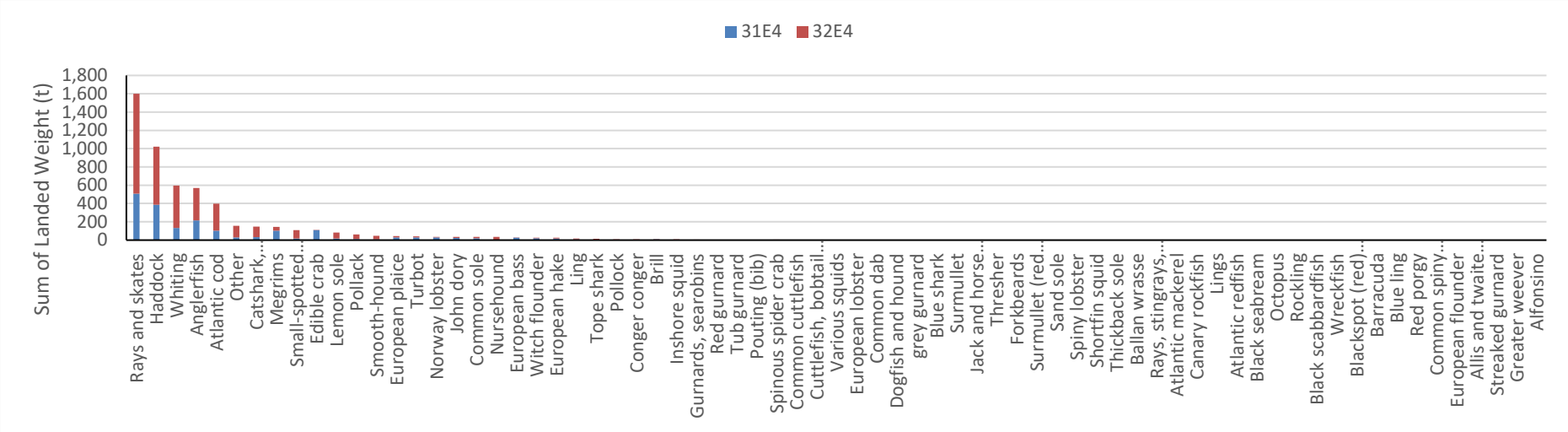
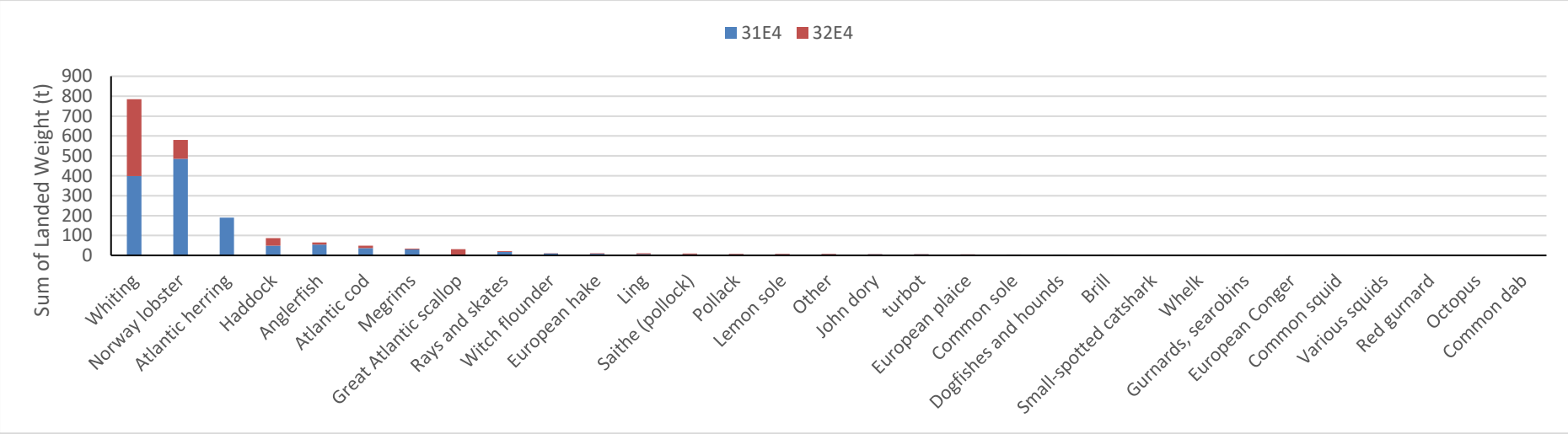


Figure 2.6.9: Total landings (tonnes) from Irish vessels within ICES Rectangle 31E4 and 32E4, displayed by species (Source: STECF, 2017)



2.6.4. Temporal Variation in Landings Weight

Between 2012-2016, landed weight caught by Belgian vessels across ICES Rectangles 31E4 and 32E4 varied from a minimum of 1,002 tonnes in 2014, to a maximum 1,915 tonnes in 2012 (Figure 2.6.10).

Between 2012-2016, landed weight caught by French vessels across both ICES Rectangles 31E4 and 32E4 varied from a minimum of 557 tonnes in 2015, to a maximum 1,856 tonnes in 2012 (Figure 2.6.11).

Total landings by Irish vessels showed an overall increase between 2012-2016, particularly across 32E4. The landed weight caught by Irish vessels varied from a minimum of 229 tonnes in 2013, to a maximum 626 tonnes in 2016 (Figure 2.6.12).

Figure 2.6.10: Total landings (tonnes) from Belgian vessels within ICES Rectangle 31E4 and 32E4

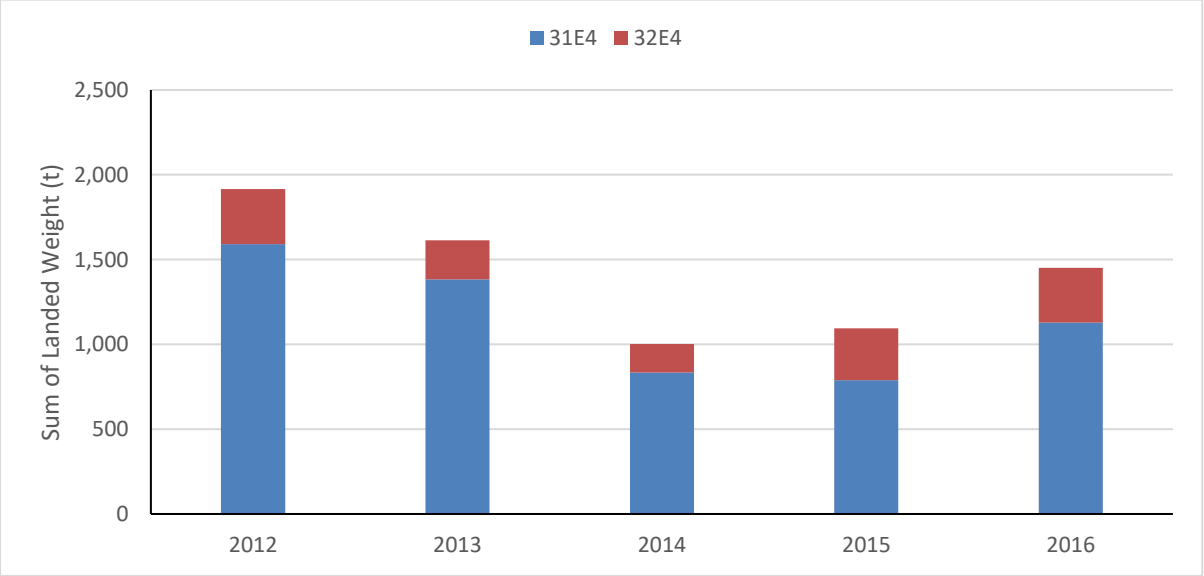


Figure 2.6.11: Total landings (tonnes) from French vessels within ICES Rectangle 31E4 and 32E4

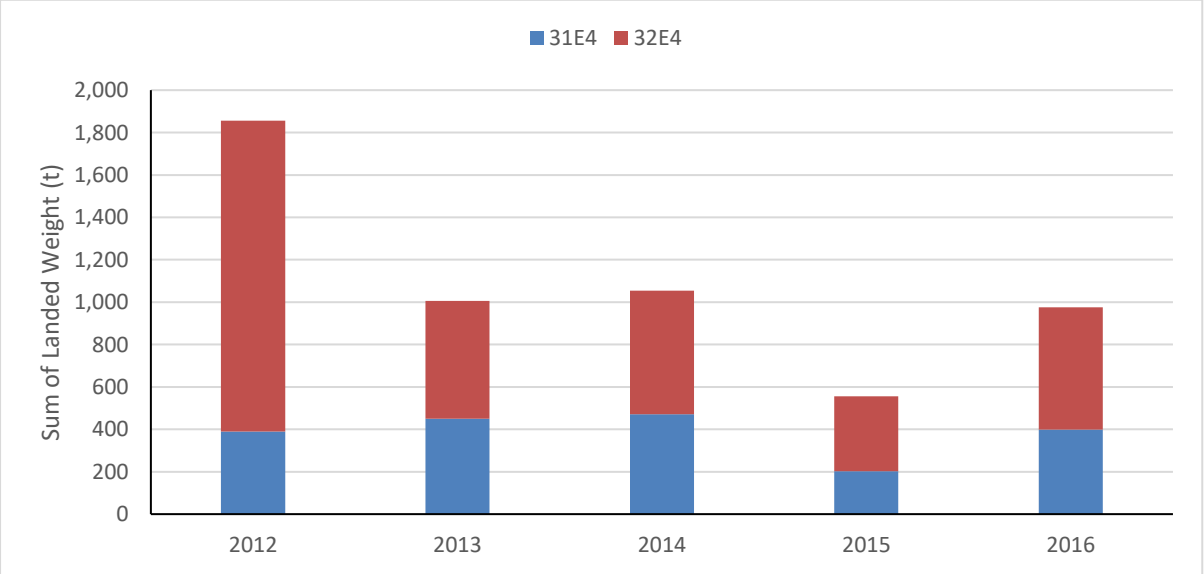
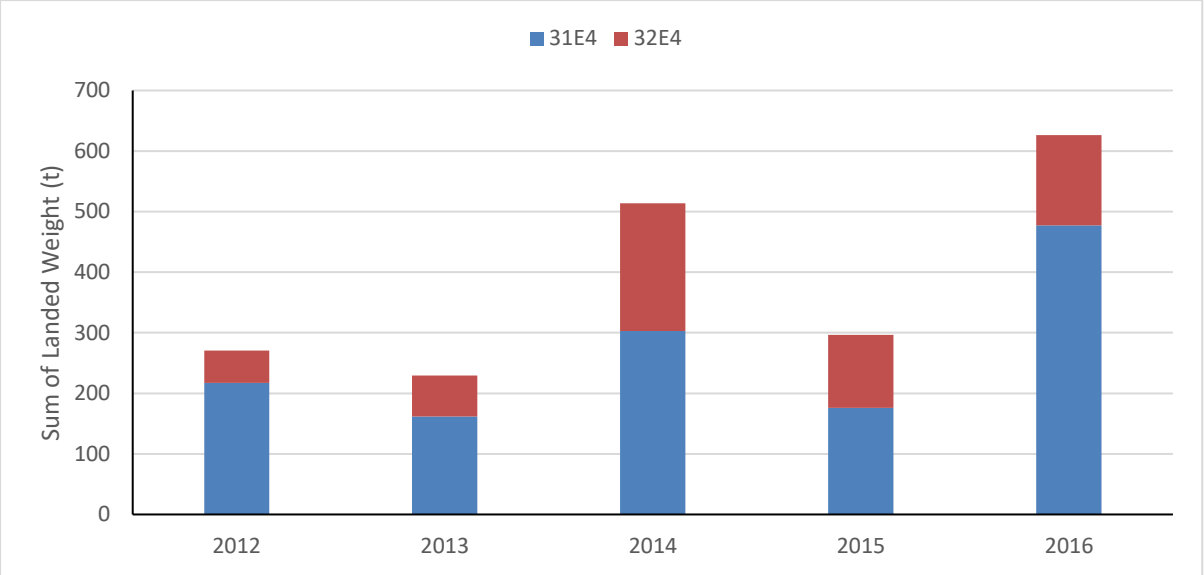


Figure 2.6.12: Total landings (tonnes) from Irish vessels within ICES Rectangle 31E4 and 32E4



The STECF species data were analysed further, allowing a closer look at the temporal variation of the top 15 most commercially important species. Overall, rays and skates, whiting, anglerfish, and haddock were the dominant species caught by all non-UK vessels in terms of landed weight across all years and rectangles (Figure 2.6.13). Whiting appeared to be of particular importance in terms of landed weight during 2014 and 2016, and less so during the other years. There was a significantly larger landed weight of haddock during 2012 compared to the other years analysed.

Figure 2.6.13: Annual trends in top 15 species by total landings (weight) from all non-UK vessels (2012-2016) for ICES Rectangles 31E4 and 32E4 (Source: STECF, 2017)

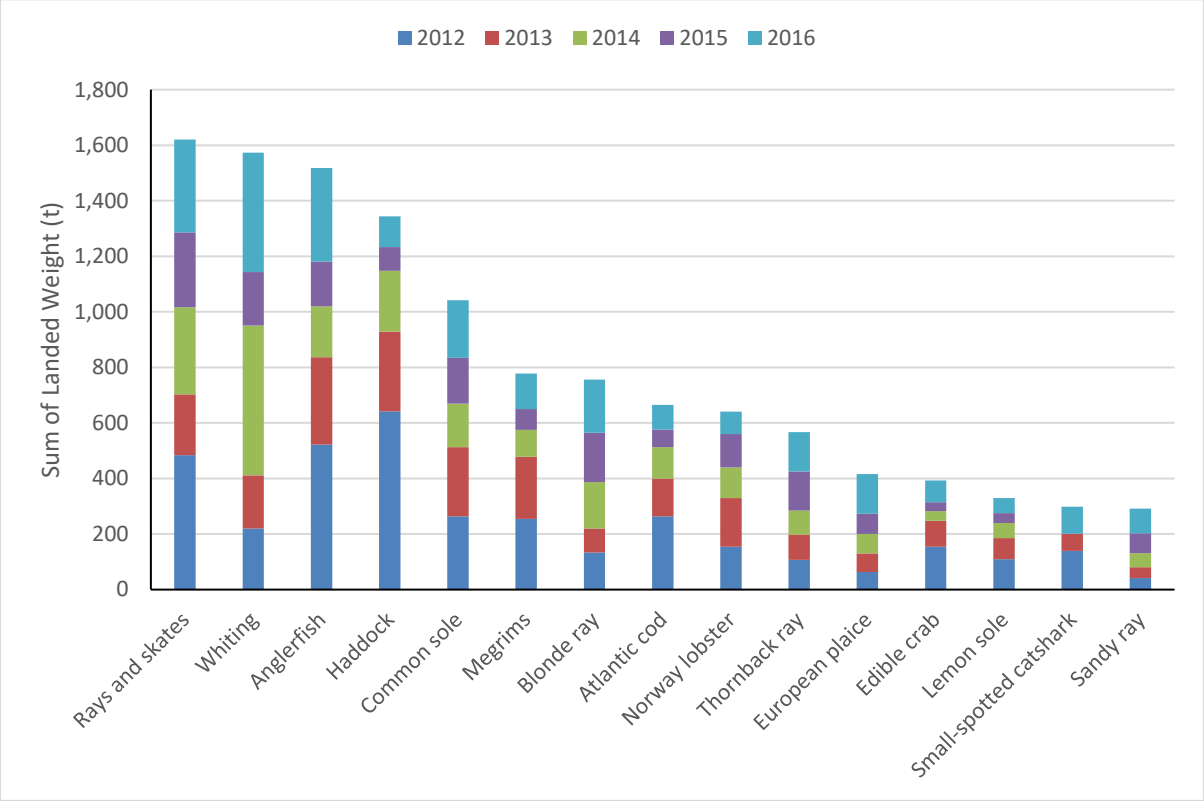
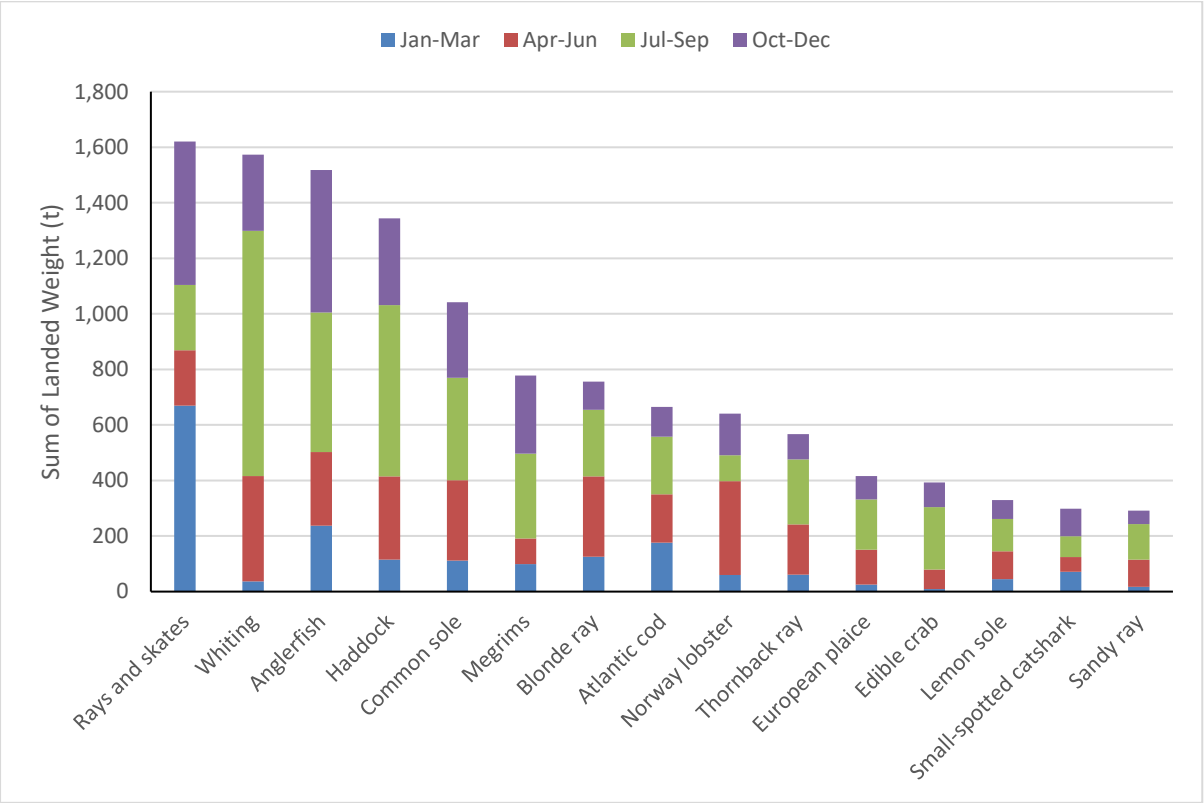


Figure 2.6.14 shows the seasonality for the top 15 species by landed weight from the non-UK vessels across the region. The landings data illustrate that July-September was the most productive period of the year in terms of landings, and January-March was the least productive. This suggests that there was a seasonal spike in the productivity of some fish stocks. Species which showed a clear seasonal spike in July-September were whiting, haddock, megrim, thornback ray, European plaice, edible crab, and sandy ray. The broader species category of rays and skates appeared to be more productive in the winter months.

