



BERWICK BANK WIND FARM OFFSHORE ENVIRONMENTAL IMPACT ASSESSMENT

APPENDIX 12.1: COMMERCIAL FISHERIES TECHNICAL REPORT



Document Status

Version	Purpose of Document	Authored by	Reviewed by	Approved by	Review Date
FINAL	Final	BMM	RPS	RPS	October 2022

Approval for Issue

Ross Hodson	<i>RA Hodson</i>	1 September 2022
-------------	------------------	------------------

Prepared by:	RPS
Prepared for:	SSE Renewables
Checked by:	Fingal McKiernan (SSER)
Accepted by:	Douglas Watson (SSER)
Approved by:	Ross Hodson (SSER)

© Copyright RPS Group Plc. All rights reserved.

The report has been prepared for the exclusive use of our client.

The report has been compiled using the resources agreed with the client and in accordance with the scope of work agreed with the client. No liability is accepted by RPS for any use of this report, other than the purpose for which it was prepared. The report does not account for any changes relating to the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report. RPS does not accept any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report.

RPS accepts no responsibility for any documents or information supplied to RPS by others and no legal liability arising from the use by others of opinions or data contained in this report. It is expressly stated that no independent verification of any documents or information supplied by others has been made.

RPS has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

CONTENTS

1. Introduction	1
2. Study Area	1
3. Data and Information Sources	2
4. Fisheries Management and Restrictions	3
4.1. Overview.....	3
4.2. Spatial Restrictions.....	3
4.3. Firth of Forth Bank Complex MPA Management Measures	4
5. Consultation to Inform the Baseline	5
6. Baseline	11
6.1. Overview.....	11
6.2. Demersal Trawling	15
6.2.1. Nephrops Fishery.....	17
6.2.2. Squid Fishery	20
6.3. Lobster and Crab Fishery.....	23
6.3.1. Fishing Gear, Vessels and Operating Practices	23
6.3.2. Distribution of Fishing Activity	24
6.4. Scallop Fishery	28
6.4.1. Fishing Gear, Vessels and Operating Practices	28
6.4.2. Distribution of Fishing Activity	30
7. Summary.....	34
8. References.....	35
Annex A: Consultation Questionnaire.....	36

TABLES

Table 3.1: Key Sources of Data and Information	2
Table 5.1: Home Port and Primary Fishing Method of the Vessels for which Consultation Questionnaires Were Returned	6
Table 5.2: Information Gathered from Vessels whose Primary Fishing Method is Creeling	7
Table 5.3: Information Gathered from Vessels whose Primary Fishing Method is Trawling	9
Table 6.1: Surveillance Sightings Recorded within the Commercial Fisheries Study Area (2011 - 2020).....	11

FIGURES

Figure 2.1: Commercial Fisheries Study Area	1
Figure 4.1: Fishing-Managed Areas (Source: Marine Scotland)	4
Figure 4.2: Possible Marine Conservation Orders (Source: Marine Scotland).....	5
Figure 5.1: Creeling Grounds Identified During Consultation	9
Figure 5.2: Trawling Grounds (<i>Nephrops</i> and Squid) Identified During Consultation	10
Figure 5.3: Inshore Scallop Grounds Identified During Consultation	10
Figure 6.1: Surveillance Sightings by Method (2011 - 2020) (Source: MMO and Marine Scotland)	12
Figure 6.2: Surveillance Sightings by Nationality (2011 – 2020) (Source: MMO and Marine Scotland).....	12
Figure 6.3 Landings (£) in the Commercial Fisheries Study Area by Species and Method (average 2015 - 2019) (Source: MMO)	13
Figure 6.4: Annual UK Landings Value (£) by Method (Average 2015 - 2019) (Source: MMO)	14
Figure 6.5: Annual Landings Values (£) by Species (Average 2015 - 2019) (Source: MMO).....	14
Figure 6.6: VMS Value (£) Demersal Trawl/Seine (Average 2015 - 2019) (Source: MMO).....	15
Figure 6.7: Surveillance Sightings of Demersal Trawlers (2011 - 2020) (Source: MMO and Marine Scotland).....	16
Figure 6.8: Combined Fishing Activity for Trawls (Source: Shelmerdine and Mouat, 2021).....	16
Figure 6.9: <i>Nephrops</i> Functional Units and Suitable Habitats (Source: Marine Scotland).....	17
Figure 6.10: Two Twin-Rig Trawlers in Port Seton (© BMM)	18
Figure 6.11: Monthly <i>Nephrops</i> Landings (£) in the Study Area (Annual Average 2015 - 2019) (Source: MMO)	18
Figure 6.12: Annual Landings Value (£) <i>Nephrops</i> (Average 2015 - 2019) (Source: MMO)	19
Figure 6.13: Inshore Fishing <i>Nephrops</i> Trawls Monetary Value (£) (Kafas <i>et al.</i> , 2014)	19
Figure 6.14: VMS Fishing Intensity (<i>Nephrops</i> and Crustaceans with Bottom Trawls) (Average 2009 - 2017) (Source: Marine Scotland)	20
Figure 6.15: Single Demersal Rockhopper Trawl (Seafish©).....	20
Figure 6.16: Monthly landings of Squid (£) in the Commercial Fisheries Study Area (Annual Average 2015 - 2019) (Source: MMO)	21
Figure 6.17: Annual Landings Value (£) Squid (Average 2015 - 2019) (Source: MMO).....	22
Figure 6.18: Inshore Fishing Not <i>Nephrops</i> Trawls Monetary Value (£) (Kafas <i>et al.</i> , 2014).....	22
Figure 6.19: Squid Amalgamated VMS Intensity (2009 - 2013) (Kafas <i>et al.</i> , 2013)	23
Figure 6.20: Parlour Creels (© BMM)	23
Figure 6.21: Creelers at Dunbar (© BMM).....	24
Figure 6.22: Monthly Lobster and Crab Landings in the Commercial Fisheries Study Area (Annual Average 2015 - 2019) (Source: MMO).....	24
Figure 6.23: Surveillance Sighting of Creelers (2011 to 2020) (Source: MMO and Marine Scotland).....	25



Figure 6.24: Annual Landings Value (£) of Crab and Lobster (Average 2015 - 2019) (Source: MMO).....25

Figure 6.25: Combined Fishing Activity for Creels (Source: Shelmerdine and Mouat, 2021).....26

Figure 6.26: Creel Fishing Effort (Marine Scotland, 2017).....26

Figure 6.27: Inshore Fishing Crab and Lobster Pots Monetary Value (£) (Kafas *et al.*, 2014)27

Figure 6.28: Creel positions (2022) (SWFPA, 2022).....27

Figure 6.29: VMS Value (£) Pots or Traps (Average 2015 - 2019) (Source: MMO)28

Figure 6.30: Example of Scallop Dredge (Seafish©)29

Figure 6.31: Monthly Scallop Landings in the Study Area (Annual Average 2015 - 2019) (Source: MMO)29

Figure 6.32: Annual Landings of Scallops in the Study Area (2010 to 2019) (Source: MMO).....29

Figure 6.33: Surveillance Sightings of Dredgers (2010 to 2020) (Source: MMO and Marine Scotland)30

Figure 6.34: Annual Landings Value (£) Scallops (Average 2015 - 2019) (Source: MMO)31

Figure 6.35: Combined Fishing Activity for Scallop Dredgers (Shelmerdine and Mouat, 2021).....31

Figure 6.36: VMS Value (£) Dredges (Average 2015 - 2019) (Source: MMO)32

Figure 6.37: VMS Value (£) Dredges UK Wide (Annual Average 2015 -2019) (Source: MMO).....32

Figure 6.38: VMS Value (£) Dredges for Individual Years (2012 - 2015) (Source: MMO).....33

Figure 6.39: VMS Value (£) Dredges for Individual Years (2016 - 2019)33

Figure 6.40: Inshore Fishing Scallop Towed Dredges Monetary Value (£) (Kafas *et al.*, 2014).....34

Figure 8.1: Map of Proposed Development (Overview)37

1. INTRODUCTION

1. This Commercial Fisheries Technical Report describes the commercial fisheries baseline for the Berwick Bank Wind Farm (hereafter referred to as “the Proposed Development”). The areas of the Proposed Development of relevance to this report are the Proposed Development array area and the Proposed Development export cable corridor.
2. For the purposes of this baseline characterisation, commercial fishing is defined as the legitimate capture of finfish and shellfish for sale by licensed fishing vessels.

2. STUDY AREA

3. Fisheries data are recorded and collated by The International Council for the Exploration of the Sea (ICES) statistical rectangles. The commercial fisheries study area has therefore been defined with reference to the ICES rectangles within which the Proposed Development is located. As shown in Figure 2.1, these are as follows:
 - ICES rectangle 41E8: encompasses the Proposed Development array area and part of the Proposed Development export cable corridor; and
 - ICES rectangles 41E7 and 40E7: include the inshore section of the Proposed Development export cable corridor.
4. The commercial fisheries study area defined has been used to identify fishing activities of relevance in the immediate area of the Proposed Development. Where relevant, data and information have been analysed for wider areas to provide context and describe the wider extent of activity of the fisheries included in the assessment.

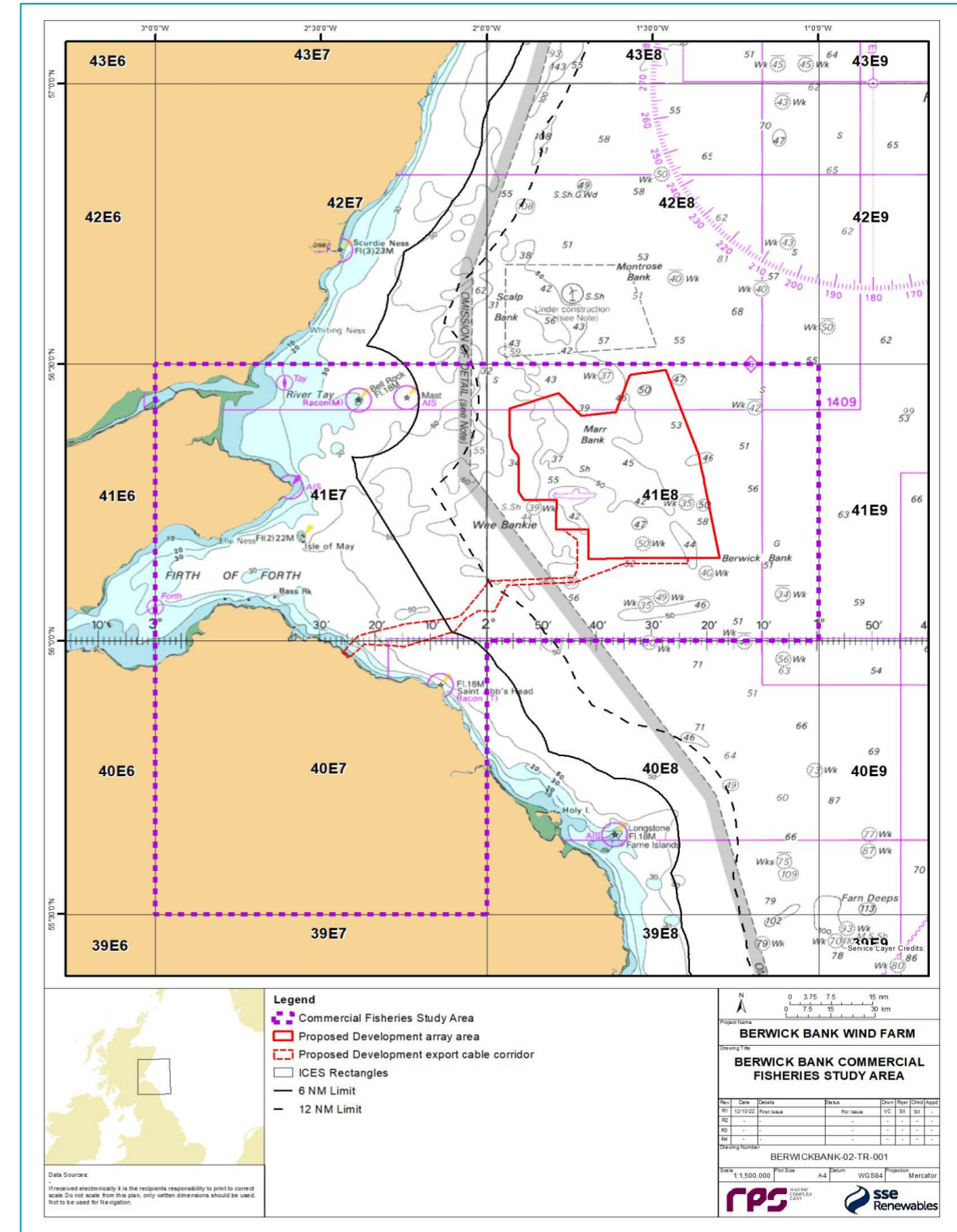


Figure 2.1: Commercial Fisheries Study Area

3. DATA AND INFORMATION SOURCES

5. A range of sources of data and information have been used to inform the Commercial Fisheries Technical Report (volume 3, appendix 12.1). These are described in Table 3.1.
6. Additional information on the commercial fisheries baseline has been gathered through direct consultation with fisheries stakeholders. Details of the consultations carried out are provided in section 5.

Table 3.1: Key Sources of Data and Information

Dataset	Year	Coverage	Notes and Limitations
Landings Data by ICES Rectangle, Marine Management Organisation (MMO)	2010 - 2019	Landings statistics data for UK-registered vessels including: landing year; landing month; vessel length category; ICES rectangle; vessel/gear type; species; live weight (tonnes); live weight (value (£)).	<p>Landings data by ICES rectangle are available for areas of relevance to the Proposed Development from both the MMO and Marine Scotland. Although the landings datasets provided by both are the same, the format in which the dataset is provided by the MMO allows a more detailed analysis of information and has therefore been used in the assessment (i.e. data can be filtered for a given method by species, etc).</p> <p>Landings data has been analysed by value (£) and presented as an annual average for the period 2015-2019.</p> <p>In the case of scallops, to provide an indication of the cyclical nature of the fishery, data for a longer period (2000 to 2019) has been analysed.</p> <p>It should be noted that fishing is normally not equally distributed across the whole area of an ICES rectangle and therefore overall activities identified for a given rectangle may not be necessarily representative of the activity that the specific area where the Proposed Development is located supports.</p>
Fisheries Surveillance Sightings (MMO and Marine Scotland)	2011 - 2020	Surveillance sightings of vessels by gear type (all nationalities) recorded in UK waters by surveillance patrols	<p>Only sightings of vessels recorded as "fishing" have been included in the analysis.</p> <p>Dataset available for all UK waters from the MMO up to 2018. From 2018 onwards, data within Scottish waters is held by Marine Scotland.</p> <p>The data provides a good indication of key methods and nationalities potentially active in a given area. It should be noted, however that surveillance patrols are not carried out at constant time intervals and that the level of surveillance effort may vary significant between years.</p>

Dataset	Year	Coverage	Notes and Limitations
Fishing Activity for UK Vessels 15 m and over Data layers (MMO)	2015 - 2019	Satellite tracking data (Vessel Monitoring System (VMS)) pings recorded in 0.05° by 0.05° grids from UK vessels in UK and European waters	<p>This type of data is only available for vessels over 15 m in length.</p> <p>Data has been analysed by value (£) and presented as an annual average for the period 2015-2019.</p> <p>Fishing gear categories used in the dataset do not allow to distinguish activity between some fisheries (i.e. demersal trawls/seines gear category does separate activity by demersal trawlers engaged in the <i>Nephrops</i> fishery from those targeting squid).</p>
Amalgamated VMS intensity layers (Kafas <i>et al.</i> , 2013)	2009 - 2013	VMS data for all UK commercial fishing vessels over 15 m in length combined with landings information to develop GIS layers describing spatial patterns of landings of the Scottish offshore fleet from within the Scottish zone of the UK Fishing Limits (200 nm). Data layers are separated by individual species/fisheries	<p>Dataset has been used in this report to illustrate the distribution of the over 15 m vessels engaged in the squid fishery.</p> <p>Dataset covers information for the period 2009 to 2013 and therefore may not be fully representative of current activities.</p>
ScotMap - Inshore Fisheries Mapping Project in Scotland (Kafas <i>et al.</i> , 2014)	2007 - 2011	Spatial information on the fishing activity of Scottish-registered commercial fishing vessels under 15 m in length.	<p>Monetary value (£) maps have been used to inform this report. The information provided in this dataset is based on information gathered via interviews with a sample of fisheries stakeholders and therefore is not necessarily representative of the views of all stakeholders.</p> <p>In addition, the data was collected between 2007 and 2011 and may therefore not be fully representative of current activities.</p>
Creel Fishing Effort Study (Marine Scotland, 2017)	2015 - 2017	The data presented in the study were obtained from two sources, interviews with static creel fishers and feedback from stakeholder workshops. The interviews with creel fishers were undertaken on the west coast in October to November 2015 and, after requests by industry, extended to the east coast in June to September 2016.	<p>The data were collected during face-to-face interviews with individual vessel owners and operators and relate to fishing activity for the period 2007 to 2011. Interviewees were asked to identify the areas in which they fish, and to provide associated information on their fishing vessel, species targeted, fishing gear used and income from fishing.</p> <p>The maps produced as part of the study provide information on the average number of crab and lobster hauls per day per 4km². Only a sample of fisheries stakeholders participated in the study area therefore the data outputs are not necessarily representative of the views of all fisheries stakeholders.</p> <p>In addition, the data was collected between 2015 and 2017 and may therefore not be fully representative of current activities.</p>
Scottish White Fish Producers Association (SWFPA) Gear Locations (SWFPA, 2022)	2021 - 2022	Locations of static gear provided voluntarily by fishermen to help avoid conflict with towed gear fisheries.	<p>Provides an indication of areas where creels are deployed. The lack of data in a given area, however, does not imply absence of creeling activity.</p>

Dataset	Year	Coverage	Notes and Limitations
VMS Fishing Intensity for <i>Nephrops</i> and crustaceans (Marine Scotland)	2009 - 2017	ICES Secretariat has collected relevant VMS and logbook data to produce, as a technical service to OSPAR, updated spatial data layers on fishing intensity/pressure. Improved data quality control checks were implemented.	The data is specifically focused on vessels engaged in demersal trawling for <i>Nephrops</i> . Only vessels 15 m and over are included in the dataset.
		This is Marine Scotland aggregated version displaying fishing for <i>Nephrops</i> and crustaceans with bottom trawls.	
Mapping fisheries and habitats in the North and East Coast Regional Inshore Fisheries Group (NECRIFG) area (Shelmerdine and Mouat, 2021)	2009 - 2019	Report produced for the NECRIFG aimed at compiling available information on fishing activity (location, landings, and value) and important habitat information for key species to create a series of maps for integration in the NECRIFG management plan.	The Shelmerdine and Mouat (2021) study reviews a number of available fisheries data for areas of relevance to the NECRIFG (landings data, Automatic Identification System (AIS) data, VMS, ScotMap data, Creel Fishing Effort Study data, etc). Fishing activity charts presented in Shelmerdine and Mouat (2021) have been included for fisheries of relevance to the Project, namely, scallop dredging, creeling and trawling.

10. At the local and regional level, Regional Inshore Fisheries Groups (RIFGs) work to improve the management of Scottish inshore fisheries (out to the 6 nm limit). RIFGs are non-statutory bodies established in 2016 to replace the previous Inshore Fishing Groups (IFGs) structure. The RIFG of relevance in the commercial fisheries study area is the NECRIFG. This covers the area between Durness on the north coast down to Burnmouth by the border with England.

4.2. SPATIAL RESTRICTIONS

11. A number of spatial restrictions to fishing apply within the commercial fisheries study area. As shown in Figure 4.1, the following overlap with the Proposed Development:
- fishing for cockles is permanently prohibited within Scottish inshore waters¹, including in those areas that overlap with the Proposed Development export cable corridor;
 - both the Proposed Development export cable corridor and array area overlap with the sandeel fishing prohibition on the east coast of Scotland. This prohibits fishing for sandeel with towed gear with a cod-end mesh size of less than 32 mm²; and
 - the landing of seabass is prohibited within ICES Division IVb and IVc, (including the commercial fisheries study area) except within the 12 nm limit as by-catch³.

4. FISHERIES MANAGEMENT AND RESTRICTIONS

4.1. OVERVIEW

7. Commercial fishing is subject to a wide range of policy and management measures and subsequent controls and regulations at the local, regional and national levels.
8. Since the exit of the UK from the European Union (EU) at the end of 2020, the Common Fisheries Policy (CFP) is no longer applicable to UK fisheries. Fishing in the UK is now governed by the Fisheries Act (2020) and agreements with the EU, including with regard to total allowable catches (TACs) and quotas are governed under the EU – UK Trade and Cooperation Agreement (24 December 2020).
9. The UK government allocates fish quotas between the four UK administrations (Scotland, England, Wales and Northern Ireland). Marine Scotland subsequently allocates Scottish quota to fishermen licensed in Scotland, primarily through fish Producer Organisations (POs). For vessels that are not PO members, quotas are managed directly by Marine Scotland. For the over-10 m fleet, quotas are assigned on the basis of historic rights.

¹ <https://www.legislation.gov.uk/ssi/2006/487/article/2/made>

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1565001726034&uri=CELEX:32019R1241>

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1549971658776&uri=CELEX:32019R0124>

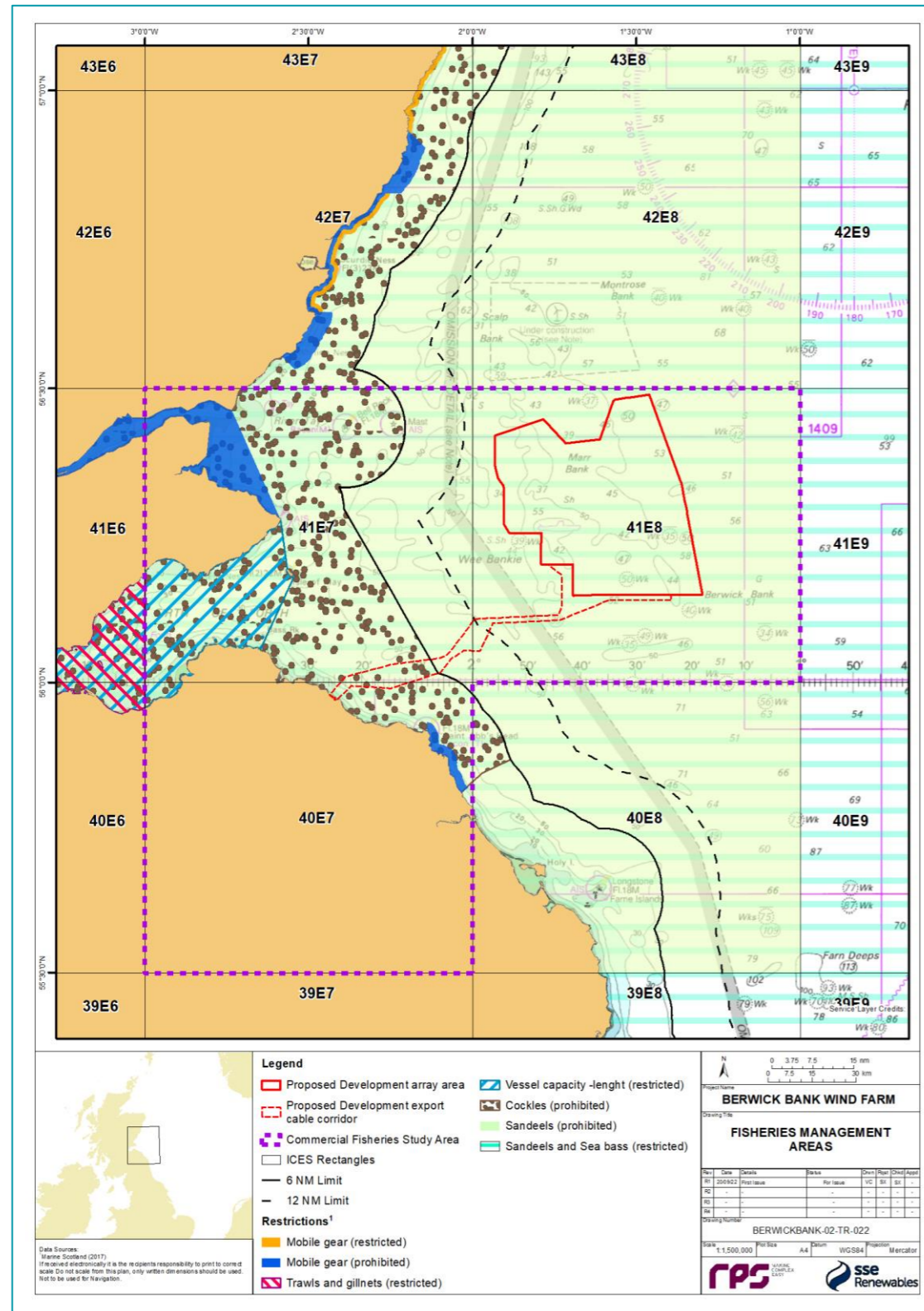


Figure 4.1: Fishing-Managed Areas (Source: Marine Scotland)

4.3. FIRTH OF FORTH BANK COMPLEX MPA MANAGEMENT MEASURES

12. As illustrated in Figure 4.2, the western and south-eastern sections of the Proposed Development array area overlap with the Firth of Forth Banks Complex Marine Protected Area (MPA). In this MPA, a Possible Marine Conservation Order (MCO) which includes fisheries related management measures has been proposed. In the areas identified by the Possible MCO for implementation of fisheries management measures, fishing activity by demersal trawls and scallop dredgers would be restricted/prohibited.
13. The Possible MCO management measures are currently undergoing consultation. Therefore, the fisheries management measures associated with it are yet to be finalised and formally implemented and may be subject to change.