Figure 2.6.14: Seasonal trends in top 15 species by total landings (weight) from non-UK vessels (2012-2016) for ICES Rectangles 31E4 and 32E4 (Source: STECF, 2017)



2.7. Vessel Monitoring Systems and Landings Data Combined

Since 2000, all EU fishing vessels ≥24 m in length have been required, by European law, to indicate their position once every 2 hours via the Vessel Monitoring System (VMS). The requirement for VMS has subsequently been amended several times to include increasingly smaller vessels (2004: fishing vessels ≥18 m, 2005: fishing vessels ≥15 m). Since 2012, all EU vessels ≥12 m in length have been required to operate VMS. To ensure the activity of the smaller vessels is captured, regional fisheries organisations were consulted (discussed further in section **Error! Reference source not found.**).

Data that represents UK vessels were collated by the MMO (MMO, 2021a); this dataset only captures data for ≥15 m vessels. For this assessment, data have been analysed to be as consistent as possible with other data used throughout this report, and the most recent available dataset was used (2016-2019). More recent data have not been released by the MMO to date. The MMO data can be split by ICES Rectangle and ICES Subrectangle. Data have been categorised into aggregated gear groups and positional data have been extracted from GPS-derived VMS data. Effort was provided in kilowatt hours (kWh), which has been calculated by multiplying the time associated with each VMS report (in hours), by the engine power of the vessel concerned at the time of the activity. Also included in the GIS data layers are the quantity (tonnes) of live weight fish landed with gear type, and value (sterling) of live weight fish landed with gear type.

Data that represents vessels of all nationalities were collated by ICES, as part of the OSPAR special request (ICES 2017), to produce updated spatial data layers on fishing intensity/pressure within Regions II and III of the OSPAR maritime area (ICES 2017). It must be noted that the aim of the data request was to identify pressure by gear type for surface and sub-surface abrasion, so data were only collated from mobile bottom contacting gear types. ICES collated VMS and logbook data from >12 m vessels 2012-2017. It is noted that VMS data from certain countries were not supplied, introducing a bias in pressure of areas fished by those countries, however the countries identified in section 2.6.1 as active in the region all submitted data.

2.7.1. Fishing Effort – UK Vessels

Figure 2.7.1 shows annual (2016-2019) fishing effort (kW/day) by UK vessels (≥15 m) using all gear types, on a regional scale plotted by ICES rectangle (MMO, 2021a). The location of the Project array area and offshore export cable are included for reference. Within the Study Area, fishing effort within 32E4 was higher than within 31E4, between 2016-2019. During this time period, fishing effort was generally higher around the north Devon and Pembrokeshire coastal areas.

Figure 2.7.1: The Project array area and offshore cable corridor in relation to annual fishing effort (kilowatt/days) for all gears and all UK vessels ≥15 m by ICES Rectangle (2016-2019) (Source: MMO, 2021a)

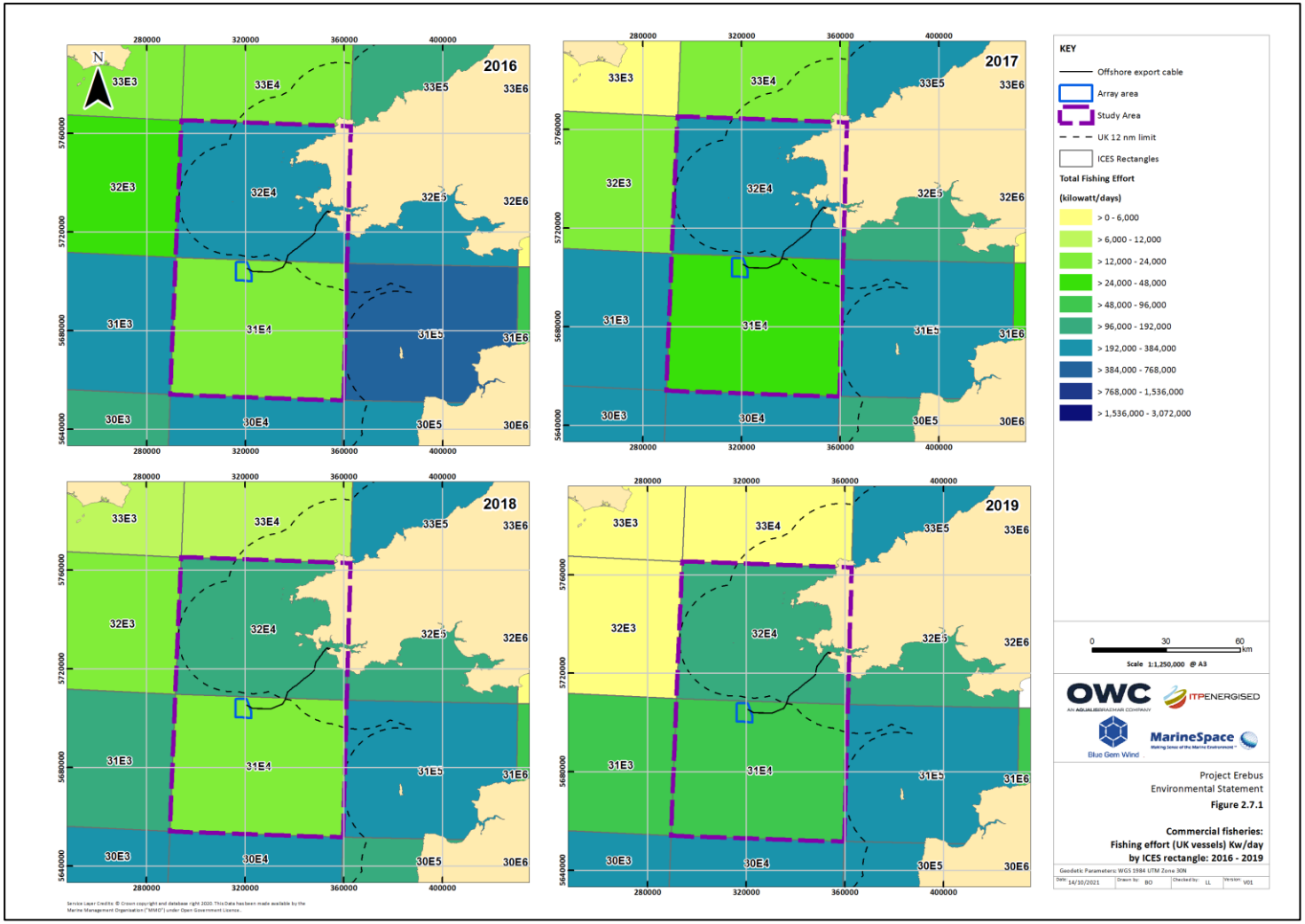


Figure 2.7.2 and Figure 2.7.3 illustrate annual plots of total hours fished of ≥15 m UK vessels across the region using both passive (also referred to as static) and mobile gear between 2016-2019, split by the ICES Sub rectangle (MMO, 2021a). Use of passive gear was relatively low in 31E4 where the Project array area is located, however the spatial distribution within this ICES rectangle changed yearly (Figure 2.7.2). Higher levels of passive gear fishing in 32E4 were observed north of the Project array area, within the 12 nm limit. The only activity by ≥15 m UK passive gear vessels during 2016 and 2017 that overlapped with the Project, was across the cable corridor inside of 6 nm. During 2018, the only activity by ≥15 m UK passive gear vessels that interacted with the Project, was within one Subrectangle that overlapped the offshore export cable close to the array area. During 2019, low levels of passive gear fishing were present along the offshore export cable (within and beyond 12 nm) and within the array area. As identified in section 2.4.2, the majority of vessels were using pots.

Across all years within the wider region of the Project, mobile gear was focused in an area known as "The Smalls", which is located within 31E3 and does not overlap with the Project. Mobile gear activity within the Study Area was generally focused within the 12 nm limit in 32E4 in the region of the offshore export cable; the total hours fished by mobile gears in this area appeared to show a general decrease across 2016-2019. Mobile gear activity was generally low in 31E4 (Figure 2.7.3), with the largest extent of activity observed during 2017. Based on the ICES Subrectangle, fish were only landed from the array area in 2017, with effort focused only on the southern part of the array area (Subrectangles H2 and I2).

Figure 2.7.2: Total hours fished for passive gears (all UK vessels ≥15 m) 2016-2019 (Source: MMO, 2021a)

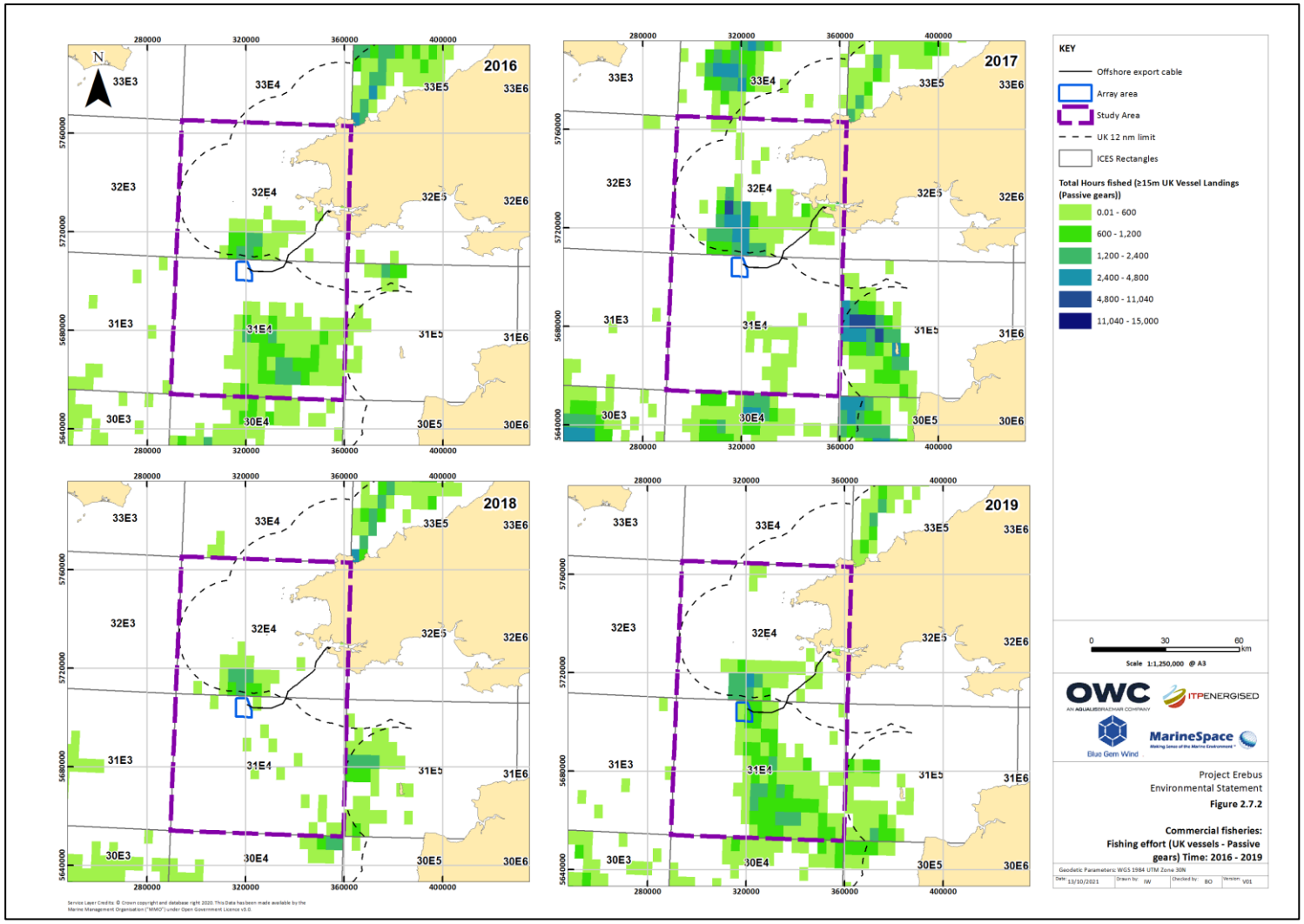
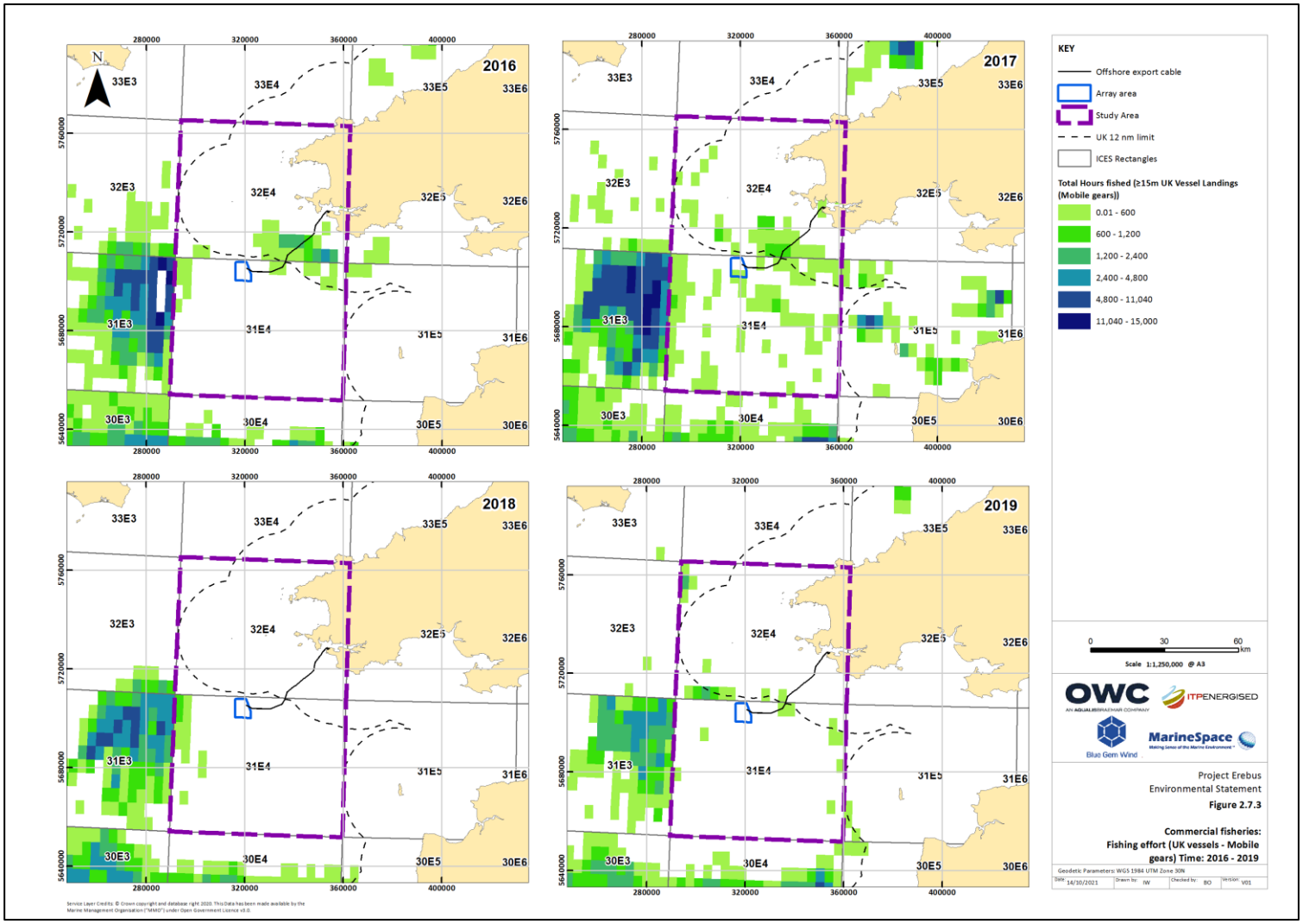


Figure 2.7.3: Total hours fished for mobile gears (all UK vessels ≥15 m) 2016-2019 (Source: MMO, 2021a)



2.7.2. Fishing Value – UK Vessels

Figure 2.7.4 shows annual (2016-2019) fishing value landed by UK vessels (≥15 m) using all gear types, on a regional scale plotted by ICES Rectangles (MMO, 2021a). The location of the Project array area and offshore export cable is included for reference. As with the fish effort data (Figure 2.7.1), the total value of landings within 32E4 was higher than within 31E4 where the Project array area is located, between 2016-2019 (Figure 2.7.4). During this time period, the value of landings was generally higher around the north Devon and Pembrokeshire coastal areas.

Figure 2.7.5 illustrates the annual plots for value of landings from ≥15 m UK vessels across the region using passive gear between 2016-2019, split by the ICES Subrectangle (MMO, 2021a). As with the fishing effort data (Figure 2.7.2), the value of landings by ≥15 m UK passive gear vessels was relatively low from 31E4, where the Project array area is located. Higher values of fish were landed from 32E4, north of the Project array area and within the 12 nm limit. During 2016-2018, no activity was observed at the array area, whereas during 2019, low values of fish were landed from the array.

In order to estimate the total annual value of landings generated by ≥15 m static gear vessels (UK vessels), along the offshore cable corridor (approximately 450 m width) and at the array area, the proportional area technique was used on the 2017 MMO VMS data, split by ICES Subrectangle. This method assumes that effort and catches were evenly distributed over each ICES Subrectangle, which cover an area approximately 19.3 km^2. The average annual value of landings (between 2016-2019) by ≥15 m static gear vessels from along the offshore cable corridor was estimated to be approximately £363. The average annual value of landings (between 2016-2019) by ≥15 m static gear vessels from within the array area was estimated to be approximately £1,440.

Figure 2.7.6 illustrates the annual plots for value of landings from ≥15 m UK vessels across the region using mobile gear between 2016 2019, split by the ICES Subrectangle (MMO, 2021a). Across all years, the value of landings from ≥15 m UK mobile gear vessels was low in 31E4 and 32E4 in comparison to the surrounding areas. Based on the ICES Subrectangle, across the time period, fish were only landed from the array area in 2017 with effort focused only on the southern part of the array area (Subrectangles H2 and I2).

Based on the proportional area technique using MMO VMS data, the average annual value of landings (between 2016-2019) by ≥15 m mobile gear vessels from along the offshore cable corridor was estimated to be approximately £604. The average annual value of landings (between 2016-2019) by ≥15 m mobile gear vessels from within the array area was estimated to be approximately £502. See Section 2.7.4 for the value estimated based on the ICES data (non-UK vessels).

Figure 2.7.4: Annual value of landings for all gears (all UK vessels ≥15 m) 2016-2019 (Source: MMO, 2021a)

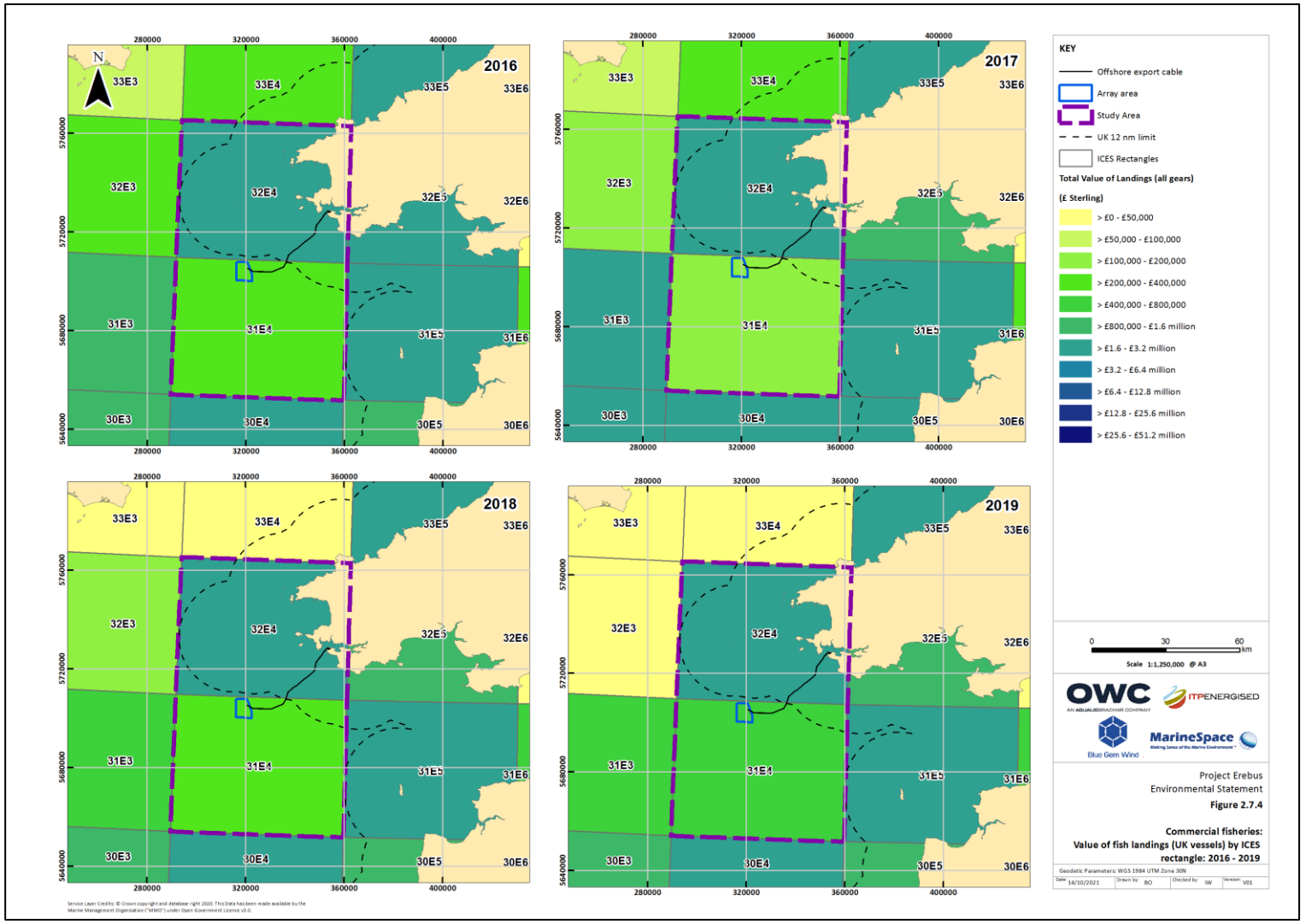


Figure 2.7.5: Annual value of landings for all passive gears (all UK vessels ≥15 m) 2016-2019 (Source: MMO, 2021a)

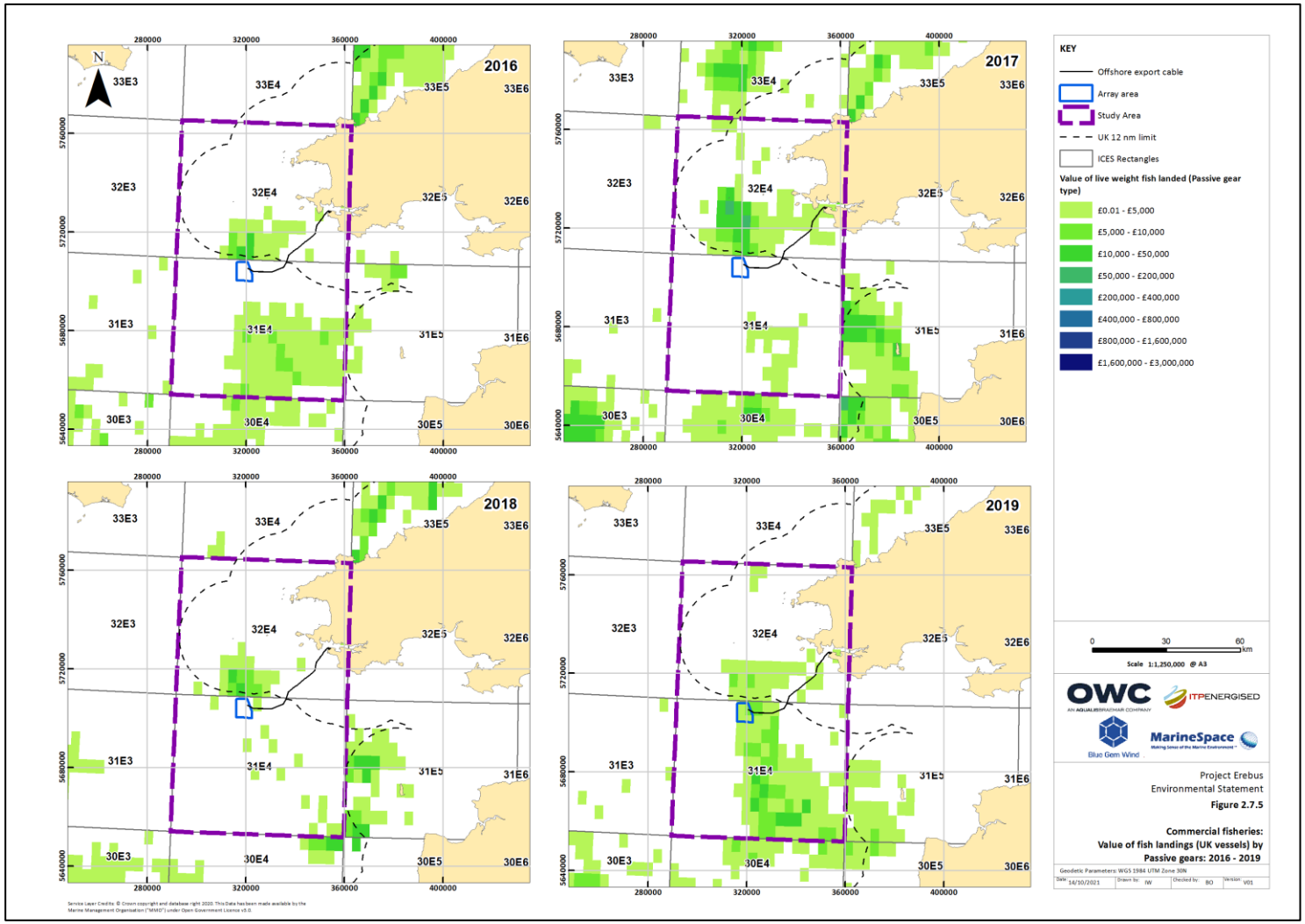
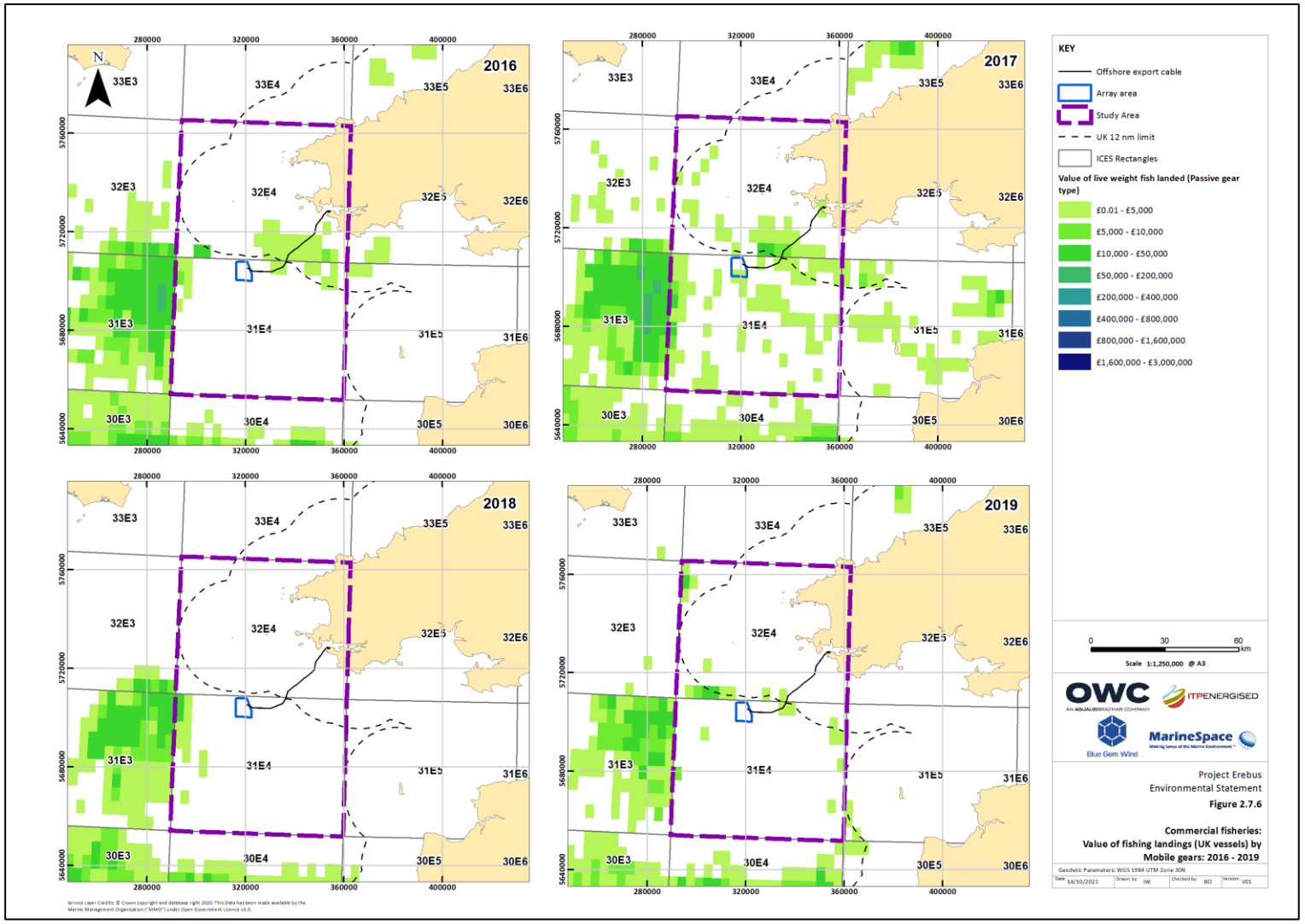


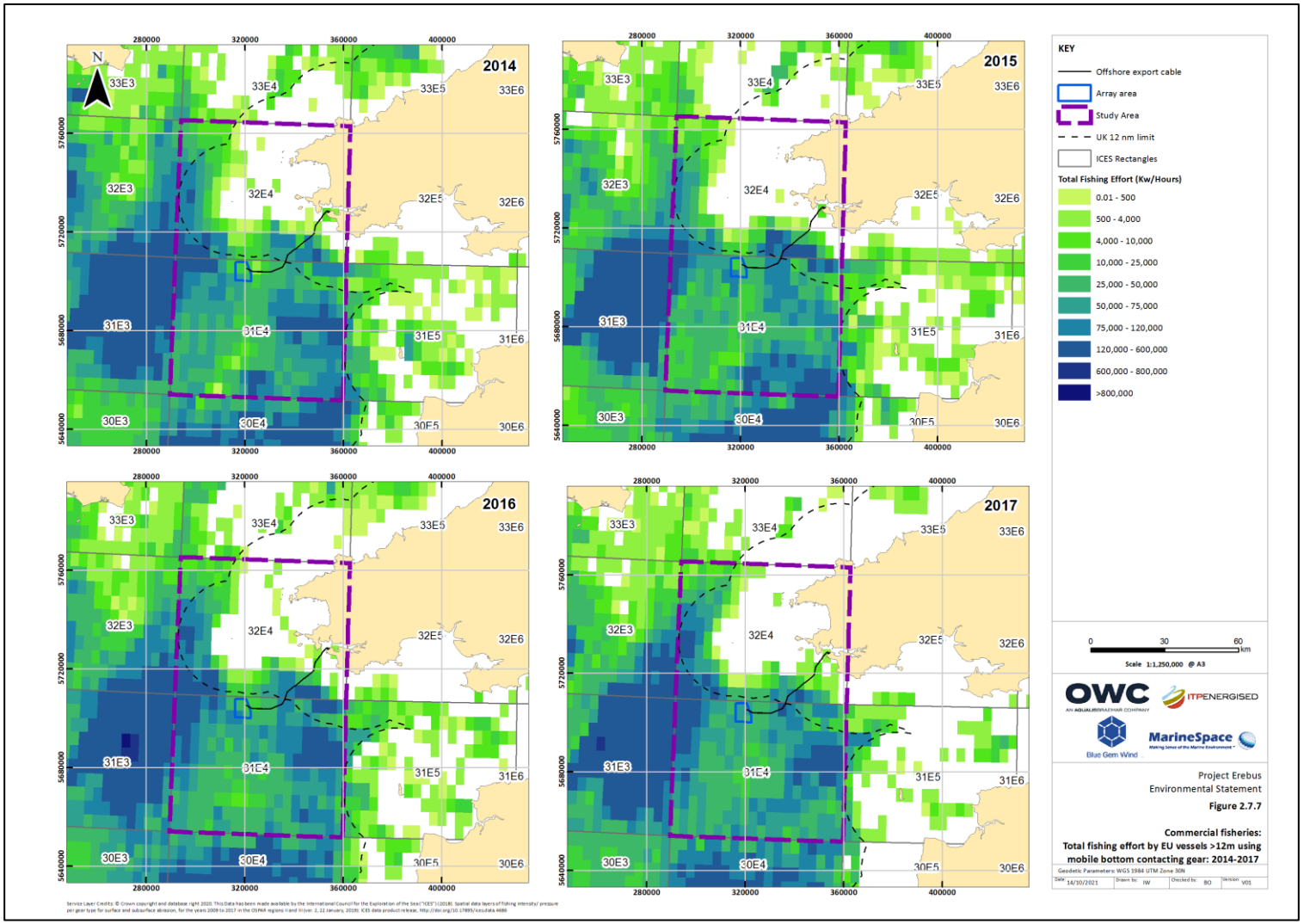
Figure 2.7.6: Annual value of landings for all mobile gears (all UK vessels ≥15 m) 2016-2019 (Source: MMO, 2021a)



2.7.3. Fishing Effort – UK and non-UK vessels

Figure 2.7.7 illustrates fishing effort by vessels using mobile bottom contacting gear, from UK and non-UK vessels >12 m between 2014-2017 (ICES, 2017). Fishing effort is clearly focused in the area known as “The Smalls” (west of the Project array area), and to a lesser degree around the 12 nm limit south of Pembrokeshire and west of the north Devon coast. As identified in section 2.6, Belgian, French, and Irish vessels make up the non-UK fleet in the vicinity of the array area.

Figure 2.7.7: Total fishing effort for mobile bottom contacting gear (UK and non-UK vessels >12 m) 2014-2017 (Source: ICES, 2017)

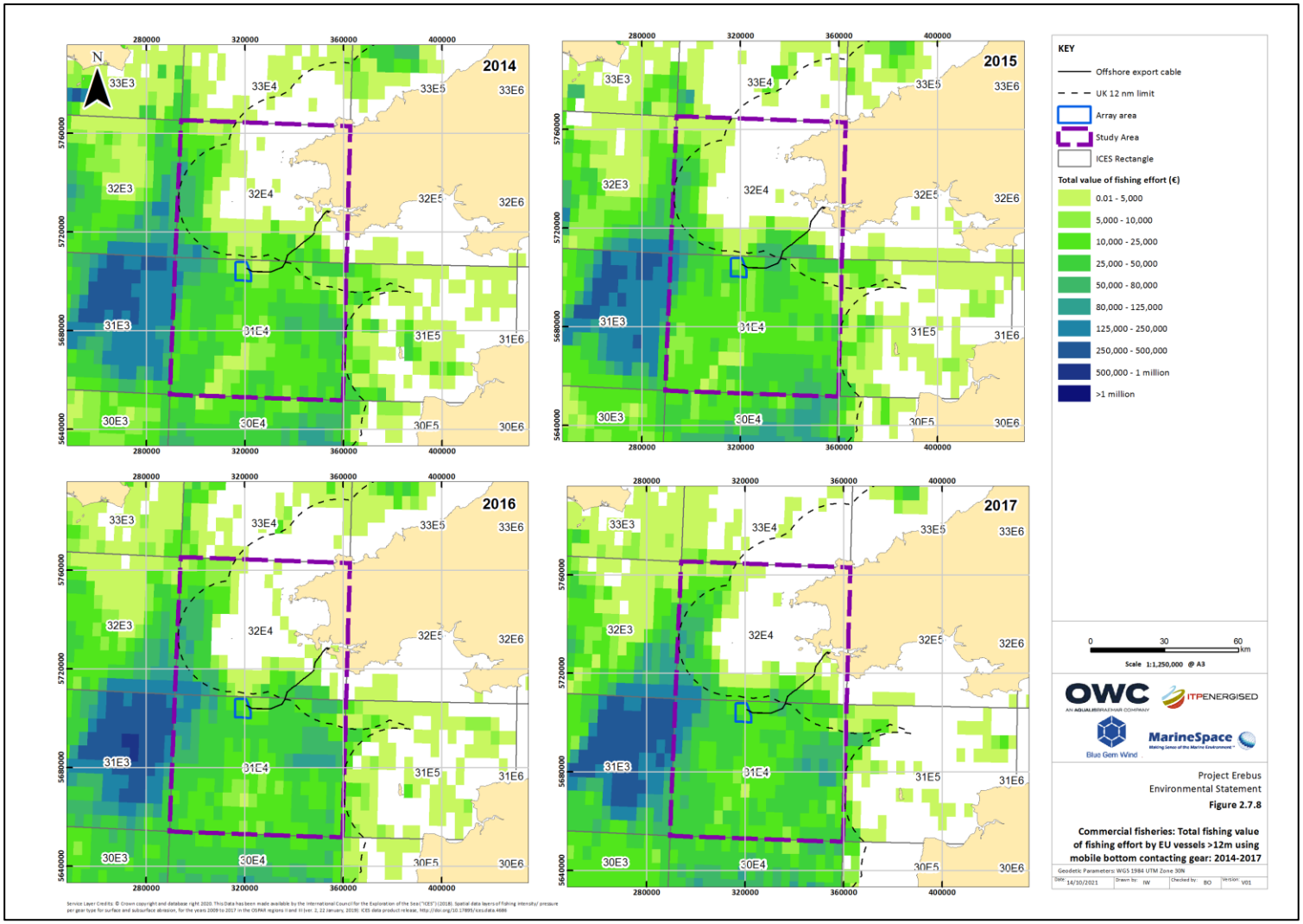


2.7.4. Fishing Value – UK and non-UK vessels

Figure 2.7.8 illustrates total value of fishing landings by mobile bottom contacting gear vessels, from both UK and non-UK vessels >12 m (ICES, 2017). Value of fishing landings is clearly highest from the area known as “The Smalls”, west of the Project array area. As identified in section 2.6, Belgian, French, and Irish vessels make up the non-UK fleet in the vicinity of the Project array area.

Based on the proportional area technique using the ICES 2017 data, it was estimated that the value of landings from the array area for non-UK mobile contacting gear vessels was approximately €73,000.

Figure 2.7.8: Total value of landings for mobile bottom contacting gear (UK and non-UK vessels >12 m) 2014-2017 (Source: ICES, 2017)



2.7.5. Fishing Effort – Gear type

Fishing effort was separated by gear type using the latest datasets available, and illustrated below by the ICES Subrectangle; 2019 data was obtained from the MMO (Figure 2.7.9 to Figure 2.7.12) and 2017 data was obtained from ICES (Figure 2.7.13 to Figure 2.7.17). This enabled a more detailed illustration of the spatial extent of the different types of fishing activities identified in sections 2.4.2 and 2.6.2.