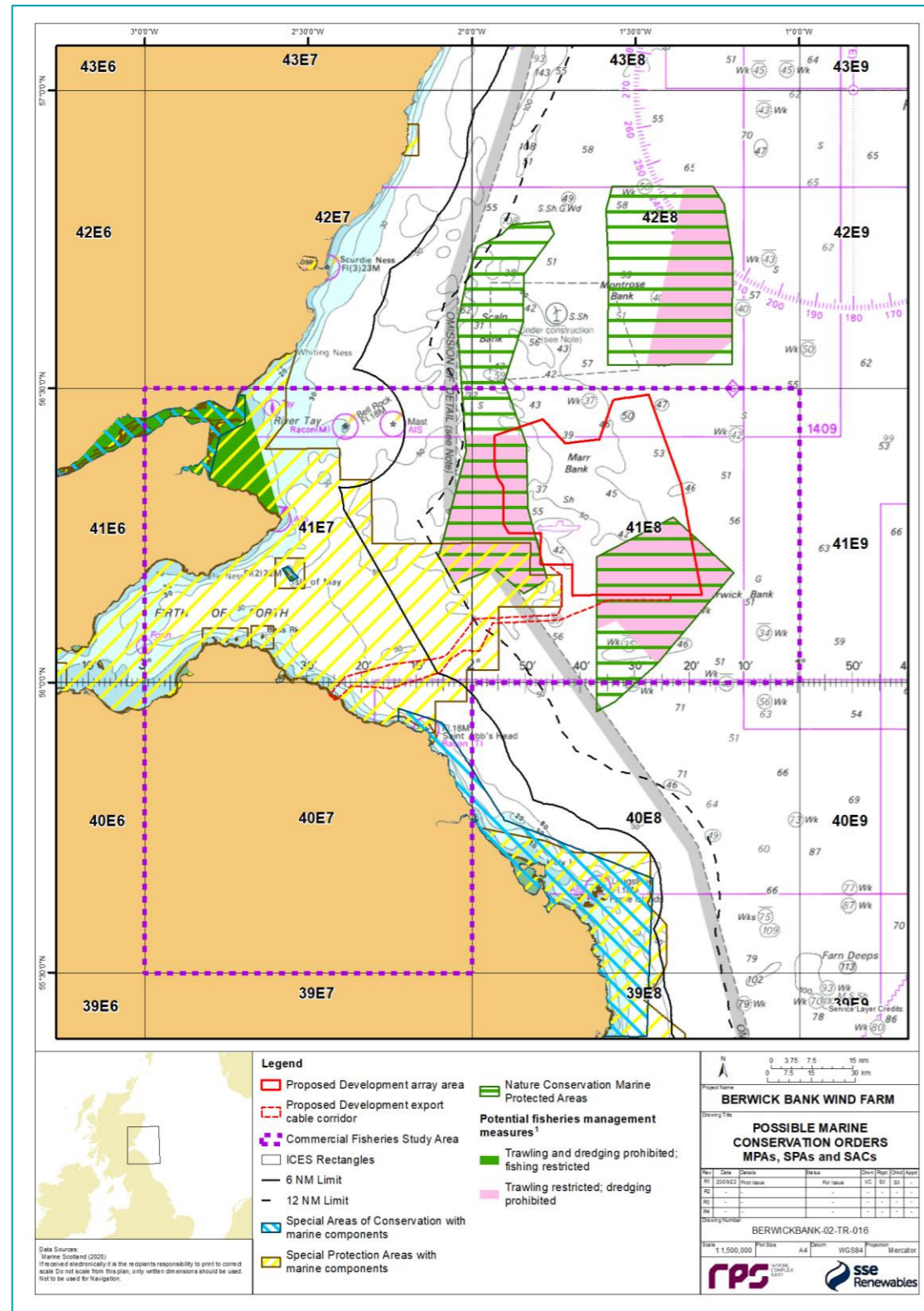


Figure 4.2: Possible Marine Conservation Orders (Source: Marine Scotland)

5. CONSULTATION TO INFORM THE BASELINE

14. In addition to the review of publicly available information, the commercial fisheries baseline has been informed through the collection of information from local fishermen active in the commercial fisheries study area.
15. An initial consultation meeting was held between the Applicant and the Scottish Fishermen's Federation (SFF), the NECRIFG, the Under 10 m Association and local Fisheries Industry Representative (FIRs) to discuss the commercial fisheries baseline in the commercial fisheries study area and the key concerns of the fishing industry with regard to the Proposed Development (Consultation meeting, 16 November 2021). During this meeting the limitations of the fisheries data and information that are publicly available were acknowledged, particularly with regard to vessels in the smaller length categories, as these are not currently satellite tracked (i.e. not included in the VMS dataset). To address this data gap, the Applicant had initially proposed to carry out direct face to face consultation with local fishermen and fisheries organisations via the Fisheries Liaison Officer (FLO) using standard questionnaires. The fisheries stakeholders that participated in the meeting on 16 November 2021, however, requested for this consultation to be carried by the local FIRs instead. To facilitate this, the Applicant provided local FIRs with consultation questionnaires for distribution amongst their members.
16. Early feedback provided by FIRs indicated that the collection of baseline information from their members via questionnaires was challenging within the timescales required by the Environmental Impact Assessment Report (EIAR) programme considering the time availability and other work commitments of both FIRs and fishermen. To address this issue, the Applicant offered the assistance of the FLO to the FIRs for the distribution and collection of questionnaires and extended the deadlines for submission of questionnaires to maximise participation.
17. Questionnaires were initially distributed to FIRs, SFF and the SWFPA on 9 December 2021 for circulation amongst their members. Consultees were asked to return completed questionnaires by 9 of January 2022. The deadline to submit questionnaires was then subsequently extended to 31 January 2022. Late responses received up to 9 March 2022 have however been given consideration.
18. Two of the local FIRs (Dunbar and Eyemouth) noted that their members were not comfortable completing the questionnaires at this early stage. This was due to concerns over the use of the information they provide. These FIRs requested meetings with the Applicant for clarification and further information. Meetings were organised by the Applicant at Dunbar and Eyemouth on 31 January 2022 and 24 February 2022, respectively. Following these meetings, some of the attendees completed and returned questionnaires.
19. Some of the fishermen potentially active in areas of the Proposed Development are not represented by local FIRs, particularly nomadic scallop dredgers and visiting squid trawlers. To ensure that these vessels were also covered as part of the consultation process, both the Moray Firth squid and scallop FIRs were contacted by the FLO directly and via the SWFPA in conjunction with the SFF. In addition, at the time the consultation was undertaken there was no local FIR covering the areas of Arbroath and Montrose, therefore consultation with local vessels from these areas was undertaken directly by the FLO.
20. Following the consultation process, a total of 53 completed questionnaires were received. As outlined in Table 5.1, these included information on the activities of vessels engaged in creeling (43) and demersal trawling (10). One of the demersal trawlers that completed the questionnaires, also provided details of inshore scallop grounds. The majority of questionnaires were completed by local vessels. No questionnaires were returned by nomadic scallop dredgers and only one questionnaire was completed by a visiting squid trawler. It should be noted that nomadic scallop dredgers and visiting squid vessels tend to be in the larger size category (i.e. over 15 m in length) and therefore the spatial distribution of their activity is well represented by the available VMS data.

21. The information provided in the questionnaires has been anonymised and is summarised in Table 5.2 and Table 5.3. Grounds depicted by fishermen have been georeferenced and amalgamated by fishing method/target species and are illustrated in Figure 5.1, Figure 5.2 and Figure 5.3.
22. An example of the questionnaires used for consultation is included within annex A. It should be noted that an older version of the site boundary was used in the questionnaires distributed in December 2021.

Table 5.1: Home Port and Primary Fishing Method of the Vessels for which Consultation Questionnaires Were Returned

Home Port	Number of Creelers	Number of Trawlers
Arbroath	12	-
Cove	3	-
Dunbar	11	5
Eyemouth	4	3
Holy Island	2	-
Montrose	5	-
Pittenweem	3	1
St. Abbs	3	-
Fraserburgh	-	1
Total	43	10

Table 5.2: Information Gathered from Vessels whose Primary Fishing Method is Creeling

Vessel Length (m)	Average no. Days Fishing per Year	Typical Fishing Trip Duration	Steamed Distance (nm)	Fishing Gear	Seasonality	Target Species
10	200	12 - 18 hours	2 miles out to 25 miles	Multi-purpose. 25 fleets of 20 - 25 pots, Single rig trawl	All year round, however gear changes location seasonally dependent on catch and weather. Mostly trawling first few months of the year	Crab, lobster, velvet crab and <i>Nephrops</i>
9.6	200	10 - 12 hours	2 miles out to 25 miles	Multi-purpose. 40 fleets of 15 pots, Single rig trawl	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster, velvet crab and <i>Nephrops</i>
10	200	10 - 12 hours	2 miles out to 25 miles	33 Fleets, 20 pots per fleet	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
8	200	10 - 12 hours	2 miles out to 25 miles	60 fleets, 15 pots per fleet	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
9.6	220	12 - 4 hours	2 miles out to 28 miles	40 fleets of 20 pots	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
9.6	250	10 - 12 hours	2 miles out to 25 miles	50 fleets, 20s	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
9.6	220	12 - 4 hours	2 miles out to 28 miles	63 fleets, 17 pots	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
7	200	8 - 10 hours	1 mile out to 26 miles	55 fleets, 15 pots	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
10.4	200	8 - 10 hours	1 mile out to 14 miles	70 fleets, 15 per fleet	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
9.95	280	10 - 14 hours	60	46 fleets, 20 pots per fleet	-	Lobster and crab
10	290	11-15 hours	50 - 60	47 fleets, 20 pots per fleet	-	Lobster and crab
9.9	140 - 240	6 - 14 hours	16 - 80 nm	40 to 60 fleets, up to 300 pots	All year	Lobster and crab
7.9	220	10-12 hours	out to 10miles from shore 10 - 30mls covered depending on gear area	25 fleets, 25 pots per fleet	All year	Crab, lobster and velvet crab
16 ft	200	6-8 hours	Out to two miles, 6-7mls total	20 fleets, 8 - 12 pots per fleet	All year	Crab, lobster and velvet crab
6.5	200	10-12 hours	out to 4 miles from shore 10-12mls covered	25 fleets, 25 pots per fleet	All year	Crabs, lobster and velvet crab
8.58	365	10-12 hours	20 - 30 nm	600 pots	All year	Lobster and crab
7.9	200	10-12 hours	100 m to 4 nm	40 fleets, 25 pots per fleet	All year	Lobster and crab
7.38	200	10-12 hours	100 m to 4 nm	30 fleets, 25 pots per fleet	All year	Lobster and crab
5.4	200	10-12 hours	100 m to 1.5 nm	20 fleets, 15 pots per fleet	March - December	Lobster and crab
7.01	200	10-12 hours	4 nm	24 fleets, 20 pots per fleet	All year	Crab, lobster and velvet crab
7.7	200	10-12 hours	4 nm	24 fleets, 20 pots per fleet	All year	Crab, lobster, and velvet crab
8.01	200	10-12 hours	Out to 4nm	26 fleets, 25 pots per fleet	All year	Crab, lobster, velvet crab
8.14	200	10-12 hours	3 nm	26 fleets, 20 pots per fleet	All year	Crab, lobster and velvet crab
9.98	200	10-12 hours	4 nm	27 fleets, 20 pots per fleet	All year	Crab, lobster and velvet crab
8.41	365	12 hours	4 nm	Potting, 40 fleets 20 to a fleet	All year	Crab, lobster and velvet crab
5.55	213	12 hours	1 nm	20 fleets, 15 pots per fleet	May to November	Crab, lobster and velvet crab
11.98	240	14 hours	3 - 50 miles	85 fleets, between 30 and 50 pots per fleet	All year	Crab, lobster and velvet crab
11.98	240	14 hours	3 - 50 miles	85 fleets, between 30 and 50 pots per fleet	All year	Crab, lobster and velvet crab

Vessel Length (m)	Average no. Days Fishing per Year	Typical Fishing Trip Duration	Steamed Distance (nm)	Fishing Gear	Seasonality	Target Species
11.95	240	24 hours	4 hours	32 fleets, 40 pots per fleet	-	Crab, lobster and velvet crab
9.81	-	12 - 16 hours	25 - 30 nm	30 pots per fleet	-	Crab and lobster
10.1	200	8 - 10 hours	65	15 fleets, 40 pots, 600 pots total	-	Crab, lobster and velvet crab
10.1	200	9 - 10 hours	65	15 fleets, 40 pots, 600 pots total	-	Crab, lobster and velvet crab
10	180	12 hours	60 - 100 nm	30 fleets, 20 pots per fleet. Caithness creels	All year round	Lobster and crab
10	180	12 hours	60 - 100 nm	31 fleets, 20 pots per fleet. Caithness creels	All year round	Lobster and crab
10	180	12 hours	60 - 100 nm	31 fleets, 20 pots per fleet. Caithness creels	All year round	Lobster and crab
10	180	12 hours	60 - 100 nm	31 fleets, 20 pots per fleet. Caithness creels	All year round	Lobster and crab
10	180	12 hours	60 - 100 nm	31 fleets, 20 pots per fleet. Caithness creels	All year round	Lobster and crab
12	250	12-18 hours	2 miles out to 45 miles	3000 creels, 50 fleets	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
8	250	12 hours	2 miles out to 40 miles	70 fleets, 30 pots per fleet	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
10	250	12 hours	2 miles out to 40 miles	70 fleets, 30 pots per fleet	All year round, however gear changes location seasonally dependent on catch and weather	Crab, lobster and velvet crab
8.04	240 - 280	10 hours	20 nm	27 fleets, 20-30 pots per fleet	-	Lobster and crab
9.15	250	9 hours	25 nm	35 fleets, 30 pots per fleet	All year round	Lobster and crab
9.94	250	9 hours	25 nm	35 fleets, 30 pots per fleet	All year round	Lobster and crab

Table 5.3: Information Gathered from Vessels whose Primary Fishing Method is Trawling

Vessel Length (m)	Average no. Days Fishing per Year	Typical Fishing Trip Duration	Steamed Distance (nm)	Fishing Gear	Seasonality	Target Species
12.2	200	24 - 36 hours	2-50 nm	Single rig	All year round Firth of Forth May to July Farn Deeps October to January Dunbar September to January	<i>Nephrops</i> and squid
11.9	200	24 - 36 hours	2-50 nm	Twin rig	All year round Firth of Forth May to July Farn Deeps October to January Dunbar September to January.	<i>Nephrops</i> and squid
10.8	200	25 - 36 hours	2-50 nm	Single ring	All year round Firth of Forth May to July Farn Deeps October to January Dunbar September to January	<i>Nephrops</i> and squid
13.1	4-5 days/week	14 hours	4 - 15 nm	Twin <i>Nephrops</i> Single squid	Prawns all year Squid September November	<i>Nephrops</i> and squid
11.58	4-5 days/week	14 hours	4 - 15 nm	Twin <i>Nephrops</i> Single squid	Prawns all year Squid September November	<i>Nephrops</i> and squid
12.88	215	14 hours	6 to 30 nm	Twin Rig	All year round	<i>Nephrops</i>
17.95	180	1-4 days	2 – 60 nm	Twin Rig. Sometimes single rig inside 12 nm off North Shields	All year. Squid in August - October/Nov	<i>Nephrops</i> and squid
14	200	1-2 days	5 -20 nm	Single rig trawl. Scallop dredge (6 dredges per side).	All year round Squid season in September – October	<i>Nephrops</i> , squid and scallops
16.5	-	2 days	-	Twin Rig	-	<i>Nephrops</i>
20.25	-	10 days	-	Otter trawl, with a single hopper net when targeting squid. Twin rig for <i>Nephrops</i> and fish and single rig for squid	January – May (<i>Nephrops</i> and fish) June – December (squid and fish) July-October main squid season	<i>Nephrops</i> , squid and fish

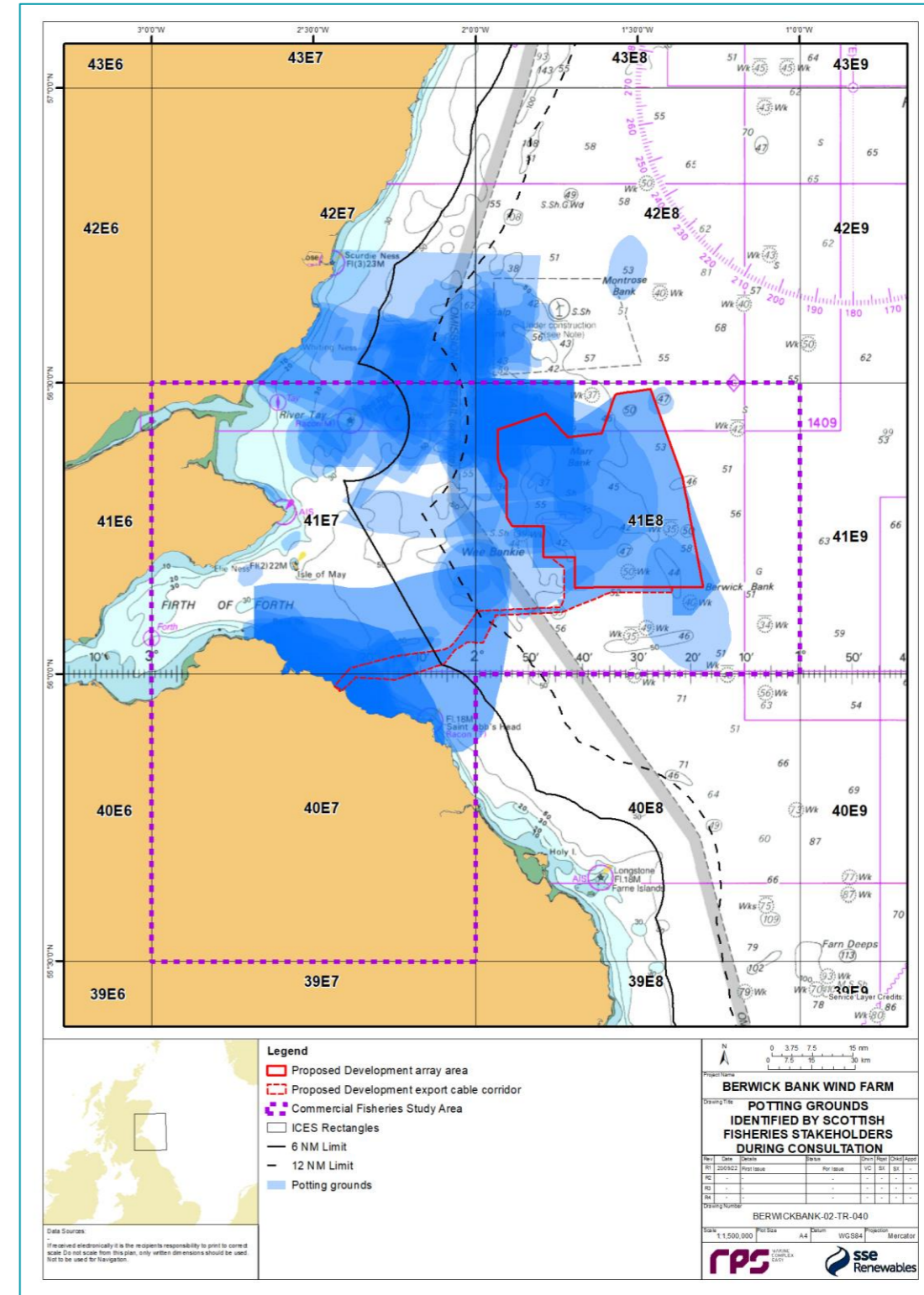


Figure 5.1: Creeling Grounds Identified During Consultation

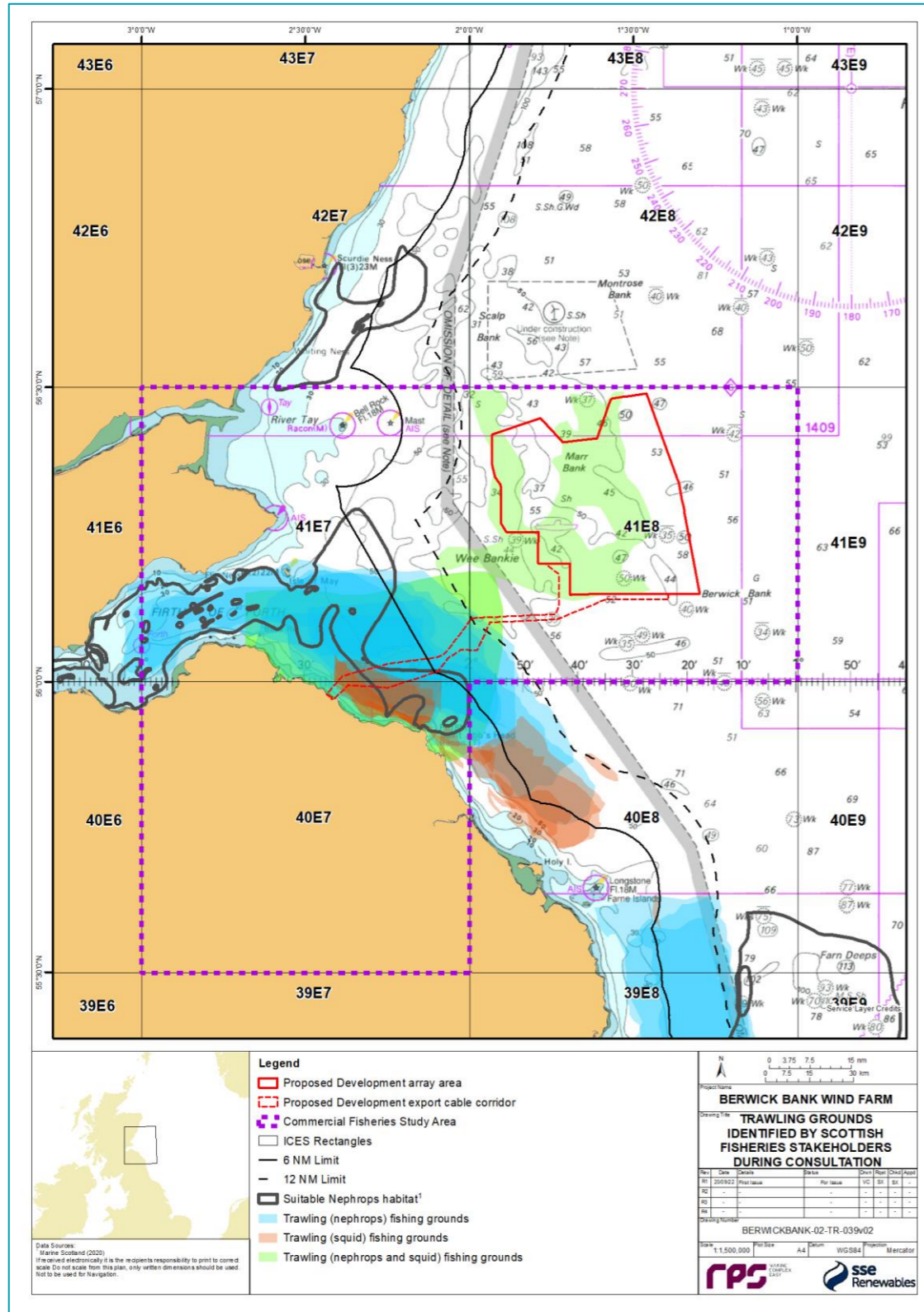


Figure 5.2: Trawling Grounds (*Nephrops* and Squid) Identified During Consultation