Figure 2.7.9 to Figure 2.7.12 illustrate the types of gear used by ≥15 m UK vessels in the region of the Project array area (MMO, 2021a). Beam trawl intensity during 2019 was relatively low in the Study Area; activity was observed with some activity in the south of the Project array area and in the area of the offshore export cable beyond approximately 6 nm (Figure 2.7.9). The key species targeted by beam trawls were likely nephrops, cod, haddock, whiting, sole, megrim, plaice, turbot, brill, anglerfish and various skates and rays. During 2019, otter trawl activity was high in the area of "The Smalls" (outside of the Study Area), and there was some low otter trawl activity in the region of the offshore export cable (Figure 2.7.10). No vessels using nets were observed within the Study Area during 2019 (Figure 2.7.11). There was a moderate intensity of vessels using pots in the area north of the array area (Figure 2.7.12Figure 2.7.12), which was generally within the Welsh 12 nm limit; there was a low intensity of fishing effort by vessels using pots across the offshore export cable route inside of approximately 6 nm. The key species targeted by potting vessels were likely brown crab, spider crab, lobster, and whelk.

Figure 2.7.9: Annual fishing effort (2019) by vessels utilising beam trawls (all UK vessels ≥15 m) (Source: MMO, 2021a)

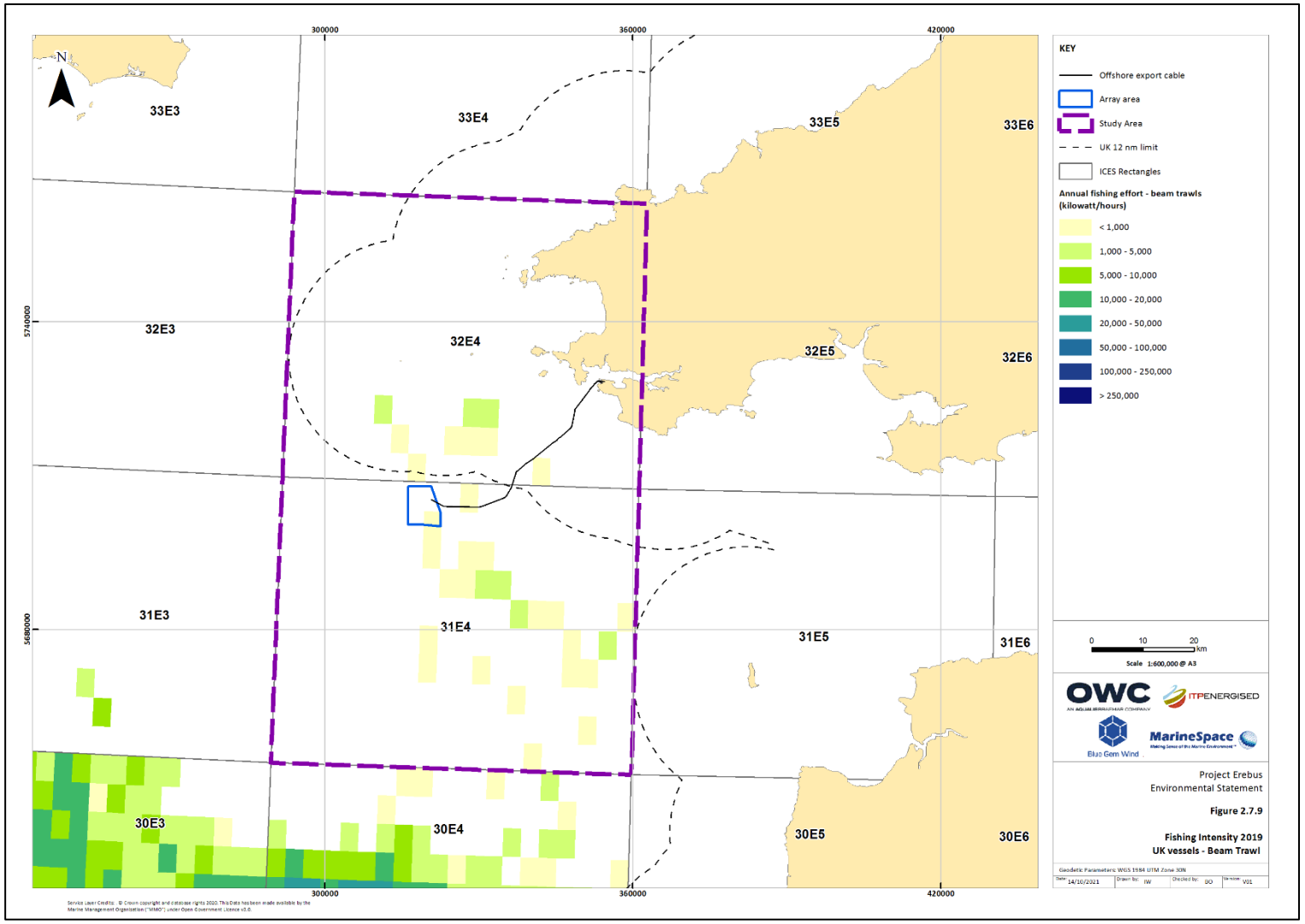


Figure 2.7.10: Annual fishing effort (2019) by vessels utilising otter trawls (all UK vessels ≥15 m) (Source: MMO, 2021a)

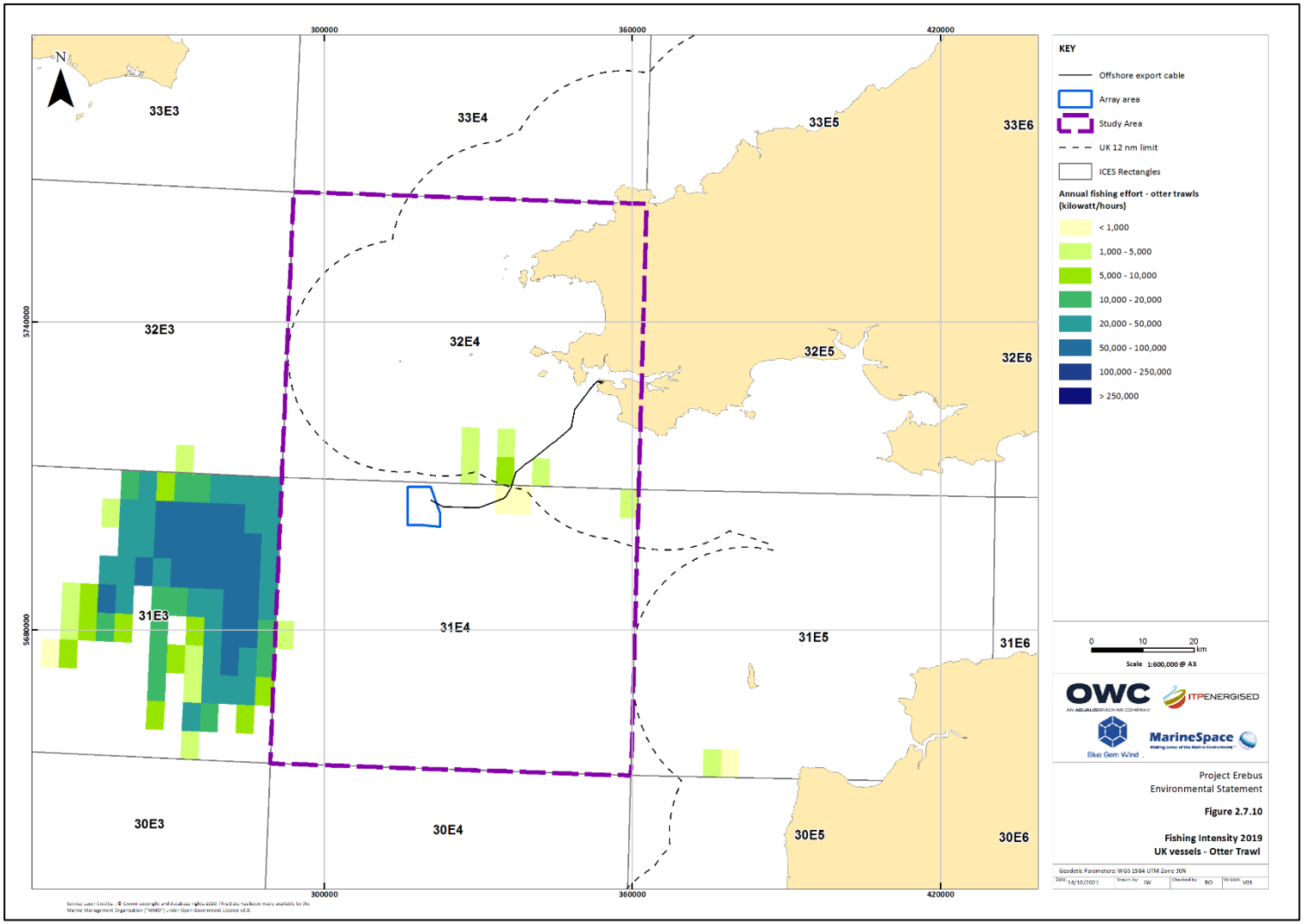


Figure 2.7.11: Annual fishing effort (2019) by vessels utilising nets (all UK vessels ≥15 m) (Source: MMO, 2021a)

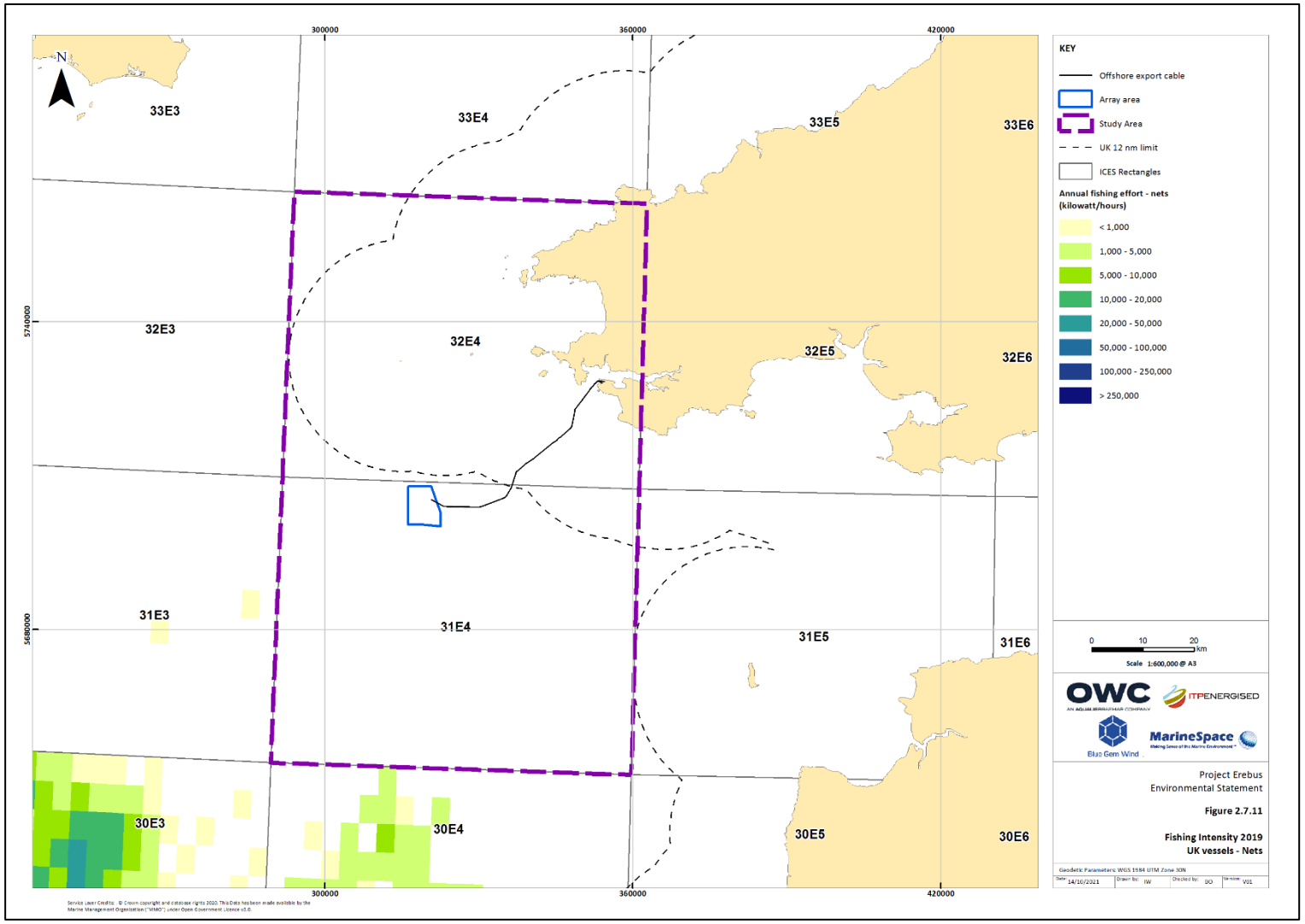


Figure 2.7.12: Annual fishing effort (2019) by vessels utilising pots (all UK vessels ≥15 m) (Source: MMO, 2021a)

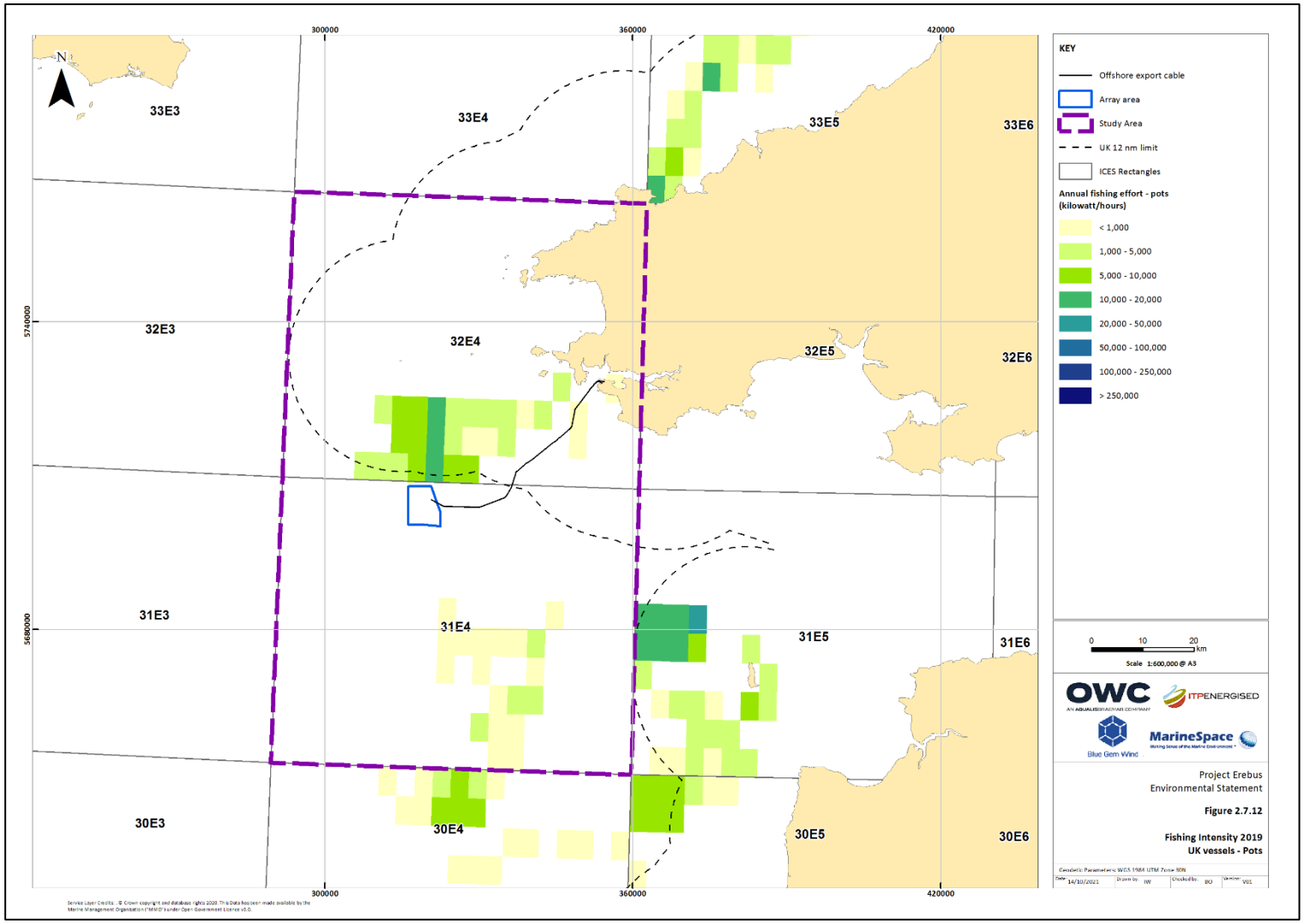


Figure 2.7.13 to Figure 2.7.17 illustrate the types of mobile bottom-contacting fishing gear used by >12 m vessels (UK and non-UK) in the region of the offshore Project area (ICES, 2017). The figures clearly demonstrate that beam trawls, bottom trawls, dredges, and demersal seine gears were not used in the region of “The Smalls”, whereas otter trawls were mostly focused on “The Smalls”, suggesting that the seabed is hard substrate. Beam trawls and bottom trawls showed higher intensity within ICES Rectangle 30E4 and within the east of 31E4, than the location of the Project array area. There was a low level of activity by the demersal gear fleet within the Welsh 12 nm limit, whereas the otter trawls fleet were active in 32E4 within the 12 nm limit. Figure 2.7.15 and Figure 2.7.16 illustrate that vessels using demersal seine gear and dredges had only minimal activity within 31E4 and 32E4.