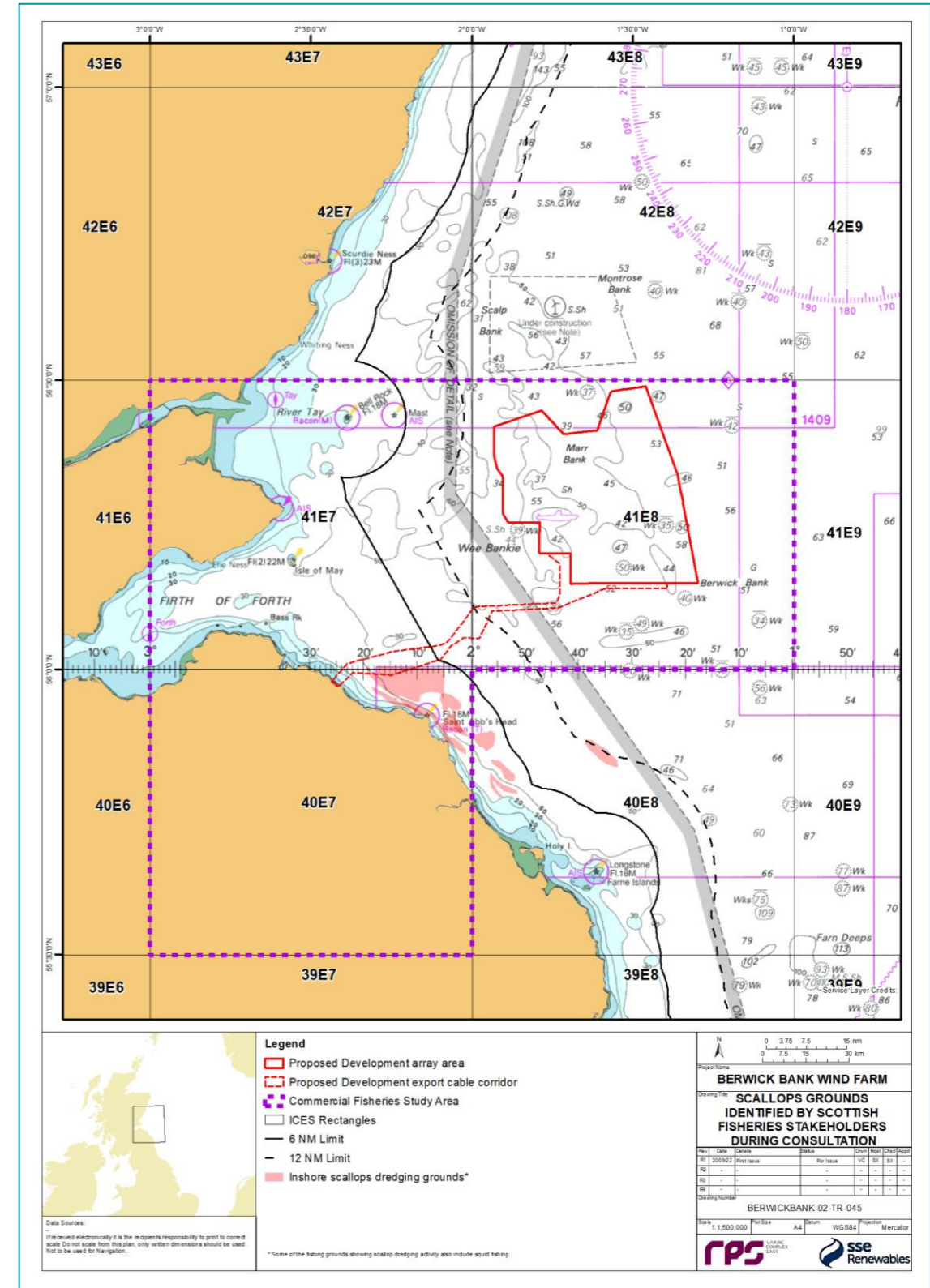


Figure 5.3: Inshore Scallop Grounds Identified During Consultation

6. BASELINE

6.1. OVERVIEW

23. The commercial fisheries study area supports a range of commercial fishing activities. As shown in Table 6.1: and Figure 6.1, fisheries surveillance sightings data for the period 2011 to 2020 suggest that demersal trawling accounts for the majority of fishing activity in the commercial fisheries study area, followed by creeling⁴ and scallop dredging.
24. The majority of surveillance sightings of demersal trawlers are found within the 6 nm limit in ICES rectangles 41E7 and 40E7 and are therefore predominantly of relevance to the Proposed Development export cable corridor. Surveillance sightings of creelers also appear to be more predominant in inshore areas within the 6 nm limit. Although in comparatively low numbers, sightings of creelers have also been recorded in areas further offshore, including within the boundary of the Proposed Development array area (Figure 6.1).
25. In the case of scallop dredging, surveillance sightings suggest that within the commercial fisheries study area fishing activity is predominantly focused around ICES rectangle 41E8, where the Proposed Development array area is located, and to its west, in the northern section of ICES rectangle 41E7. As it is apparent from Figure 6.1, sightings of vessels engaged in scallop dredging in these areas are relatively low compared to those recorded in grounds to the north (e.g. in ICES rectangles 42E7 and 42E8).

The nationality of the vessels recorded during surveillance activities is illustrated in Figure 6.2: As shown practically the totality of sightings within the commercial fisheries study area are of UK vessels. Activity by non-UK vessels in the commercial fisheries study area is expected at negligible levels. A total of nine sightings of non-UK vessels have been recorded during the period 2011 – 2020. These correspond with Danish vessels (sandeel trawlers) and were recorded during 2012 (eight sightings) and 2015 (one sighting). In this context it is important to note that the commercial fisheries study area falls within the area where a prohibition to fish for sandeel with towed gears with a cod-end mesh size of less than 32 mm is in place (Figure 4.1). Sandeel trawlers typically use mesh-sizes under 32 mm (Hawkings *et al.*, 1998) and therefore, at present, Danish vessels engaged in the sandeel fishery would not be expected to be active in the commercial fisheries study area.

Table 6.1: Surveillance Sightings Recorded within the Commercial Fisheries Study Area (2011 - 2020)

ICES Rectangle	Vessel Type	Number of Sightings	% of Total Sightings
40E7	Demersal Stern Trawler	94	69.1%
	Trawler (All)	25	18.4%
	Potter/Whelker	12	8.8%
	Scallop Dredger (French/Newhaven)	4	2.9%
	Stern Trawler (Pelagic/Demersal)	1	0.7%
41E7	Demersal Stern Trawler	317	68.6%
	Potter/Whelker	54	11.7%
	Trawler (All)	52	11.3%
	Scallop Dredger (French/Newhaven)	27	5.8%
	Hand gathering/Hand Lining	4	0.9%
	Unknown	3	0.6%
	Stern Trawler (Pelagic/Demersal)	2	0.4%
	Demersal Side Trawler	1	0.2%
	Other Dredges (Including Mussel)	1	0.2%
	Pelagic Stern Trawler	1	0.2%
41E8	Scallop Dredger (French/Newhaven)	35	61.4%
	Industrial Trawler (Sandeeler)	8	14.0%
	Potter/Whelker	5	8.8%
	Demersal Stern Trawler	3	5.3%
	Trawler (All)	2	3.2%
	Pair Trawler (All)	2	3.5%
	Pelagic Stern Trawler	1	1.8%
Stern Trawler (Pelagic/Demersal)	1	1.8%	

⁴ Creelers are referred to as "potters/whelkers" in the surveillance sightings dataset

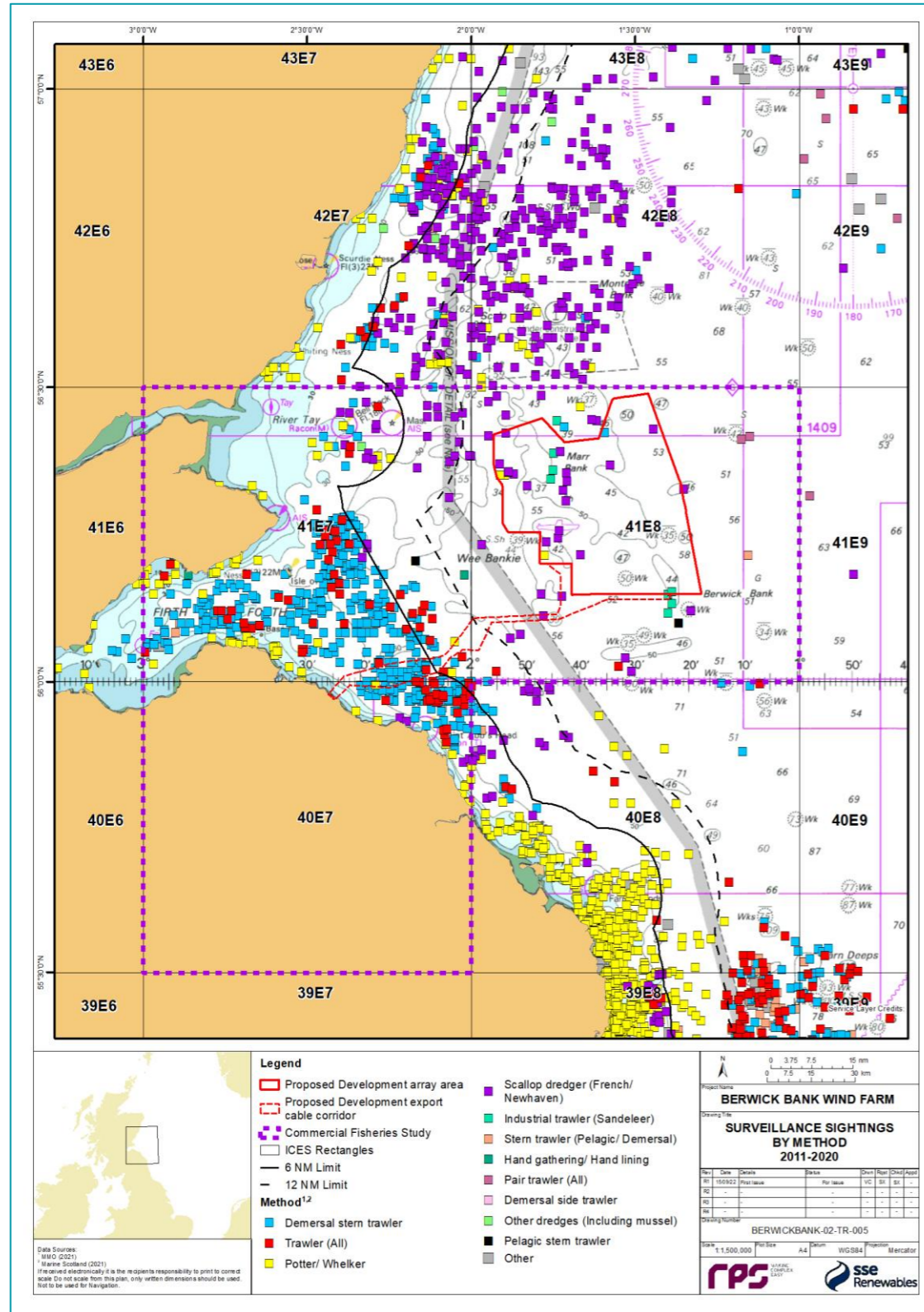


Figure 6.1: Surveillance Sightings by Method (2011 - 2020) (Source: MMO and Marine Scotland)

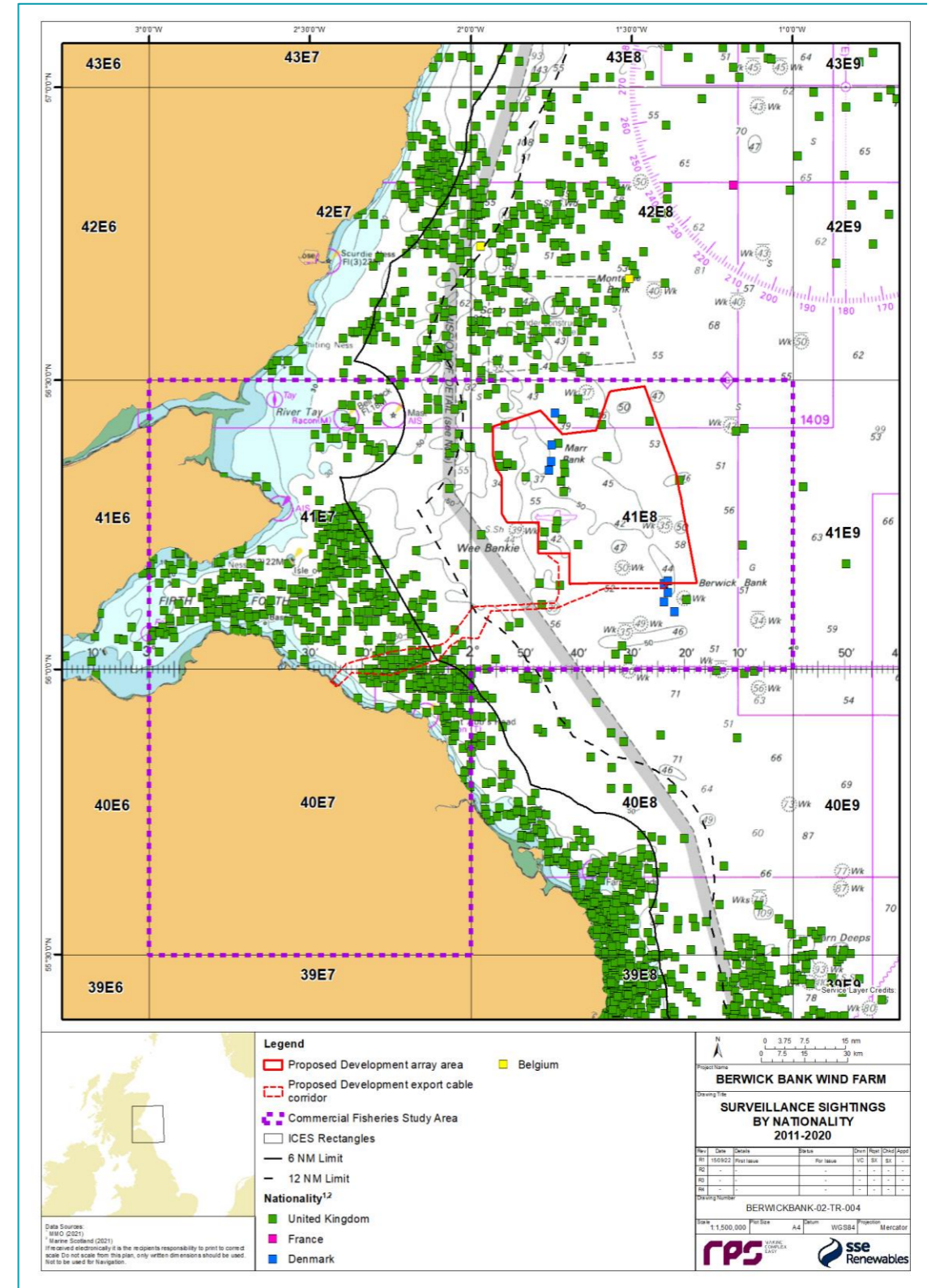


Figure 6.2: Surveillance Sightings by Nationality (2011 - 2020) (Source: MMO and Marine Scotland)

26. An overview of the value (£) of the landings from the commercial fisheries study area is provided in Figure 6.3 to Figure 6.5, based on analysis of landings by ICES rectangle, species and fishing method.
27. As shown, demersal trawling represents the main fishing activity by value in the commercial fisheries study area, followed by creeling⁵ and scallop dredging (Figure 6.3).
28. Demersal trawling is predominantly undertaken in inshore rectangle 41E7 and to a lesser extent within rectangle 40E7 (Figure 6.4). *Nephrops* is the principal species targeted by demersal trawlers, however, other species, particularly squid, are also targeted by these vessels at times (Figure 6.3 and Figure 6.5).
29. The lobster and crab fishery contributes significantly to the overall value of the landings across the commercial fisheries study area, including in offshore rectangle 41E8, where the Proposed Development array area is located. Overall, however, landings of lobster and crab are higher in inshore areas, particularly in ICES rectangle 41E7 (Figure 6.5).
30. Scallop dredging accounts for relatively lower landings values than demersal trawling and creeling. The majority of the landings of scallop in the commercial fisheries study area come from ICES rectangles 41E8 and 41E7.

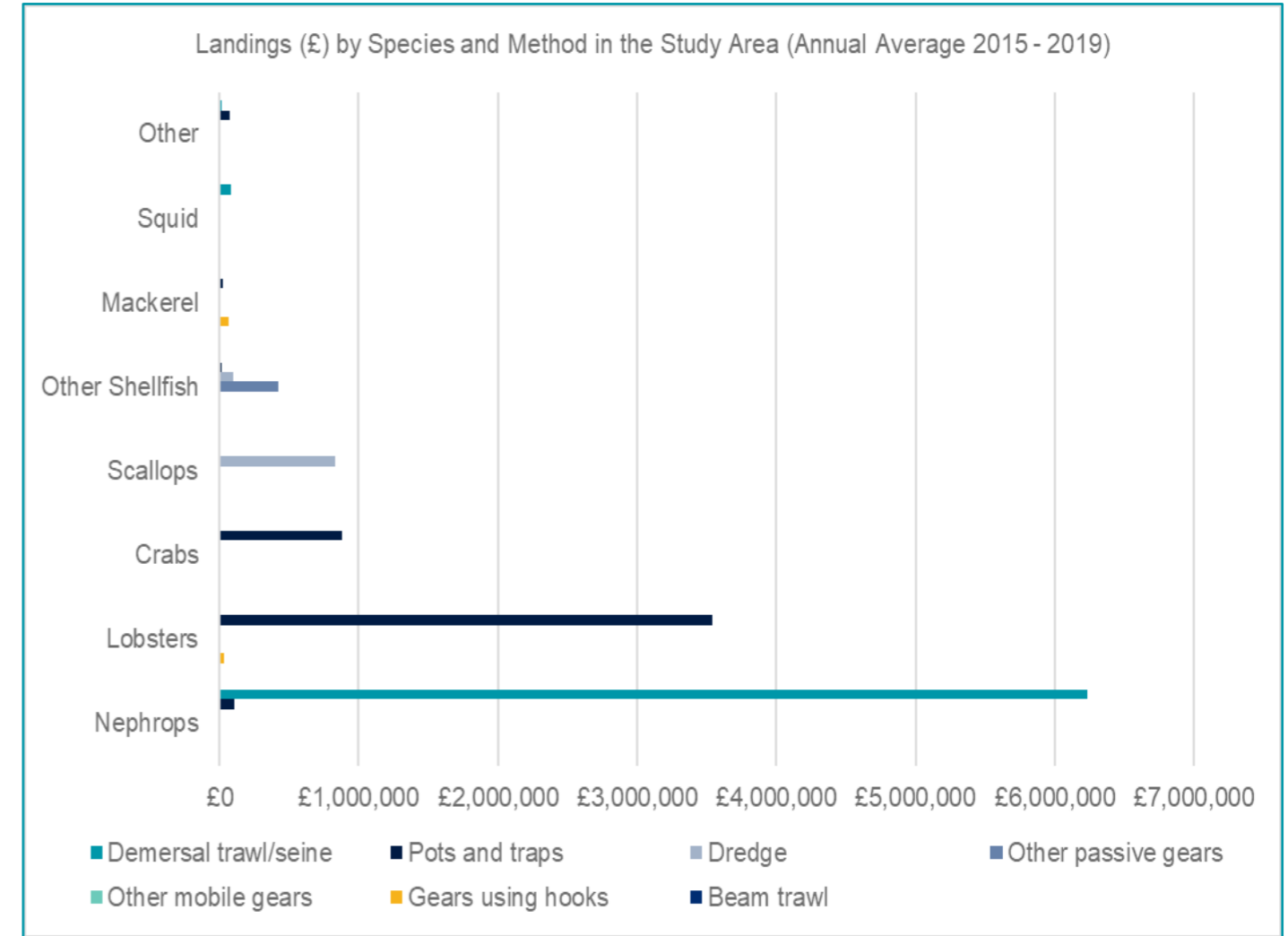


Figure 6.3 Landings (£) in the Commercial Fisheries Study Area by Species and Method (average 2015 - 2019) (Source: MMO)

⁵ Creeling activity is included under the gear category "pots/traps" in the landings by ICES rectangle dataset

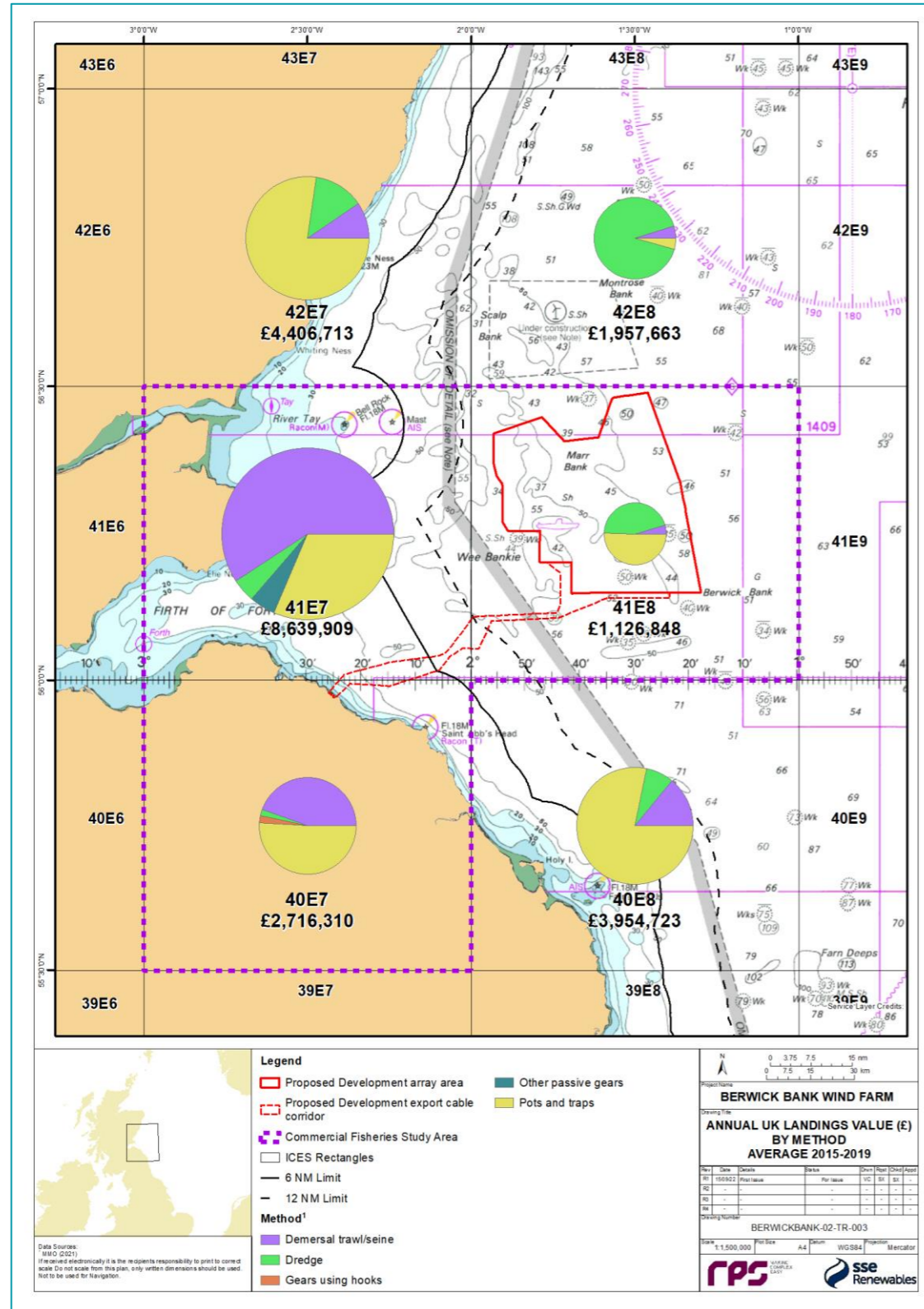


Figure 6.4: Annual UK Landings Value (£) by Method (Average 2015 - 2019) (Source: MMO)