Figure 2.7.13: Annual fishing effort (2017) by vessels utilising beam trawls (UK and non-UK vessels >12 m) (Source: ICES, 2017)

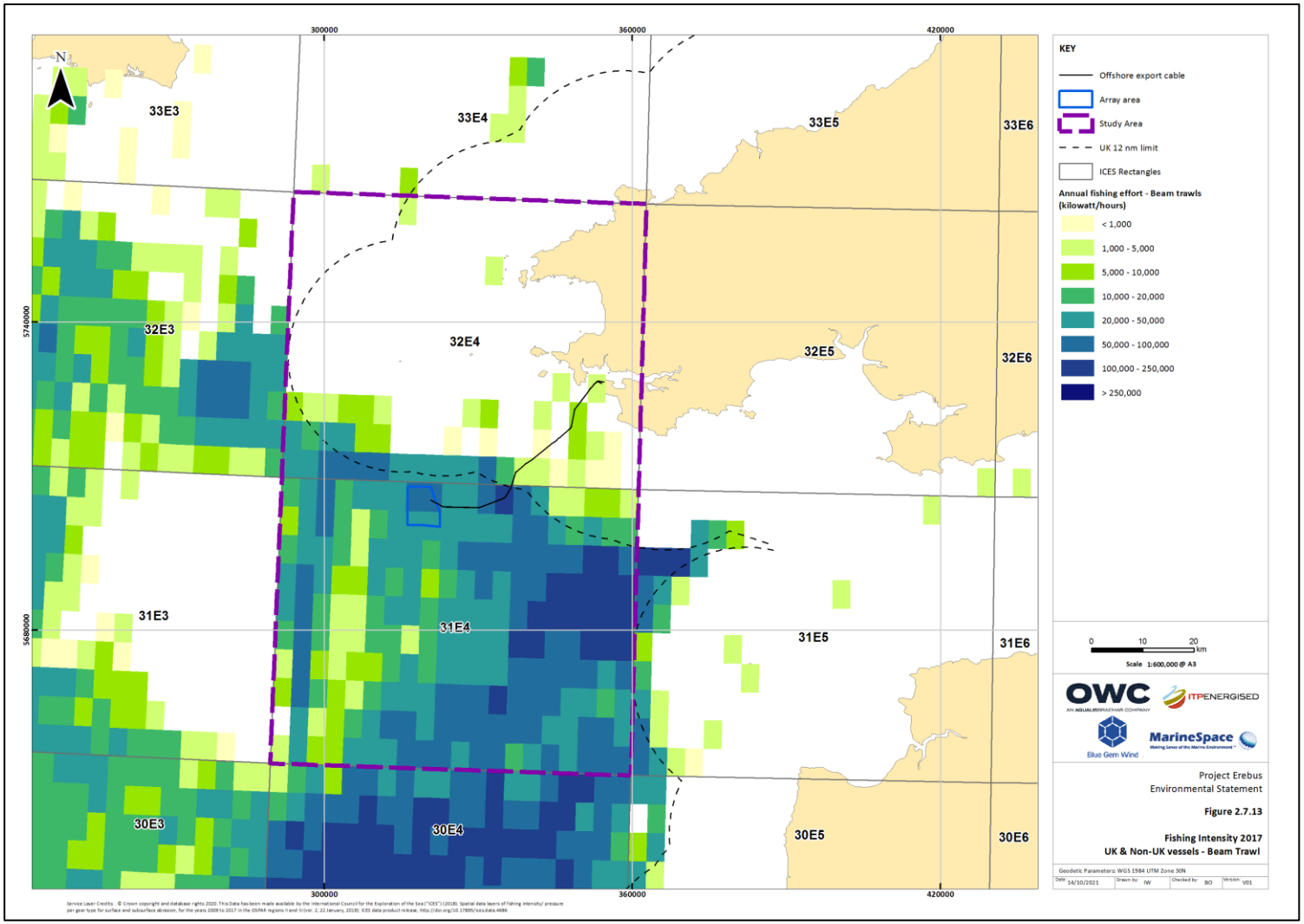


Figure 2.7.14: Annual fishing effort (2017) by vessels utilising bottom trawls (UK and non-UK vessels >12 m) (Source: ICES, 2017)

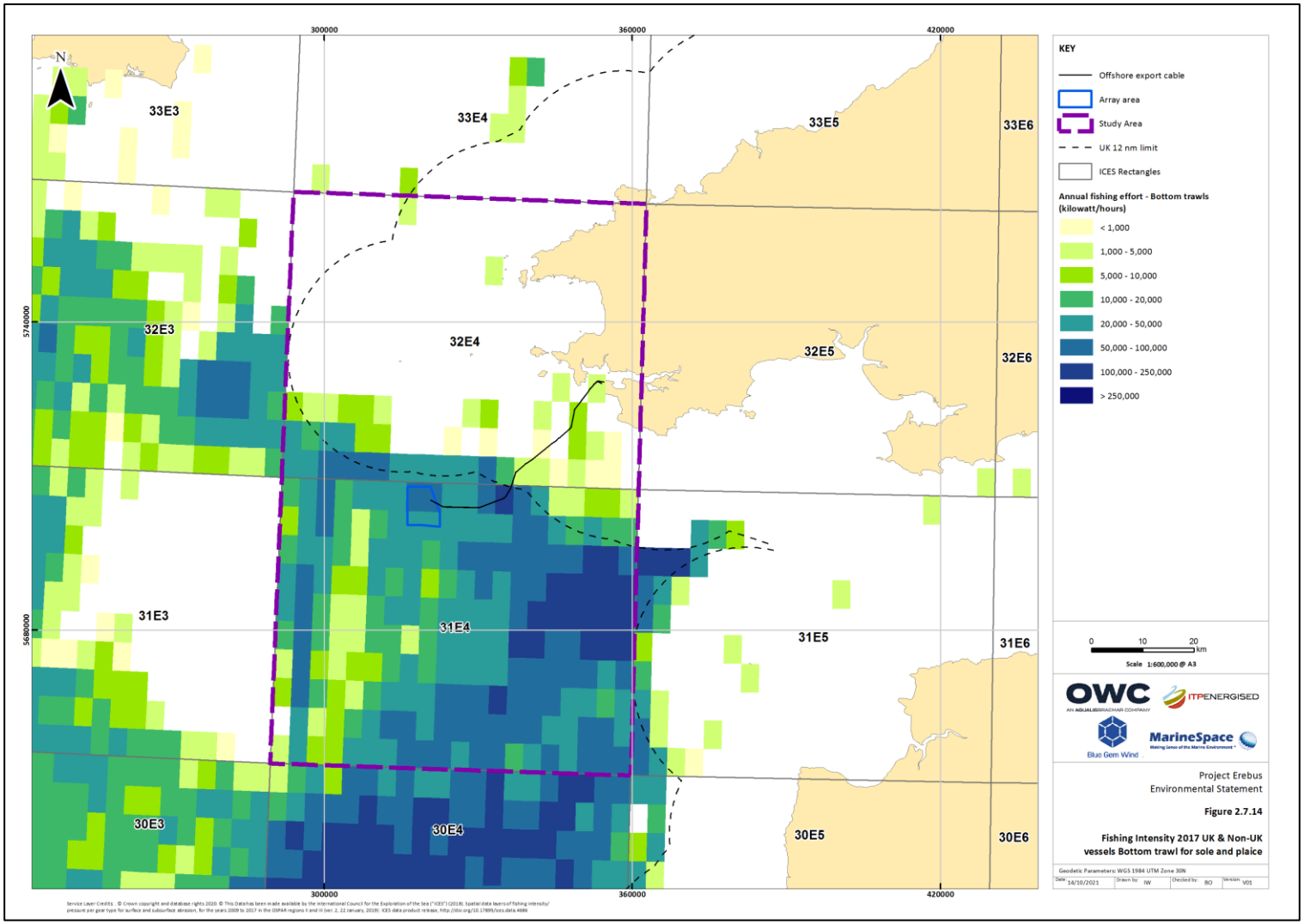


Figure 2.7.15: Annual fishing effort (2017) by vessels utilising demersal seine gears (UK and non-UK vessels >12 m) (Source: ICES, 2017)

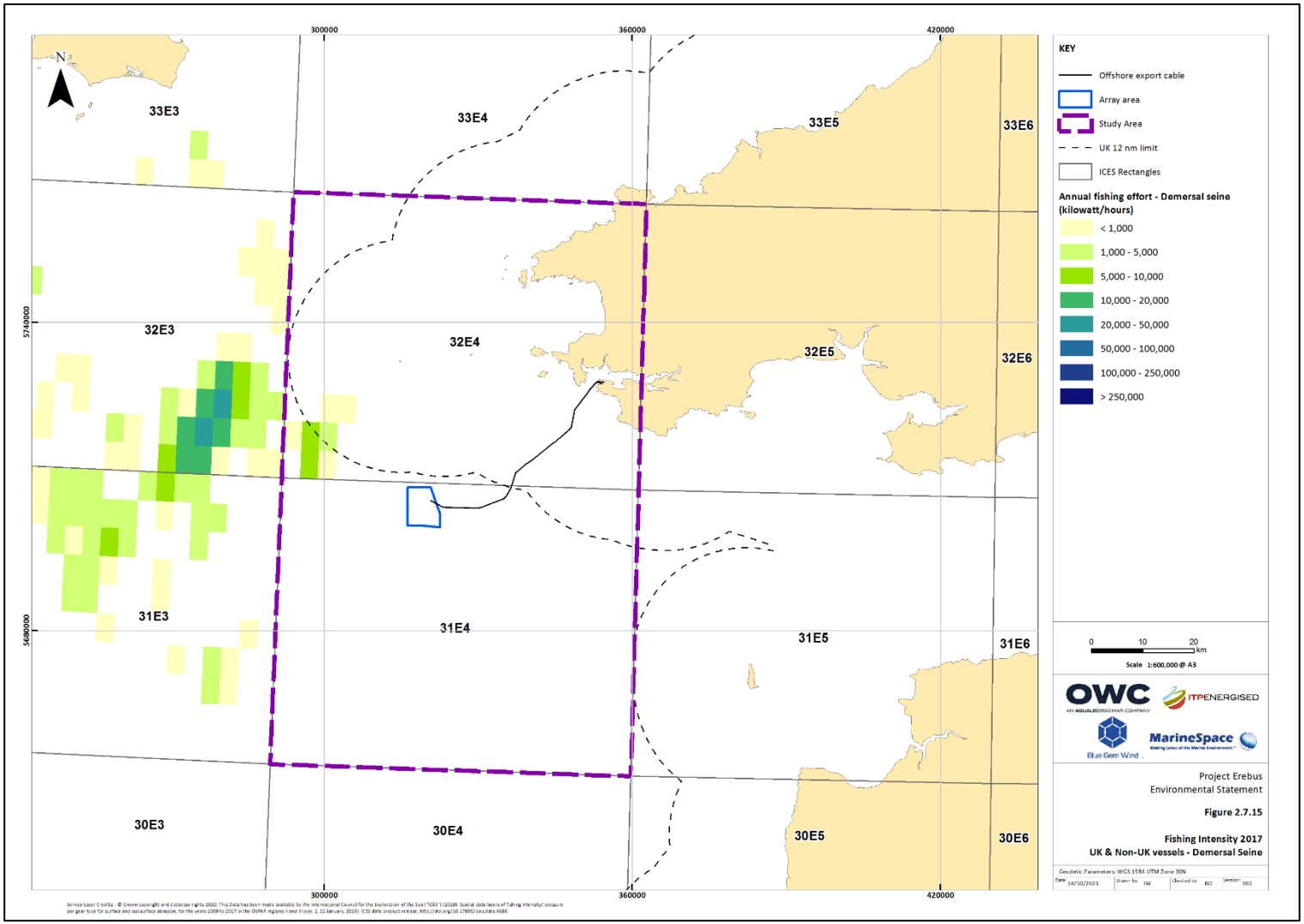


Figure 2.7.16: Annual fishing effort (2017) by vessels utilising dredges (UK and non-UK vessels >12 m) (Source: ICES, 2017)

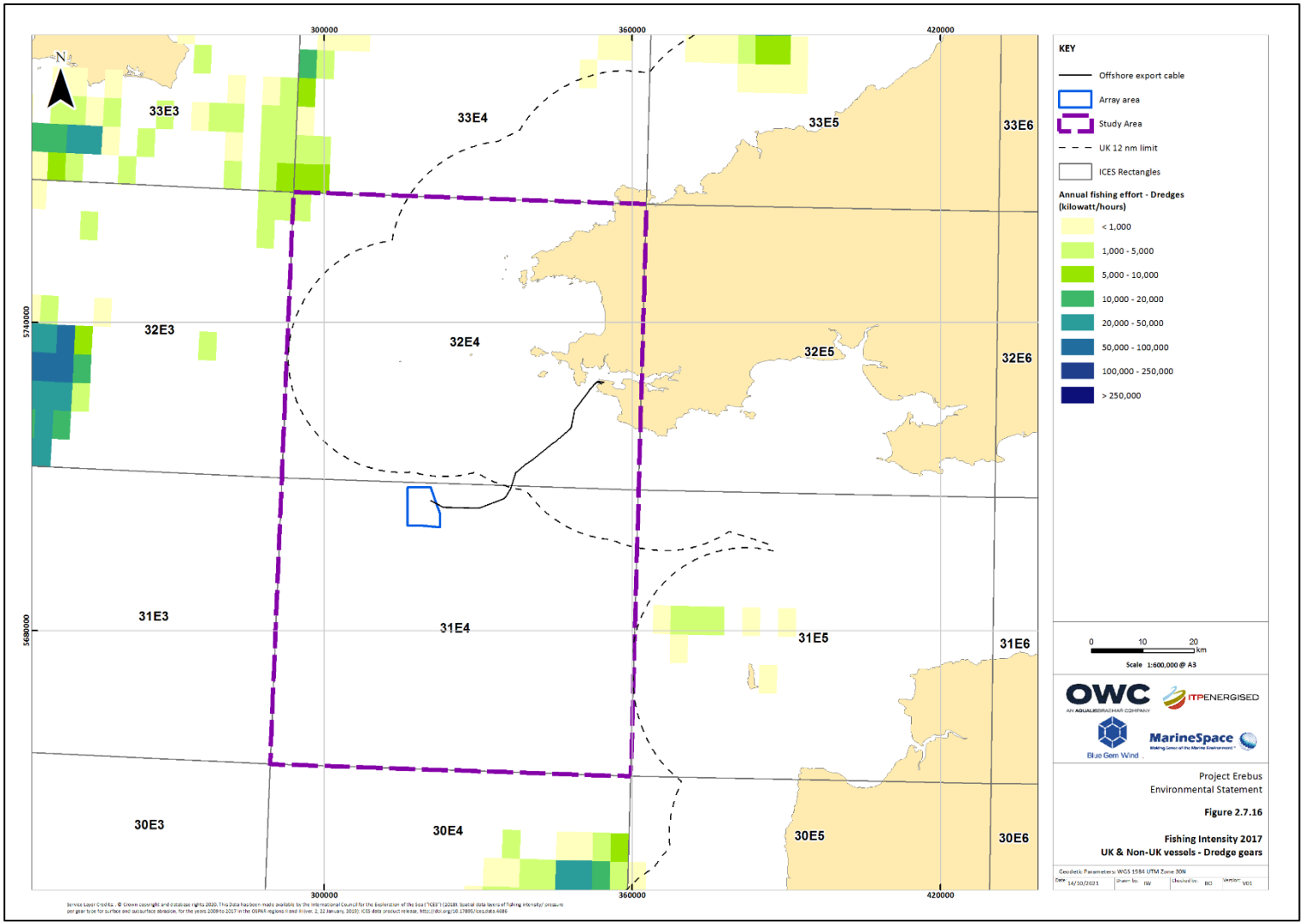
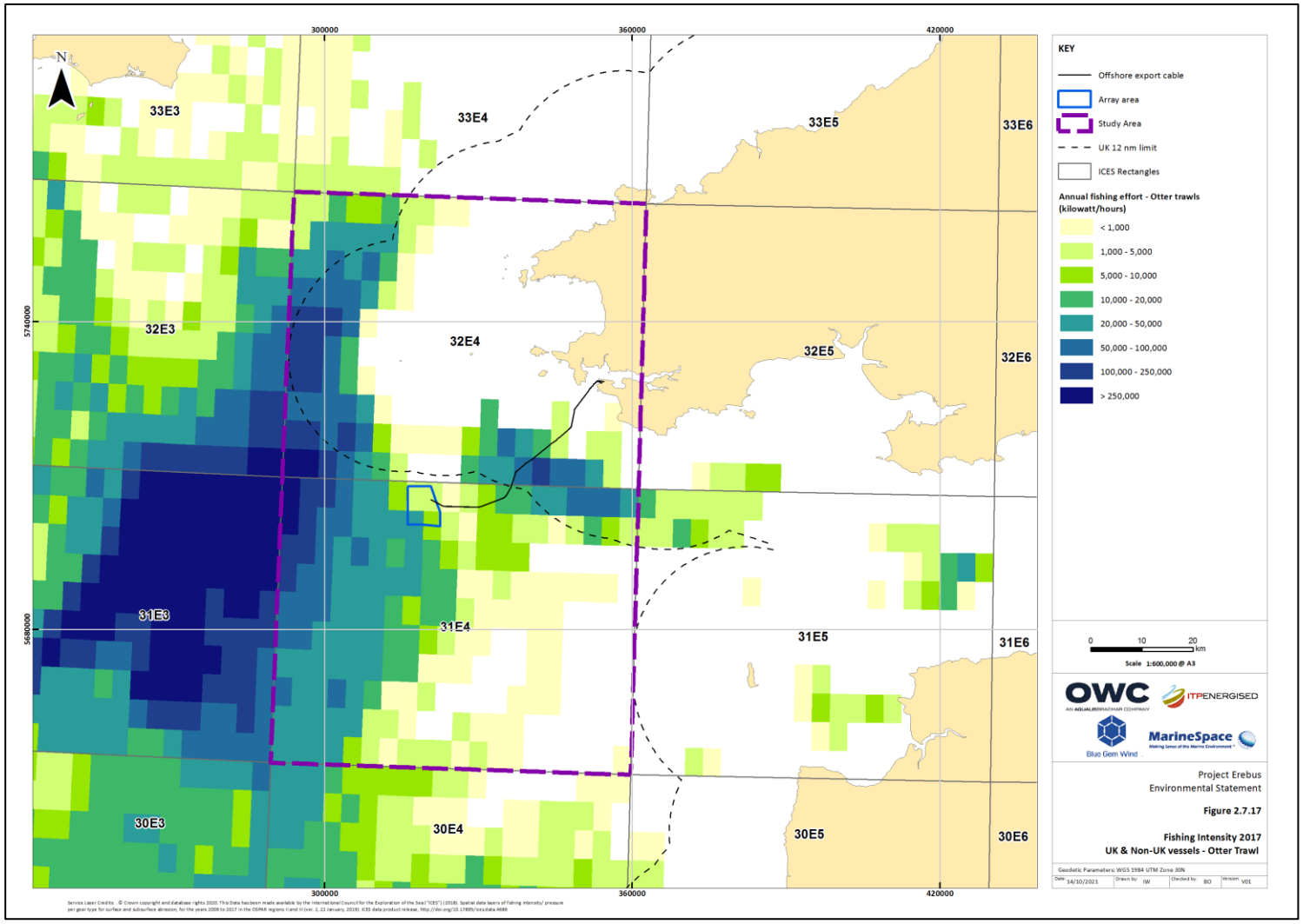


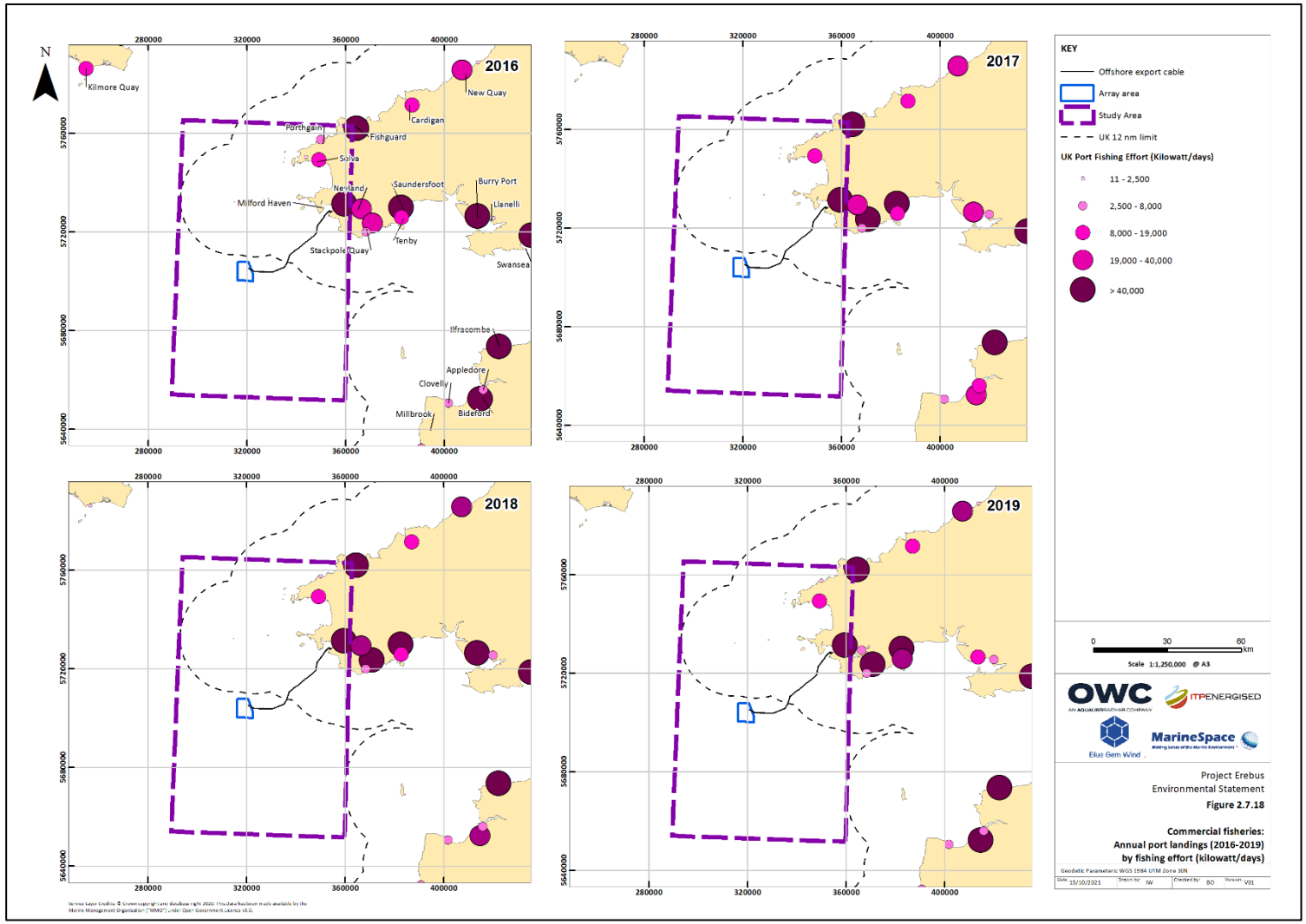
Figure 2.7.17: Annual fishing effort (2017) by vessels utilising otter trawls (UK and non-UK vessels >12 m) (Source: ICES, 2017)



2.7.6. Fishing Effort – By Regional Ports

Figure 2.7.18 shows fishing effort (kW/day) in relation to key regional ports in England, Ireland, and Wales, between 2016-2019 (MMO, 2021b). Fishing effort was similar in Wales and England, with a lower relative effort in Ireland (Kilmore Quay). Fishing effort appeared relatively equally distributed across both the Pembrokeshire coast and the north Devon coast. The two sites with highest fishing effort close to the Project offshore export cable were Milford Haven and Saundersfoot (described further in section 2.5).