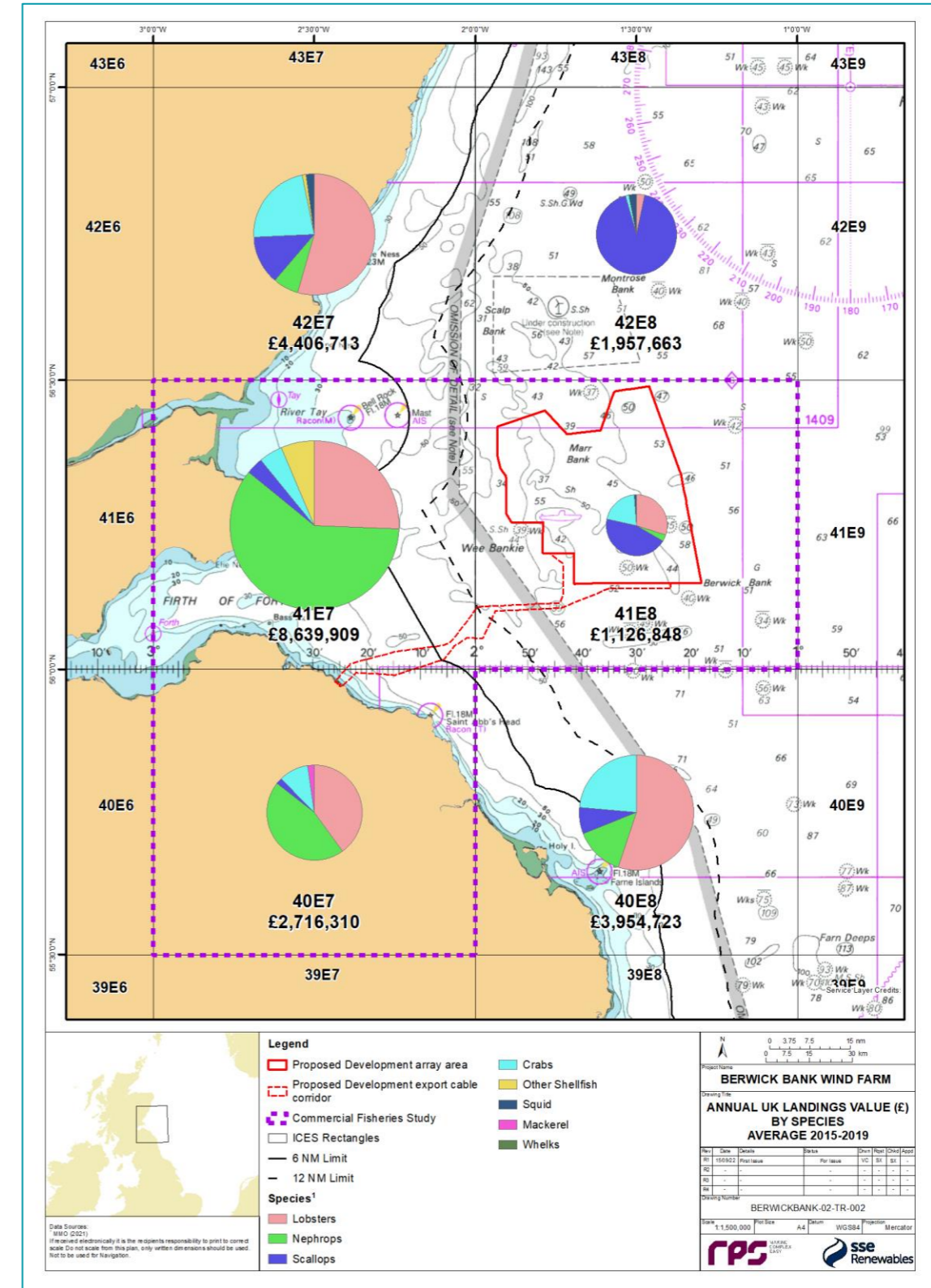


Figure 6.5: Annual Landings Values (£) by Species (Average 2015 - 2019) (Source: MMO)

6.2. DEMERSAL TRAWLING

31. An indication of the principal areas targeted by demersal trawlers in the commercial fisheries study area is provided in Figure 6.6 to Figure 6.8 based on analysis of VMS data by value for vessels over 15 m in length (annual average 2015 -2019), surveillance sightings of demersal trawlers and information on the distribution of trawlers presented in Shelmerdine and Mouat (2021).
32. As shown, overall activity by demersal trawlers appears to concentrate in inshore areas, predominantly within the 6 nm limit, including in areas that overlap with the Proposed Development export cable corridor, with very low levels of fishing anticipated in the Proposed Development array area.
33. It should be noted that a significant number of demersal trawlers active in the area are under 15 m in length, and therefore, their activity is not accounted for in the VMS dataset. In addition, as described in section 6.1, whilst *Nephrops* is the principal species targeted by demersal trawlers in areas of relevance to the Proposed Development, other species, particularly squid, are also targeted by some vessels. The data for demersal trawlers presented in Figure 6.6 and Figure 6.7, includes activity by demersal trawlers regardless of target species.
34. Detailed information is also provided for the *Nephrops* (section 6.2.1) and squid (section 6.2.2) fisheries.

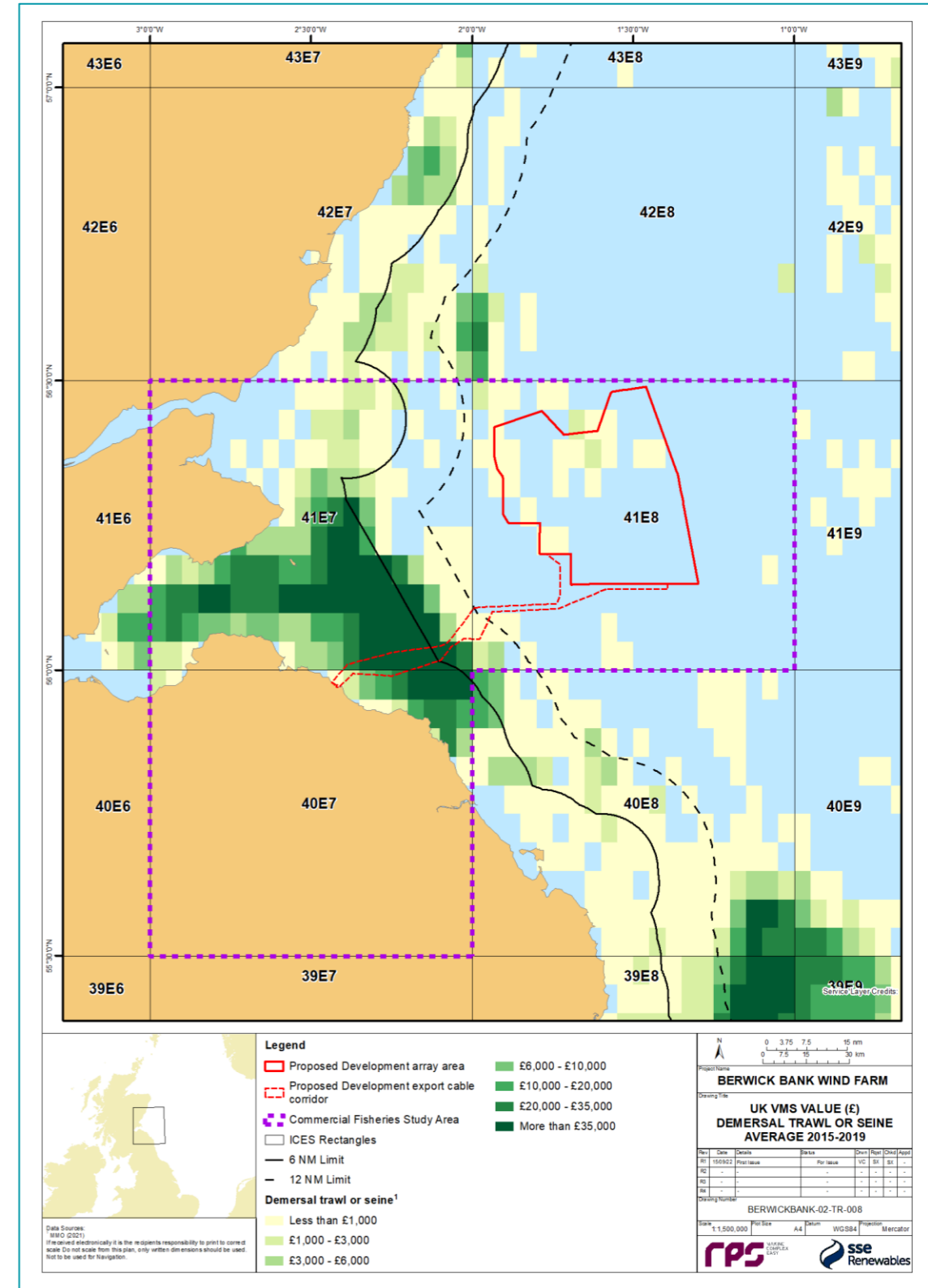


Figure 6.6: VMS Value (£) Demersal Trawl/Seine (Average 2015 - 2019) (Source: MMO)