Figure 2.7.18: Fishing effort (kW/day) by regional ports (all UK vessels) (2016-2019) (Source: MMO, 2021b)



2.8. UK Fishermen's Information Mapping Data

The UK Fishermen's Information Mapping (UKFIM) data were obtained from the National Federation of Fishermen's Organisations (NFFO) and The Crown Estate to cross-reference with the official data sources (Crown Estate and NFFO, 2013). The aim of the UKFIM project was to reduce user conflict in offshore wind farms, by helping fishermen explain the fishing activity in a particular area to offshore wind developers. The project recognised that VMS data were not able to illustrate detailed information, and so plotter data were collated to provide a finer scale illustration of where individual fishermen tow their gear. It should be noted that the resulting UKFIM data are a merge of various file formats, from different time periods and cannot, therefore, be used in the same way as VMS data.

Following discussions with fishermen who are active in the region of the Project array area and offshore export cable, it was concluded that findings from recent official data sources were generally consistent with the UKFIM data.

The UKFIM data on bottom trawl activity showed some overlap with the Project area, particularly to the southwest between the array area and "The Smalls", which is not as evident in the ICES (2017) data (Figure 2.7.14). Local fishermen suggested that these vessels were likely beam trawl vessels, most likely Irish and some Belgian, which aligns with findings presented in section 2.4.2. As discussed in section 4.2.1, a Brixham beam trawl vessel is active in the area, targeting Dover sole. It was suggested that this fishing ground may not be as active as it once was, due to temporal closures, but it was also noted that this area could see an increase in activity in the coming years due to the changes to leasing of quotas and the new EU-UK Trade and Cooperation Agreement

High levels of bottom trawls were also clear along the Welsh 12 nm limit, which is consistent with the ICES data (section 2.7.5), and the information from consultations (

Figure 4.2.1).

High activity of mobile gears (no more specific data on gear type was provided) was noticeable between the 6-12 nm limits along the south Pembrokeshire coast. This also aligns with official data sources (section 2.7.5), and the information from consultations.

The UKFIM data indicated that no vessels were recorded utilising dredges in the vicinity of the Project array area, which was also evident in the ICES data (Figure 2.7.16).

2.9. Sea Fishing Atlas of Wales

The Sea Fishing Atlas of Wales was compiled by the then Countryside Council for Wales (CCW) (now Natural Resources Wales) in 2010, from information collected between 2000-2005 from various sources including fishermen, fishery officers and fishery regulators, and other marine users (CCW, 2010). The maps of Welsh inshore fishing activity were prepared primarily on the basis of anecdotal comments received by the former CCW from a variety of sources. The maps were purely indicative in nature and gave a general idea of where fishing activity was thought to have occurred at the given time; the data displayed is purely to provide an indication of smaller inshore vessels activity which would not have been captured in the data described above. There is a low level of confidence in the data. The indicative static gear fishing activity illustrated can be cross-referenced with knowledge of the local static gear fleet based on the fisheries liaison work as described in section 4.1 and feedback from informal consultations described in section 4.2.

Figure 2.9.1 indicates that the whelk fishery was active across the majority of areas inshore of the 12 nm limit, including the route of the offshore export cable; this aligns with the MMO data which showed that whelks were the greatest weight of landings from ICES Rectangle 32E4 (section 2.4.4). The data also show that vessels using lobster pots, crab pots and set nets were active in the nearshore regions in the vicinity of the offshore export cable; this is supported by the findings from the fisheries liaison work.

Figure 2.9.2 indicates that beam trawls and otter trawls were used by vessels in the offshore Project area, which is supported by the VMS data (section 2.7.5), the UKFIM data (section 2.8) and feedback from consultations (section 4.2). Drift lines were used by vessels along the 12 nm limit, and commercial rod and lines were used within the 12 nm limit across the whole of the south Pembrokeshire coast.

Figure 2.9.1: Indicative fishing areas (static gear) in the vicinity of the Project array area and offshore export cable (Source: NRW, 2010)

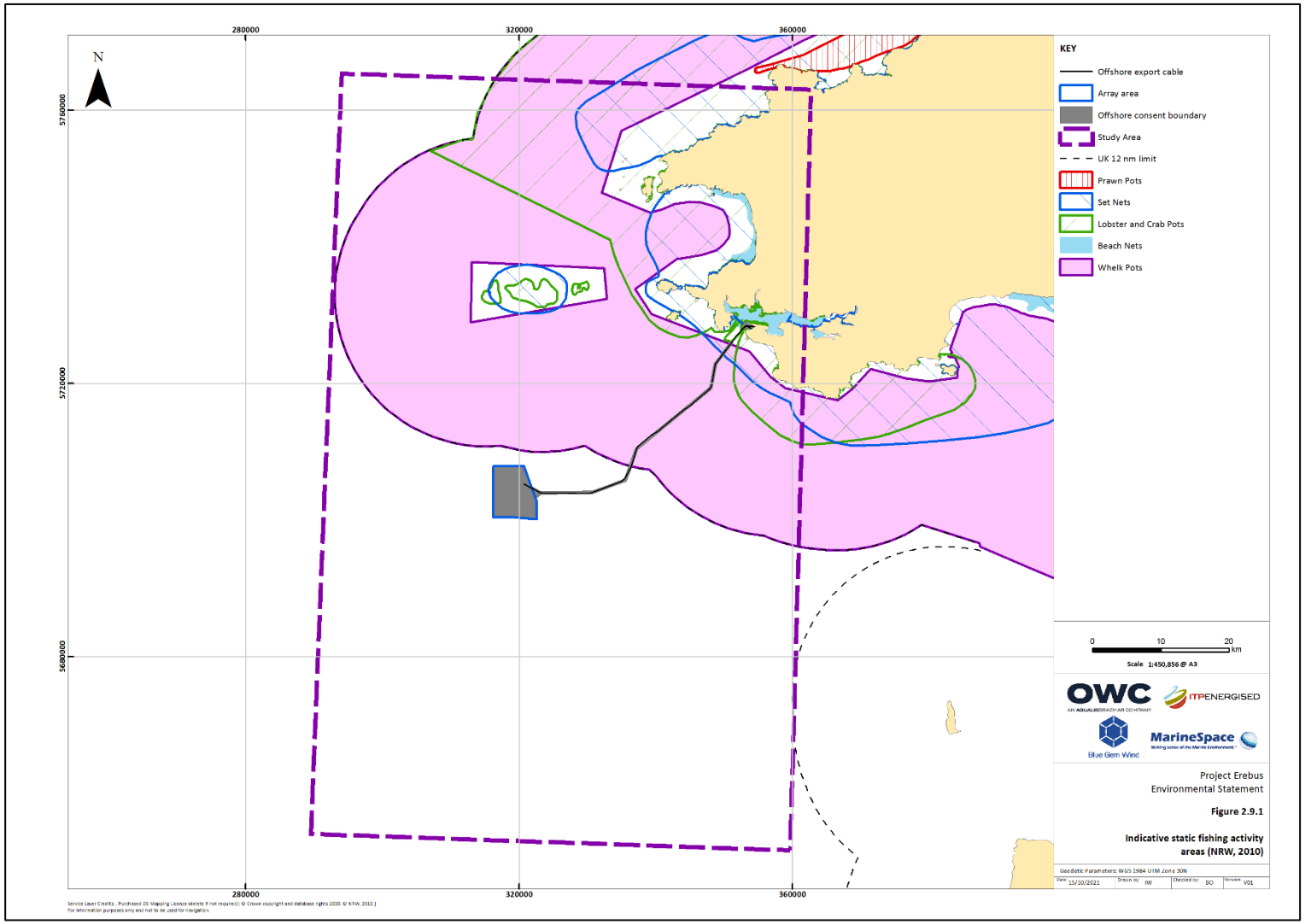
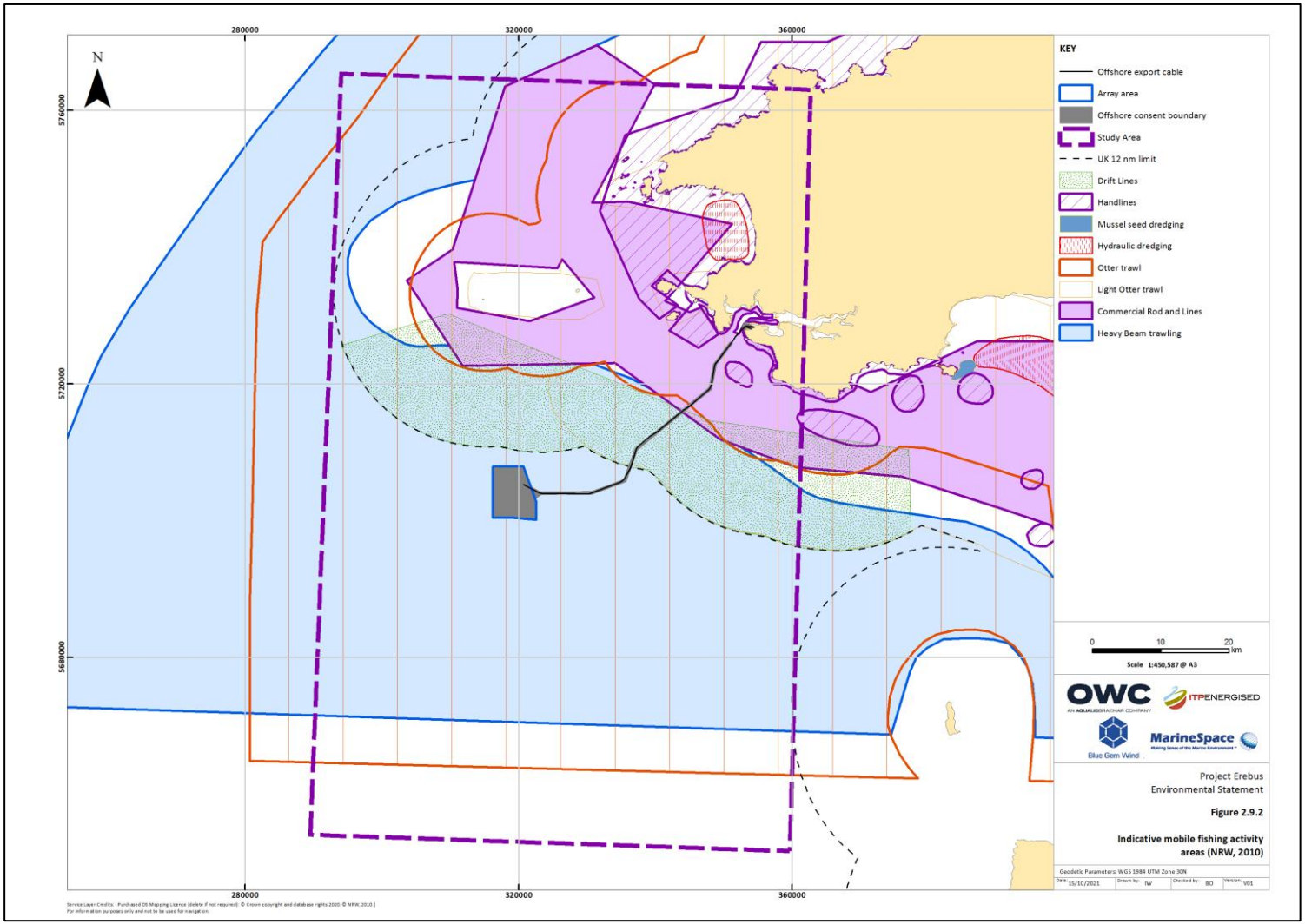


Figure 2.9.2: Indicative fishing areas (mobile gear) in the vicinity of the Project array area and offshore export cable (Source: NRW, 2010)



3. Recreational Fishing Activity

Sea angling is a very popular recreational activity in the UK and comprises boat and shore fishing. In Wales, shore fishing for bass, cod and whiting is popular, as well as boat fishing (private and charter vessels) for bass, mackerel, cod, pollack, rays and tope (Monkman *et al.,* 2015); there are multiple charter boat companies in Pembrokeshire offering recreational fishing trips, for a variety of species (Welsh Government, 2013).

Estimates suggest that there were approximately 76,000 anglers local to Wales in 2012 (Armstrong *et al.,* 2013), and 28,000 visiting anglers (Nautilus, 2000). It is estimated that total expenditure by visiting and resident anglers in 2013 was approximately £121.61 million, supporting approximately 1,700 jobs (Monkman *et al.,* 2015).

3.1. Recreational Fishing

Recreational sea fishing (angling) is often restricted to either the shoreline or nearshore. Spatial distribution of sea angling activity can be observed through the Wales Activity Mapping (WAM) GIS web tool (Pembrokeshire Coastal Forum, 2020), and it is noted that all non-shore polygons were attributable to private boat effort.

The WAM tool indicates that that shore angler effort was relatively low in the region of the Project's offshore cable corridor, although sites were identified within proximity of the offshore export cable landfall (West Angle Bay, St Ann's Head and Freshwater West); these sites were observed as having both seasonal and all year usage.

Boat angling areas identified by the WAM tool were relatively isolated and distributed along the Pembrokeshire coast and islands. Areas popular for boat-based recreational angling in proximity to the offshore export cable include offshore of Castlemartin Range (primarily spring to autumn), Freshwater West (primarily spring to autumn), St Ann's Head (primarily spring to autumn) and West Angle Bay (primarily summer). The offshore export cable also passes close to the Turbot Bank, a subtidal sandbank situated approximately 3.5 km south of the entrance to Milford Haven. This sandbank feature is a particularly popular location for boat-based recreational angling.

Further details on recreational fishing activity in the Study Area are included in Chapter 29, Socio Economics, Tourism and Recreation.

3.2. Charter Fishing Vessels

There are a number of charter vessels operating in this region. Whilst many typically do not operate long distances offshore (often within 12 nm of the coast), several also offer trips further offshore, with the Celtic Deeps being a particular area of focus. Charter fishing vessels operate out of various ports along the south Pembrokeshire coastline, including Dale, Milford Haven, Pembroke Dock, Saundersfoot and Tenby. Charter vessels are also active within the Milford Haven Waterway, although there are seasonal restrictions to fishing activities (Port of Milford Haven, 2016).

Mackerel are the target species for most inshore trips, with sharks also being an important species further offshore. Inshore vessels target species such as conger, ling, bull huss pollack, codling and

wrasse on reefs or rough ground; species on sand banks include turbot, ray, plaice, dab, gurnard, bass, spur dog and tope.

Charter vessels are generally confined to the Milford Haven waterway during winter, whereas during the spring and summer they are active along the coast and as far as 50 nm offshore. Trips can be from 1 hour targeting mackerel inshore, to 12 hours targeting blue sharks offshore. Inshore vessels are generally active close to the coast, in the Milford Haven waterway, around the islands of Skomer and Skokholm, and over sandbanks such as the Turbot Bank or Knoll. Offshore vessels are active in the Celtic Deeps, offshore reefs such as the Hat and Barrels and St George's Channel. Wrecks are also popular areas for fishing by charter vessels.

The marine traffic surveys (section 4.3) in 2020 identified a charter boat vessel, approximately 5 km south of Skokholm island; this vessel provides sea angling trips out of Dale, and as far offshore as the Celtic Deep.

Further details on charter fishing businesses in this region are included in Chapter 29, Socio-Economics, Tourism and Recreation.

4. Additional Data Sources on Fishing Activity in the Study Area

In addition to review of the MMO and EU datasets, MarineSpace engaged at a detailed-level with individual vessels potentially affected by offshore surveys associated with the Project; held a series of consultation meetings with relevant fisheries organisations/stakeholders; reviewed data collected via 2 x 14-day marine traffic surveys undertaken in 2020; and also assessed AIS data from 2019. The key conclusions from these additional data sources are presented below.

4.1. Findings from the 2020 Fisheries Liaison – Inshore Static Gear

MarineSpace was commissioned to perform the Fisheries Liaison Officer (FLO) role prior to, and during, the offshore geophysical surveys undertaken in August-October 2020. This role involved consultation and engagement to identify any local vessels that may be affected by the planned survey. After engaging with the wider fishing community and relevant organisations, key vessels were identified that would be impacted by the survey works, or that could impact the survey operations due to presence of static gear (pots/nets).

The 2020 geophysical survey covered the offshore array area, the offshore cable corridor (450 m width), and 2 short listed landfalls (Angle Bay and West Angle). The route of the offshore export cable was divided into blocks (approximately 2 km in length inshore of 12 nm and approximately 5-6 km in length outside 12 nm) to enable individuals to identify the areas in which they had static gear that would potentially interact with the 2020 offshore surveys.

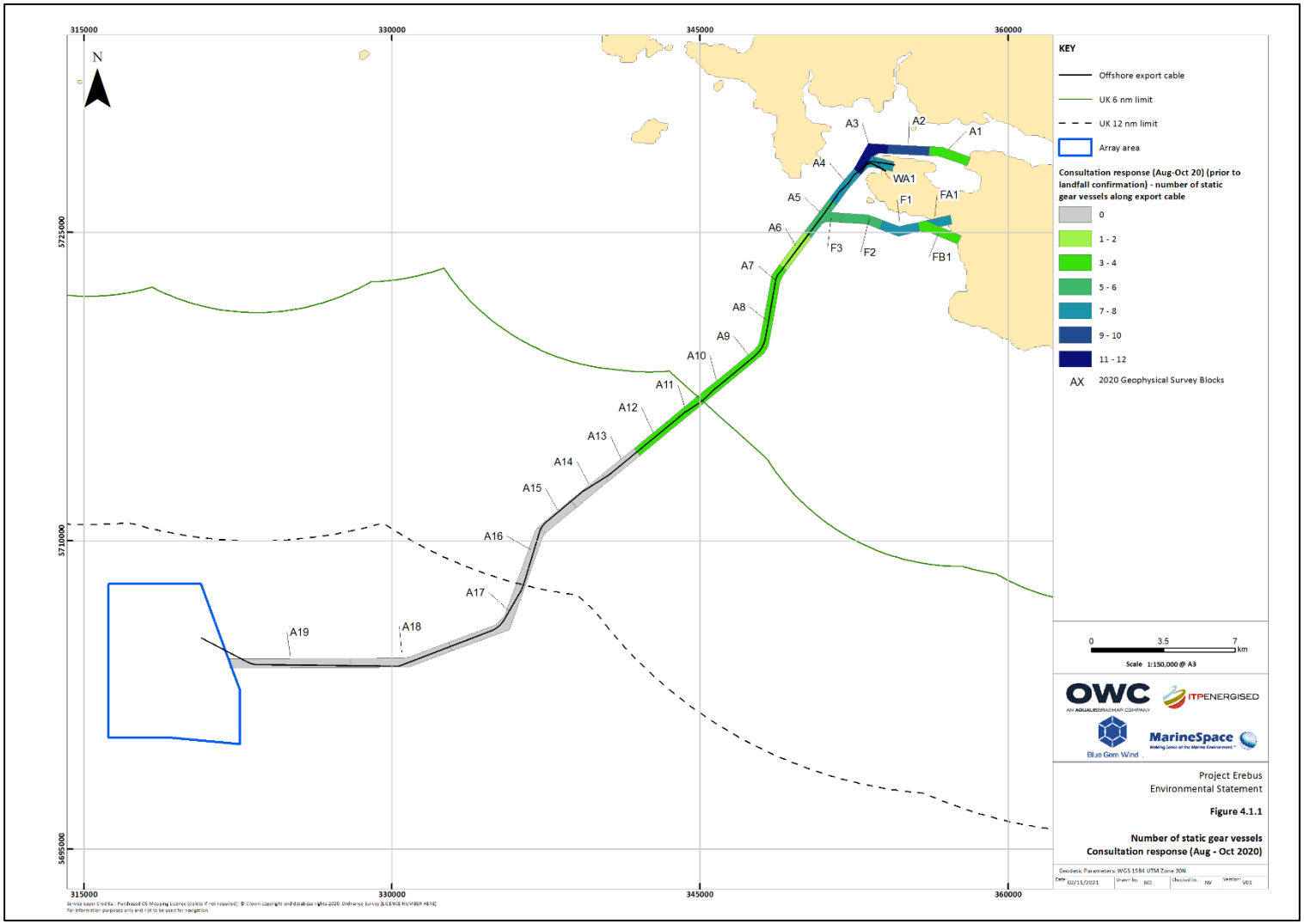
A total of 12 vessels (Table 4.1.1) were identified as having the potential to be directly affected by the geophysical surveys along the offshore cable corridor out to approximately 9 nm (Figure 4.1.1). These vessels were all under 12 m in length and predominantly targeting crab (brown, spider, and velvet), crawfish, lobster, whelk, and prawn. The majority of these vessels were particularly active in the nearshore region, i.e., within the Milford Haven waterway and around the Angle peninsula, as well as off Freshwater West.

When interpreting these data, it should be noted that they cannot be used as a direct representation of fishing activity or effort; for example, there were fewer vessels fishing further offshore, but they are more likely to be larger vessels and have larger number of pots, thus effort could be greater. The vessels identified were affected during the survey period of August-October, so other vessels may be affected at different times of the year. These data are a useful indication of areas fished by smaller inshore vessels which would not have been captured in the MMO data. It was noted during consultations that the Welsh Government plans to introduce a legislative requirement for vessels <12 m to have VMS.

Table 4.1.1: Static gear vessels identified during the August-October 2020 geophysical surveys, and the blocks in which gear was present

Vessel ID	Approximate vessel length (m)	Blocks fished
1	8.5	A3, A4, WA1, A5, F3, F2, F1, FA1, FB1
2	5.9	A1, A2, A3, A4, WA1, F1, FA1
3	7.9	A1, A2, A3, WA1, F1
4	9.8	A2, A3, WA1
5	8.5	A2, A3, A4, WA1
6	7.0	A2, A3, A4, WA1, A5, F3, F2, F1, FA1, FB1
7	11.8	A6, A7, A8, A9, A10, A11, A12, F3, F2, FA1, FB1
8	9.8	A2, A3, A4, A5, A7, A8, A9, A10, A11, A12, F3, F2, F1, FA1, FB1
9	12.0	A2, A3, WA1, A4, A5, A7, A8, A9, F3, F2, F1, FA1
10	12.0	A2, A3, A4, A5, A7, A8, A9, A10, A11, A12, F3, F2, F1, FA1
11	5.9	A1, A2, A3, A4
12	7.4	A2, A3

Figure 4.1.1: Consultation response from static gear vessels engaged with for the Project geophysical surveys during August-October 2020



4.2. Feedback from Key Fisheries Organisations

Table 4.2.1 lists the fishing organisations who were contacted in order to inform this desk-based study. Contact with these organisations was primarily focused on the following objectives:

- Providing an introduction to the Project and status of design progress and offshore surveys;
- Discussing the key findings of the review of MMO/EU data to identify any particular anomalies or inaccuracies;
- Obtaining information on nearshore fishing activity (by <10 m vessels) whose activity may not be fully recorded in official MMO/EU datasets.

4.2.1. Fishing Activity

Key findings from consultations with commercial fisheries stakeholders regarding fishing activity are summarised below:

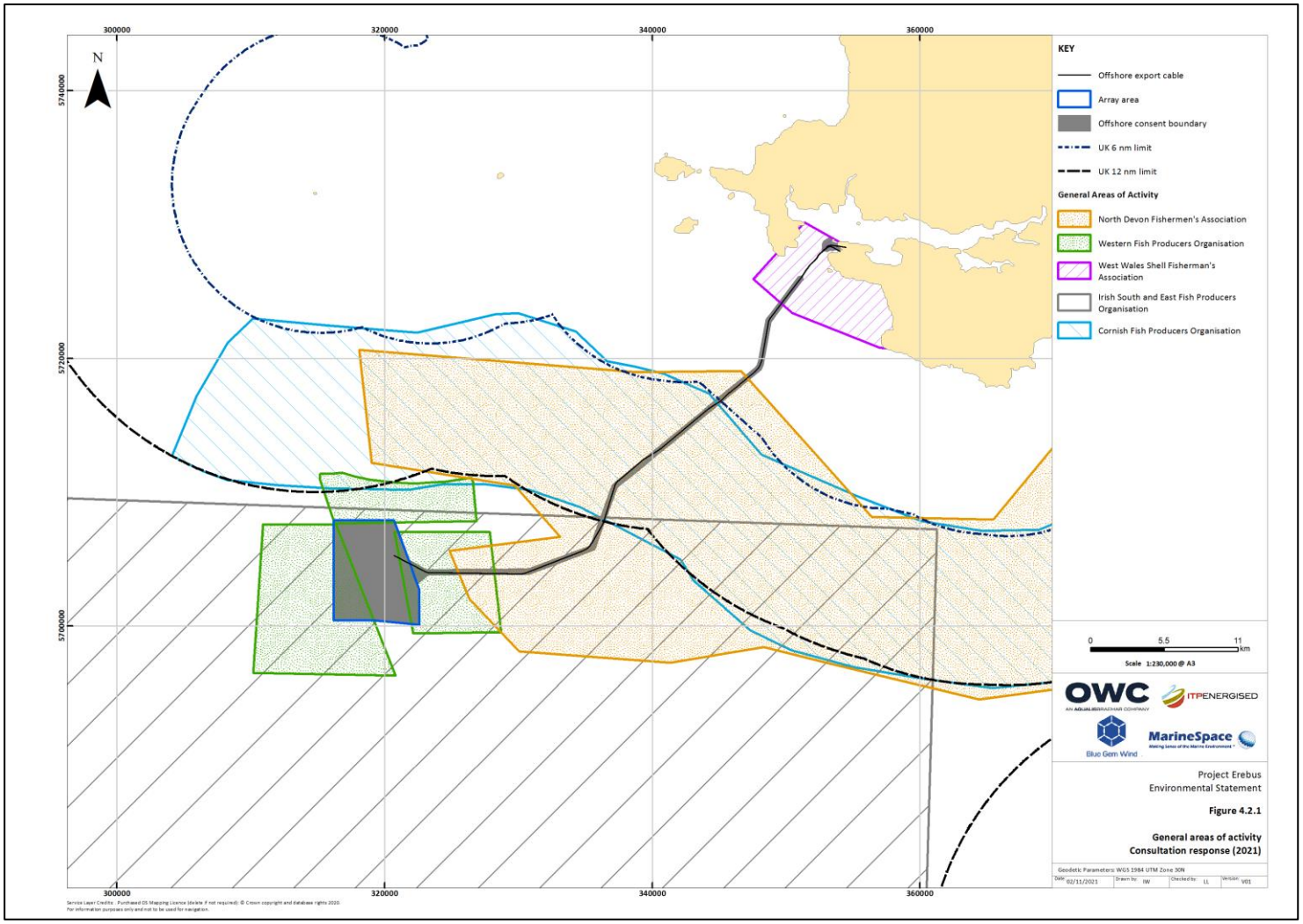
- The key observations and trends identified via review of MMO, and EU landings/activity data appear sound and in line with consultees' understanding of activity in the region;
- The inshore section of the offshore cable corridor features a high intensity of static gear fishing, particularly in the summer months, even though vessels do move further offshore later in the year;
- Sea and weather conditions (southwesterly prevailing wind and large swells) limits the ability of smaller inshore vessels to work further offshore, which intensifies the importance of the nearshore (0-6 nm) section on the Welsh side;
- The offshore cable corridor between 6-12 nm has a high level of activity from both mobile and static vessels;
- The array area is considered to be in an area of lower fishing intensity for the region, but there are beam and otter trawlers active in the vicinity.

Relevant commercial fisheries stakeholders agreed that the official data sources were representative of offshore commercial fishing activities, but less so for the inshore region. Organisations were asked to annotate charts to indicate areas where members were active in the vicinity of the Project array area and offshore cable corridor, which have been summarised in Figure 4.2.1; information was received from members of the Cornish Fish Producers Organisation, Irish South and East Fish Producers Organisation, North Devon Fishermen's Association, West Wales Shell Fishermen's Association and Western Fish Producers Organisation. A summary of comments provided with the spatial information is listed below:

- All areas shown on the figure are weather dependent and subject to strong tidal flows;
- Activities are seasonal. For example, Dover sole is targeted in areas of soft sediment close to the array area during February to August; fishing for rays between 6-12 nm during November to April;
- Beam trawls and otter trawls are particularly active between 6-12 nm;
- Irish vessels have listed the ICES Rectangle in which they are active;
- Vessels tow with the tide between 6-12 nm, in a general northeast-southwest direction,

- Sandbanks north of the array up to 10-15 m in height;
- Inshore mobile vessels targeting Dover sole, plaice, bass, thornback ray, blonde ray.

Figure 4.2.1: Consultation response from relevant fishing organisations active in the vicinity of Project



The areas of fishing activity illustrated on Figure 4.2.1 relied on feedback from organisations or individuals. It is noted that no feedback was provided by Belgian vessels, however 2 Belgian trawlers were identified during the offshore geophysical survey during November 2020, and another Belgian trawler was observed close to the wave buoy during September 2020.

4.2.2. Key Issues

Key issues from consultations with commercial fisheries stakeholders regarding interaction with Project array area and offshore coble corridor are summarised below:

- Planned survey works in 2021 will impact on fishing activity in the inshore regions and will require early engagement with the fishing industry to plan gear movements etc;
- Concern regarding the methods of cable installation, and that if not buried will cause potential loss of fishing grounds and displacement of the fishing fleet. It was questioned whether there would be frequent surveys of cables so any exposures can be relayed to the fishing community; also raised that even if a cable were over-trawlable, vessels may choose not to in case there was exposure;
- Concerns regarding effects of array area and offshore export cables to fish stocks and whether this would be monitored by the Project. Points raised on the issue were regarding piling, ground noise and EMF. It was recognised that in other regions fish stocks, such as rays have seen an increase in the vicinity of OWF;
- It was questioned whether guard vessels be used during the construction phase;
- The importance of long-term engagement with the fishing community was highlighted.

Table 4.2.1: Summary of consultations held with relevant fishing organisations*

*All engagement was led with correspondence introducing the scope of the Project, including charts of the offshore array area and offshore cable corridor, and was followed up with a link to the virtual public exhibition for stakeholders to review further information and comment. Organisations were asked to circulate charts showing the Project, for members to annotate general fishing activity areas.

Organisation	Liaison to date
Wales	
Atlantic Edge Oysters	Atlantic Edge Oysters provided coordinates of farm.
Pembrokeshire and Cardigan Fish Producers Organisation	Response stated that the project was not of interest to the organisation.
Pembrokeshire County Council (Fishing Communities Development Officer)	Meeting held with PCC Officer who had no significant concerns with the Project. Identified that main impact will be to offshore fisheries, any works further inshore may be of interest to Fisheries Local Action Group. PCC Officer had no additional data on fishing activity.
Pembrokeshire Marine SAC	The SAC Officer confirmed that they were content to not be involved in discussions provided there was engagement with active local fishers.
South and West Wales Fishing Communities (SWWFC)	Meeting held with representative, who had no significant concerns with the Project.
Wales and West Coast Fish Producers Organisation	Contacted numerous times but no response received.
Welsh Fishermen's Association (WFA)	Meeting held with the Chairman of the WFA, who agreed that all relevant fisheries stakeholders have been contacted. Queries were raised regarding the following: how the location of the cable landfall and duration of cable laying activities may affect members; any potential impacts during construction; whether electromagnetic frequencies would be assessed; disruption payments and potential Community Fisheries Fund.

Organisation	Liaison to date
Welsh Government (Marine and Fisheries Division)	Meeting held with 2 WG officers, who agreed that all relevant organisations have been contacted. No significant concerns. Highlighted that Belgian vessels which are active in the area will unlikely be displaced following new EU-UK trade agreement.
Welsh Marine Fisheries Advisory Group (WMFAG)	Information was provided to the WMFAG, but no meeting was held.
West Wales Shell Fishermen's Association (WWSFA)	Meeting held with member who raised that WWSFA no longer has a lead person. Agreed that all relevant organisations have been contacted and confirmed that VMS data are generally representative of fishing activity in area. Member provided annotated chart with areas of fishing activity
Devon and Cornwall	
Cornish Fish Producers Organisation (CFPO)	Meeting held with CFPO Chief Executive, who highlighted that there are 3 beam trawlers affiliated to the CFPO that currently fish to the east of the array area. Agreed that all relevant organisations have been contacted and that VMS data are generally representative of fishing activity in area. Concern regarding cable burial for mobile vessels. Highlighted that increase in quota availability has seen increased fishing activity to the east/north of the array area. CFPO sent annotated chart with areas of members' fishing activity in the region.
Cornwall Inshore Fisheries and Conservation Authority (IFCA)	Response from Officer that they are out of scope for the area of interest.
Devon and Severn IFCA	Meeting held with 2 Officers who had no significant concerns with the Project.
Interfish	Meeting held with Director who had no significant concerns and noted that Interfish's vessels are likely further south and closer to the coast the Project array area. Noted seasonality of fishing activity (generally February-April/May, and some activity during Autumn). Concerns were highlighted regarding piling or ground noise and whether magnetic fields were likely to be an issue. Noted importance of long-term engagement with fishing community.

Organisation	Liaison to date
North Devon Fishermen's Association (NDFA)	Meeting held with the Chairman of the NDFA who had no significant concerns. Agreed that fisheries would have to be excluded from array area. Suggested that offshore export cable should be surveyed frequently to ensure it remains buried. Meeting held with Director who had no significant concerns. Queries were raised regarding the following: sand wave levelling and impact on fish stocks. Identified that fishing vessels would use an additional 1-2 miles of exclusion around the offshore array area to take into account the tide and wind when manoeuvring. Agreed that location of array area is more preferable than the 'south of the shoals' area. Provided discussion on The Crown Estate UKFIM data and information on general areas of fishing activity.
South Western Fish Producers Organisation (SWFPO)	Meeting held with the Chief Executive, who had no significant concerns and agreed that all relevant organisations have been contacted. Noted that beam trawl activity is seasonal. Highlighted importance of navigational accuracy for fishermen to identify cable locations. Acknowledged lack of information regarding inshore static gear vessels in official data sources.
Waterdance Fishing	Contacted numerous times but no response was received.
Western Fish Producers Organisation (WFPO)	Meeting held with Manager of WFPO and 1 member (only member of the WFPO who fishes in region). Member uses open gear with a beam trawl and is mainly active at 3-4 sites in vicinity of offshore array area on areas of softer ground to target Dover sole (February-August). Queries were raised regarding the following: whether cable will be over-trawlable; higher beam trawl activity than shown in official data. Information on fishing activity provided by member.
Other UK	
Association of Severn Estuary Relevant Authorities (ASERA)	Contacted numerous times but no response was received.
Jersey Government (Marine Resources)	Response from Officer that they are out of scope for the area of interest.
National Federation of Fishermen's Organisations	Meeting held with Assistant Chief Executive. Queries were raised regarding the following: safety zones; whether cable will be over-trawlable. Sent UKFIM data and recommended requesting NDFA Trawlers' input.
New Under Ten Fishermen's Association	Contacted numerous times but no response was received.

Organisation	Liaison to date
(NUFTA)	
Severn Estuary Partnership (SEP)	Contacted numerous times but no response was received.
Ireland	
Irish South and East Fish Producers Organisation (ISEFPO)	Meeting held with Administrator. Information on general fishing areas was provided by 3 members.
Irish South and West Fish Producers Organisation	Contacted numerous times but no response was received.
Non-UK organisations	
Comité National des Pêches Maritimes et des Elevages Marins (CNPMEM)	Project manager for CNPMEM confirmed that no responses/concerns were received by members regarding the Project.
Danish Fishermen's Association	Contacted but no response.
Deutscher Fischerei Verband	Contacted but no response.
Independent Fishing Agent (Anglo-Spanish vessels)	Meeting held with Agent. Following review, Agent confirmed that none of the fishing vessels are active in the vicinity of the Project.
Nederlande Vissersbond	Contacted but no response.
Norrads (Fishing Agents, Belgium)	Contacted numerous times but no response was received.
Norwegian Fishermen's Association	Contacted but no response.
Rederscentrale	Contacted numerous times but no response was received.
Southern Norway Trawler Association	Contacted but no response.

Organisation	Liaison to date
Stichting voor Visserjontwikkeling	Contacted but no response.
Swedish Fishermen's Association	Contacted but no response.
VisNed (Netherlands Fishermen's Federations)	Contacted but no response.

4.3. Findings from Site-Specific Marine Traffic Surveys and AIS data

NASH Maritime was commissioned to undertake a Navigation Risk Assessment (NRA) for the Project, and to support this 2 x 14-day marine traffic surveys (of the site plus 10 km buffer) were undertaken in August 2020 and December 2020. An initial Marine Traffic Data Report was produced following the completion of these surveys (NASH Maritime, 2021). Data presented in the NASH Maritime report included AIS data, visual observations from the 2 x 14-day marine vessel traffic surveys and marine radar information. The AIS data was obtained from 2019 to avoid potential influences on vessel traffic in 2020 due to the Covid-19 pandemic; a 6-month period between 01 July 2019 and 31 December 2019 was used to achieve peak and off-peak seasonal coverage. Limitations of the datasets are discussed within the report itself.

The majority of fishing vessel tracks captured by NASH Maritime, during both the summer and winter survey, were observed outside of the array area ; the only fishing vessel tracks captured within the array area were located in the south and southwest areas.

During the August 2020 survey, 2 fishing vessels were identified; 1 of which was a charter boat from Milford Haven, and the other was a Belgian otter trawl vessel (19 m in length) registered in Oostende. During the December 2020 survey, a Newlyn beam trawl vessel (12 m in length) was observed, and another Belgian otter trawl vessel (25 m in length), also registered in Oostende. MMO and ICES data on beam trawl activity (Figure 2.7.9 and Figure 2.7.13) align with the findings, as they show that beam trawlers are active in the vicinity of the array area. These observations also align with the otter trawl activity captured in Figure 2.7.17, which shows low levels of activity across the Project array area, particularly to the southwest which appears to be from the dispersal of otter trawl activity around “The Smalls”. However, it must be noted that no Belgian vessels were recorded as using otter trawls in the STECF 2017 data.

AIS data from July-December 2019were also collated for the Project array area and offshore cable corridor with a 10 km buffer. Fishing vessel tracks were extracted from the data and are shown in Figure 4.3.1 AIS fishing vessel track data from July-December 2019 in relation to the Project array area and offshore export cable, with a 10 km buffer (Source: NASH Maritime, 2021)Figure 4.3.1The data have been interrogated by vessel speed, identification number, course, and date in order to interpret.

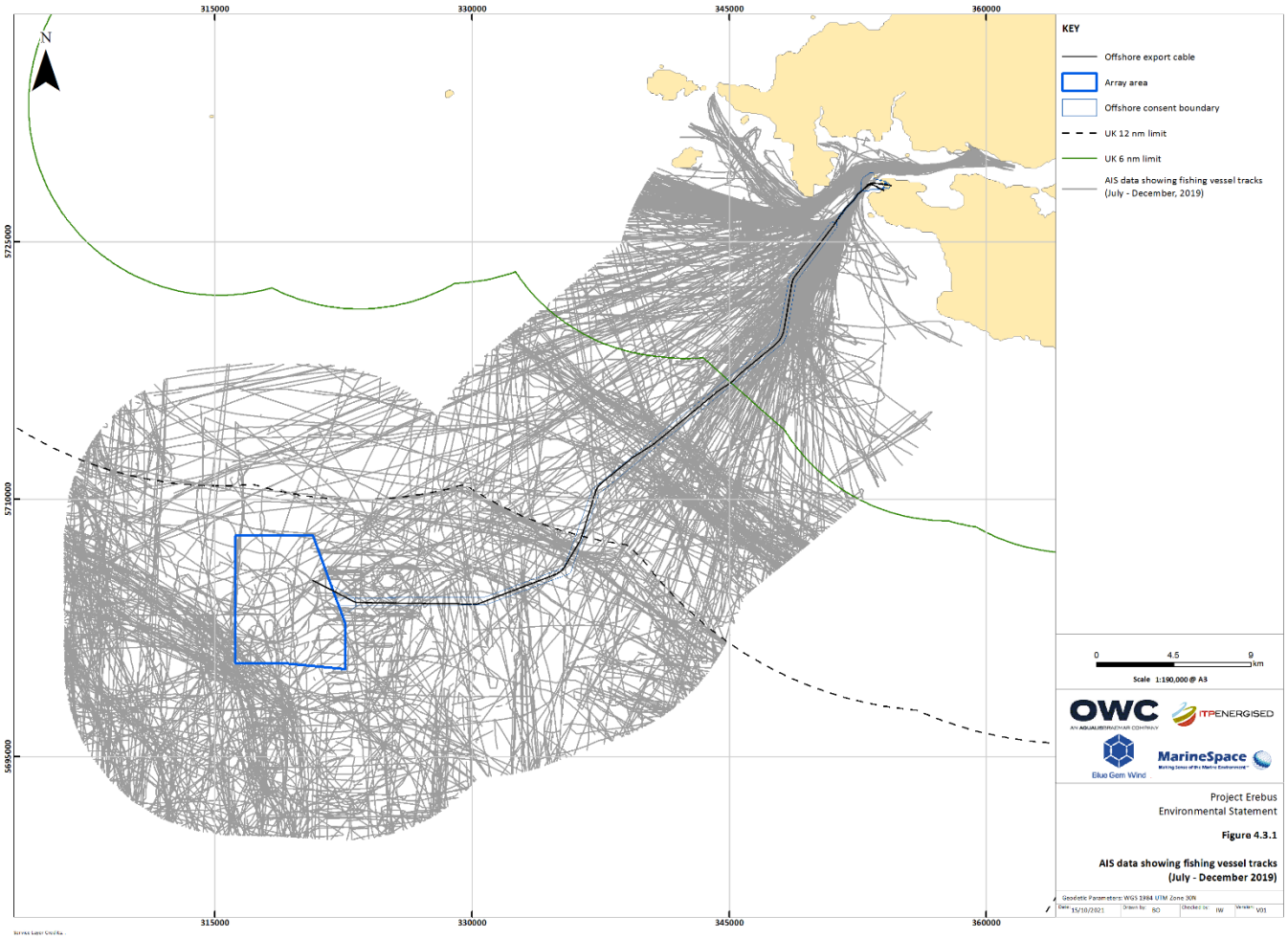
The AIS data showed a large number of tracks, particularly close to the entrance of the Milford Haven waterway, many of which were likely transit tracks due to the speed and course. Between 0-3 nm there appeared to be low levels of fishing activity, as most tracks were straight lines in and out of the waterway. Between 0-6 nm there was some potential activity observed, focused on the Turbot Bank, some of which overlapped with the cable corridor, and the majority were adjacent to the cable corridor on the eastern side.

There was a moderate presence of fishing vessel tracks between the 6-12 nm. Vessels travelling in a north-east to south-west orientation were generally travelling at over 10 knots and in a straight line, which indicated transit tracks. Fishing vessels observed between 6-12 nm travelling north-west to south-east were assumed to be fishing as they were mostly travelling at approximately 2-4 knots and

the track lines were not straight. These tracks were predominantly from July and August from several Belgian trawlers (19-25 m in length).

Beyond 12 nm the fishing vessel tracks were observed in higher densities along the 12 nm, and to the south-west of the array area. Several Belgian trawlers (approximately 35 m in length) were present just outside of the 12 nm, travelling in a general north-west to south-west direction; these tracks were mostly from September to November. The vessels observed to the south-west of the array generally travelled in a north-west to south-east direction and were comprised of vessels from Belgium, France, Holland, Poland, and the United Kingdom; some of these vessels were over 100 m in length. These vessels were present from August to November. Within the array area, there were relatively fewer vessel tracks than compared to the surrounding areas; vessels observed within the array area were from Belgium, France, Holland, Poland, and the United Kingdom. Of note were tracks from a Cornish trawler during December which were present to the east of the array, with some overlap

Figure 4.3.1 AIS fishing vessel track data from July-December 2019 in relation to the Project array area and offshore export cable, with a 10 km buffer (Source: NASH Maritime, 2021)



5. Summary

An assessment of commercial and recreational fishing activity in the region of the Project has been undertaken via a review of official landings and fishing activity data collated from the MMO and EU-data sources. Consultation has also been undertaken with selected representatives of commercial fishing organisations in the region.

Key conclusions can be reached with respect to fishing activity in this area from the data presented in the report and are summarised below.

5.1. Overview of Fisheries Activity

- There is a wide spatial distribution of commercial fishing in the Celtic Sea, with demersal and shellfish species being the most important in terms of landings by weight and value;
- Key demersal species include; cod, haddock, anglerfish, plaice, ray, skate and sole;
- Key shellfish species include; lobster, nephrops, crab, and whelk;
- Pelagic fish landings from this area are mainly of herring and whiting, and of relatively less economic importance compared to demersal and shellfish species;
- The closest fishing port to landfall is Milford Haven, which sees a variety of species landed. Saundersfoot is east of landfall, where there are relatively high landings of whelks;
- The inshore fisheries are particularly characterised by valuable potting grounds for crab, lobster, and whelk around the Pembrokeshire coast;
- Since the late 1980s, the bass rod and line fishery has also proved popular amongst both commercial and recreational fishermen (Walmsley and Pawson, 2007);
- The trawler fleet concentrates its efforts in the Bristol Channel and Cardigan Bay and lands a mixed catch throughout the year. These trawlers fish mainly between the 6-12 nm and competition can be intense, especially when the sole fishery attracts visiting beam trawlers from the south coast of Devon, Cornwall, and Belgium;
- The majority of otter trawling effort is by Devon and Cornish vessels operating twin rig gear between 6-12 nm., and Belgian vessels;
- “The Smalls” is located southwest of the Project and has some of the highest levels of activity in the region;
- Boat-based recreational angling occurs at a relatively low level around the wider Study Area, focussed on discrete locations, such as the Turbot Bank and offshore reefs;
- There are a number of established charter angling businesses that operate in the Study Area. The majority of trips are focussed inshore (out to 12 nm), but some vessels offer trips further offshore, including shark fishing in the Celtic Deeps region.

5.2. Overview of Landings Data

5.2.1. Landings by Weight and Value

5.2.1.1. UK Fleet

- Based on the most recent 5 years of MMO data available at this time (2015-2019) ICES Rectangle 32E4 (Welsh inshore region) had significantly higher weight and value of landings by all vessels compared with 31E4;
- Pots and traps were the gear types which accounted for most of the landed weights from 31E4 and 32E4;
- Shellfish were the most important species for UK vessels, with the majority caught in 32E4, highlighting the importance of the Welsh inshore potting fishery;
- Demersal species were more important for the larger vessel size class across both ICES Rectangles;
- Key species within 31E4 (offshore region where the array is located) were crab (C.P. mixed sexes), nephrops, blonde ray, whiting, lobster, thornback ray and haddock;
- Key species within 32E4 (inshore region through which the export cable runs) were whelk, crab (C.P. mixed sexes), spider crab and lobster.

5.2.1.2. Non-UK fleet

- Vessels from all Belgium, France and Ireland were active across both ICES Rectangle 31E4 and 32E4;
- Based on STECP (EU) data, a total of 21,559 tonnes was caught by the non-UK fleet in 31E4 across 2012-2016, with Belgium landing the largest proportion of total weight of fish caught in ICES Rectangle 31E4. A total of 10,273 tonnes was caught in 32E4, with France landing the largest proportion of total weight from 32E4;
- The majority of total landings from non-UK vessels in the region were recorded as having been caught by vessels utilising beam trawl and bottom trawl/seine;
- A total of 58 species were landed by Belgian vessels during 2012-2016. The top 20 species constituted approximately 93% of the total catch landed during the monitoring period. The top 5 species (common sole, anglerfish, blonde ray, megrim, and thornback ray) constituted approximately 54% of the total tonnage landed from the region;
- A total of 71 species were landed by the French vessels during 2012-2016. The top 20 species constituted approximately 97% of the total catch landed during the monitoring period. The top 5 species (rays and skates, haddock, whiting, anglerfish, and Atlantic cod) constituted approximately 77% of the total tonnage landed from the region;
- A total of 31 species were landed by Irish vessels during 2012-2016. The top 10 species constituted 96 of the total catch landed during the monitoring period. The top 3 (whiting, Norway lobster and Atlantic herring) species constituted approximately 80% of the total tonnage landed from the region.

5.2.2. Temporal Trends

- Landings by weight and value, for UK vessels between 2015-2019, varied across both 31E4 and 32E4, with no obvious general trend. Variations can generally be attributed to changes in which species were caught;
- In terms of intra-annual variation, landings varied for all species/vessels over the period with a clear seasonal pattern of highest weight/value of landings between April and October each year;
- For the top 5 individual species landed by UK vessels in ICES Rectangles 31E4 and 32E4, the following were the key periods for landings by weight and value:
    - Whelk - April to July;
    - Crab (C.P. mixed sexes) – July to November;
    - Spider crab – May to July;
    - Lobster - April to October;
    - Blonde ray – no clear seasonal pattern;
- For the non-UK fleet, based on data presented only by Quarter, the period July to September appears to be the most important in terms of landings, especially for species such as whiting and haddock. January to March was the least productive for most species, with the exception of rays and skates.

5.3. Overview of Spatial Distribution of Fishing Activity/Value

- The spatial distribution of fishing activity/value in the entire region has been displayed via review and analysis of VMS data;
- Low-moderate levels of fishing generally occur along the Project offshore cable corridor and the array area. Areas of higher activity were observed in the Welsh inshore region (0-12 nm) and to the southwest of the array area;
- The MMO, STECF and ICES data were cross-referenced with further data sources, including the UK Fishermen's Information Mapping (UKFIM) data and the Sea Fishing Atlas of Wales. These data are generally consistent with the official MMO data in that they highlight the distribution of potting activity off the Welsh coast and demonstrate otter and beam trawling activity in the between 6-12 nm and further offshore.

5.4. Feedback from Targeted Consultation

- Contact has been made with the commercial fishing organisations listed in Table 4.2.1;
- The key observations and trends identified via review of MMO, and EU landings/activity data appear sound and in line with consultees understanding of activity in the region;
- The inshore section of the offshore cable corridor features a high intensity of static gear fishing; through fisheries liaison work during offshore surveys in 2020, a total of 12 static gear vessels were identified in the inshore region of the offshore cable corridor (out to 9 nm);
- Beam and otter trawlers are active between 6-12 nm across the offshore cable corridor; these vessels are predominantly from the UK and Belgium;

- Concerns were more focused on the offshore export cable, as it was noted that in general there is a lower concentration of fishing activity at the array area.

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Appendix A. Landing's weight (tonnes) and value (£) by species from ICES Rectangle 31E4

Species	Sum of Landed Weight (tonnes)	Sum of Value (£)
Crab (C.P.mixed sexes)	308.35	576,544.06
Nephrops (Norway lobster)	31.13	167,801.22
Blonde ray	30.99	75,646.89
Whiting	30.36	30,846.26
Lobster	27.22	362,822.40
Thornback ray	26.37	57,205.36
Haddock	23.48	32,145.55
Whelk	17.51	18,698.56
Pollack	15.20	51,658.41
Small-eyed ray	12.82	20,383.79
Dogfish (Scyliorhinidae)	4.80	3,449.63
Turbot	3.92	37,800.74
Skates and rays	3.53	563.41
Sole	3.18	35,233.40
Lesser spotted dog	3.00	789.64
Monks or anglers	2.96	13,448.48
Spider crab	2.75	3,131.65
Bass	2.06	16,430.82
Plaice	1.60	3,066.55
Cod	1.32	3,458.42
Nursehound	1.30	42.57
Spotted ray	1.09	1,385.08
Brill	0.90	5,117.09

Species	Sum of Landed Weight (tonnes)	Sum of Value (£)
Ling	0.86	1,611.79
Megrim	0.70	1,086.82
Crab - velvet (swim)	0.63	1,256.70
Smoothhound	0.62	281.94
Conger eels	0.59	513.26
Saithe	0.56	887.44
Lemon sole	0.55	1,716.48
Dabs	0.54	354.60
Hake	0.47	815.92
Sand sole	0.41	1,130.55
John dory	0.27	1,275.70
Periwinkle	0.21	267.80
Witch	0.19	110.89
Gurnard and latchet	0.18	250.68
Cuckoo ray	0.17	134.75
Flounder or flukes	0.11	58.89
Squid	0.08	472.04
Unidentified dogfish	0.06	18.81
Tope	0.06	61.56
Red mullet	0.06	358.44
Shagreen ray	0.05	19.20
Mackerel	0.05	57.67
Scallop	0.04	92.58
Mullet - other	0.04	79.92
Sea bream	0.03	83.40

Species	Sum of Landed Weight (tonnes)	Sum of Value (£)
Octopus	0.02	25.20
Crawfish	0.01	374.30
Spurdog	0.01	13.80
Roes	0.01	12.64
Common prawn	0.01	115.90
Pouting (Bib)	0.01	5.31
Black Seabream	0.00	11.52
Cuttlefish	0.00	11.62
Wreckfish	0.00	33.90
Gilt-Head Seabream	0.00	1.06
Wrasse	0.00	0.03
Grand Total	**563.44**	**1,531,273.09**

Appendix B. Landing's weight (tonnes) and value (£) by species from ICES Rectangle 32E4

Species	Sum of Landed Weight (tonnes)	Sum of Value (£)
Whelk	3,393.10	3,803,535.58
Crab (C.P.mixed sexes)	1,464.18	2,621,052.02
Spider Crab	398.95	378,636.77
Lobster	352.39	4,462,899.25
Periwinkle	53.07	80,721.45
Blonde Ray	38.70	114,422.41
Bass	36.62	295,688.14
Crab - velvet (swim)	32.99	78,950.14
Thornback ray	30.82	61,713.13
Haddock	26.77	42,568.96
Whiting	24.36	19,326.86
Common prawn	15.01	316,619.88
Lesser spotted dog	14.45	3,677.05
Dogfish (Scyliorhinidae)	10.93	6,370.32
Skates and rays	9.84	1,591.74
Scallop	9.82	22,513.42
Queen scallop	9.64	15,512.35
Mullet - other	7.63	13,889.07
Pollack	7.51	19,958.67
Sole	7.37	79,493.69
Small-eyed ray	5.97	11,480.85
Nephrops (Norway lobster)	3.93	18,032.80
Crawfish	3.59	84,916.72

Species	Sum of Landed Weight (tonnes)	Sum of Value (£)
Plaice	3.17	6,635.00
Nursehound	2.79	1,001.82
Cod	2.63	5,110.78
Dab	2.58	1,360.76
Monk or angler	2.27	10,232.36
Megrim	1.85	3,357.12
Brill	1.56	9,307.76
Turbot	1.53	11,957.90
Smoothhound	1.52	1,246.23
Unidentified dogfish	1.24	634.65
Conger eel	1.16	998.20
Sand sole	0.88	1,416.10
Mackerel	0.83	1,652.02
Lemon sole	0.64	1,920.99
Gurnard and latchet	0.62	585.78
Hake	0.51	631.22
Ling	0.45	475.91
Spotted ray	0.34	667.00
Green crab	0.31	186.30
Sandy ray	0.28	380.50
Saithe	0.22	276.58
Flounder or fluke	0.19	175.52
Cuckoo ray	0.17	208.59
Indo-Pacific sailfish	0.16	162.00
Herring	0.14	122.19
John dory	0.13	552.11

Species	Sum of Landed Weight (tonnes)	Sum of Value (£)
Sea bream	0.13	547.87
Spurdog	0.13	154.47
Native oyster	0.12	116.00
Witch	0.10	102.21
Red mullet	0.10	343.15
Squid	0.06	385.33
Wrasse	0.02	6.52
Shagreen ray	0.02	3.20
Roes	0.01	29.69
Cuttlefish	0.01	106.30
Gilt-head seabream	0.01	35.18
Black seabream	0.01	26.24
Gurnards - grey	0.00	6.59
Starry ray	0.00	6.02
Pouting (Bib)	0.00	1.57
Gurnard - red	0.00	1.66
Triggerfish	0.00	4.50
Long rough dab	0.00	2.40
Catfish	0.00	2.00
Halibut	0.00	4.00
Blue whiting	0.00	0.15
Grand Total	**5,986.48**	**12,616,711.71**

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