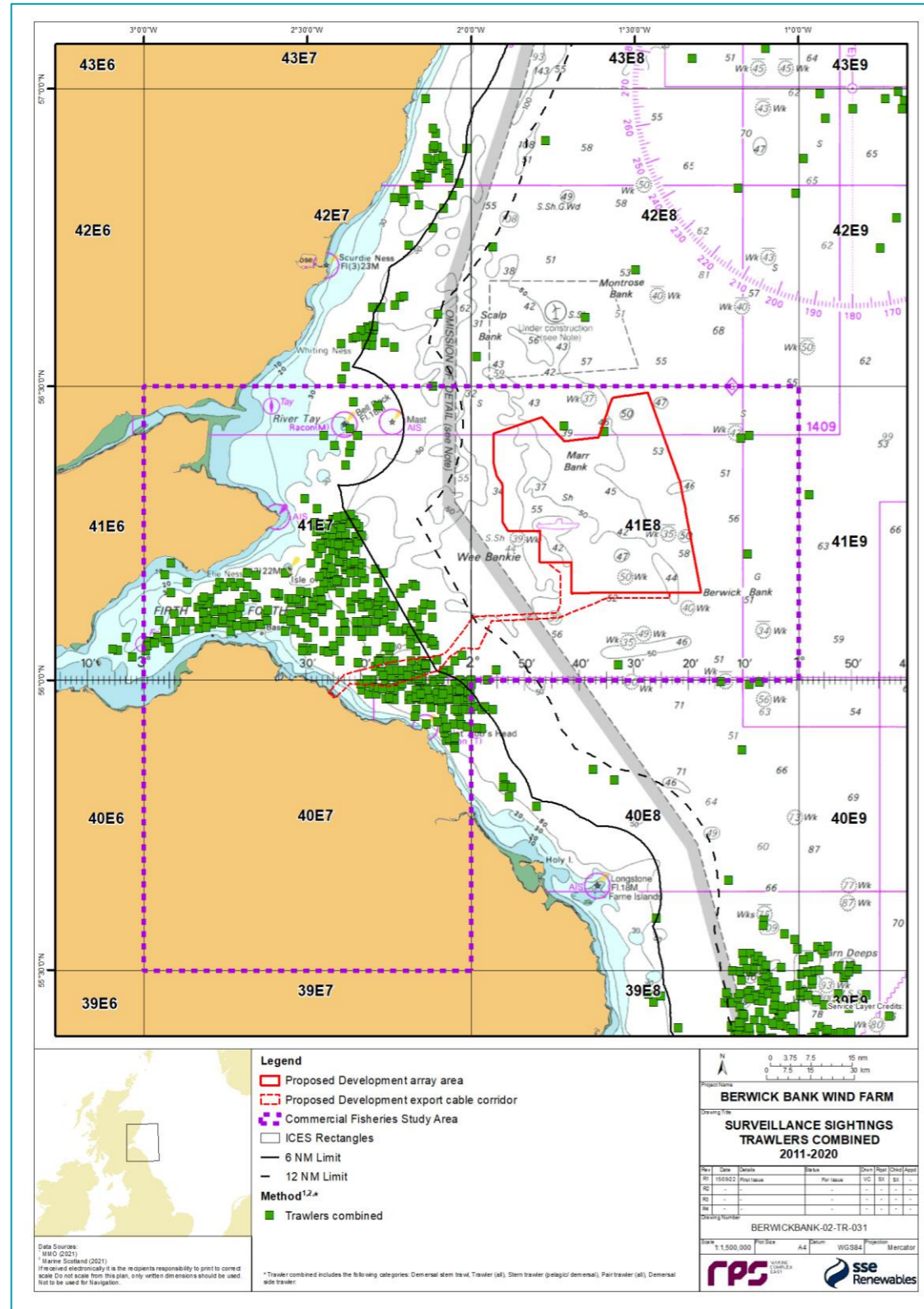


Figure 6.7: Surveillance Sightings of Demersal Trawlers (2011 - 2020) (Source: MMO and Marine Scotland)

Berwick Bank Wind Farm

Offshore Environmental Impact Assessment

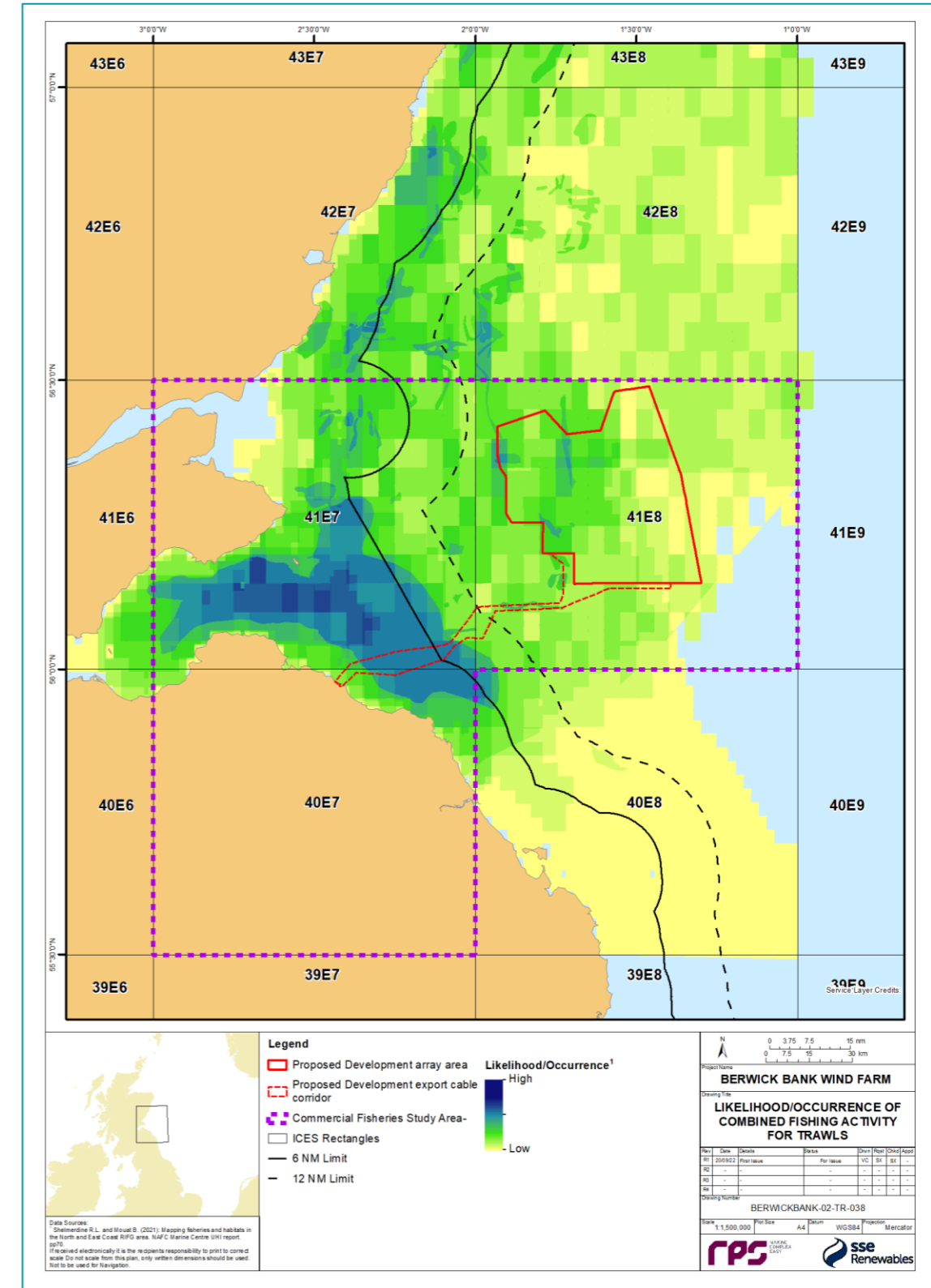


Figure 6.8: Combined Fishing Activity for Trawls (Source: Shelmerdine and Mout, 2021)

6.2.1. NEPHROPS FISHERY

Fishing gear, vessels and operating practices

35. *Nephrops* (also known as Dublin Bay prawn or Langoustine) are highly substrate-specific, dwelling in areas of fine and silty mud sediment that facilitates their burrowing behaviour. For the purposes of management and stock assessment, *Nephrops* stocks are split into “Functional Units” (FU). The distribution of mud habitat in the commercial fisheries study area and the boundaries of FUs are illustrated in Figure 6.9. As shown, the inshore rectangles of the commercial fisheries study area (rectangles 41E7 and 40E7) fall within FU8 (Firth of Forth) and the inshore section of the Proposed Development export cable corridor overlaps with part of the *Nephrops* habitat identified within FU8. The level of overlap between the Proposed Development export cable corridor and identified *Nephrops* habitat is however relatively small (approximately 31.4 km², which represents less than 3.5% of the overall *Nephrops* habitat identified in FU8).
36. Vessels active in the commercial fisheries study area are typically 10 m - 20 m in length. Twin-rig trawls are most commonly used in this area; however, some vessels use single trawl nets (Figure 6.10). In twin-rigged trawling, the vessel tows two nets that are spread open with trawl doors and kept flush with the seabed by a clump weight positioned between the two nets.
37. During consultation typical fishing trip durations reported by demersal trawlers were between 24 hours and 36 hours and steaming distances between 2 nm and 50 nm.

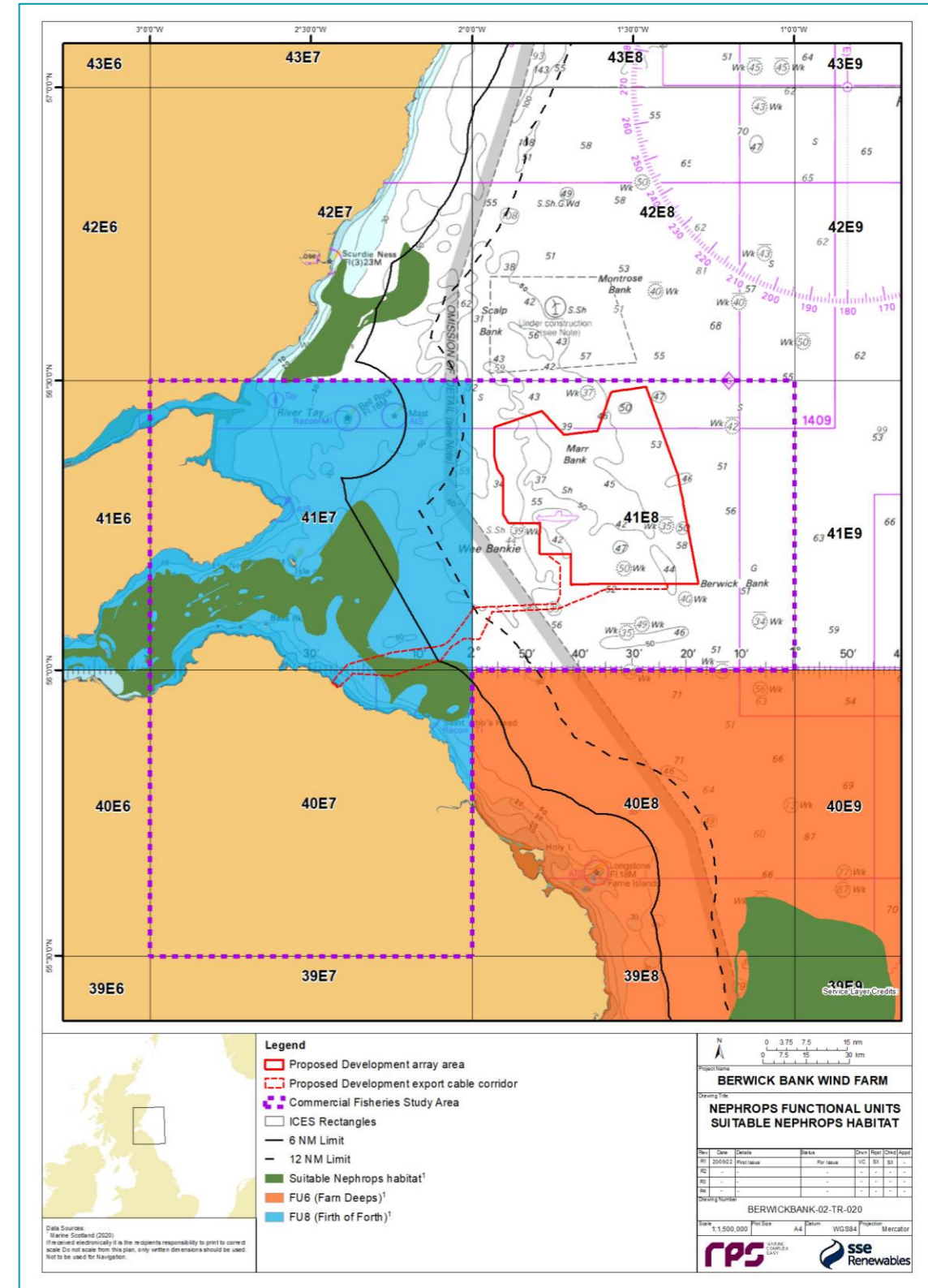


Figure 6.9: *Nephrops* Functional Units and Suitable Habitats (Source: Marine Scotland)



Figure 6.10: Two Twin-Rig Trawlers in Port Seton (© BMM)

38. *Nephrops* are targeted all year round. An indication of the seasonality of the *Nephrops* fishery is given in Figure 6.11 based on analysis of landings values by month (average 2015 -2019). As shown, the highest landings are recorded from June to August, peaking in July. Relatively high landings values are also recorded from November to January. Similarly, during consultation, the year-round nature of the fishery was noted and the periods between May to July and October to January were reported as the main fishing seasons in the Firth of Forth and in the grounds off Dunbar, respectively (Table 5.2).

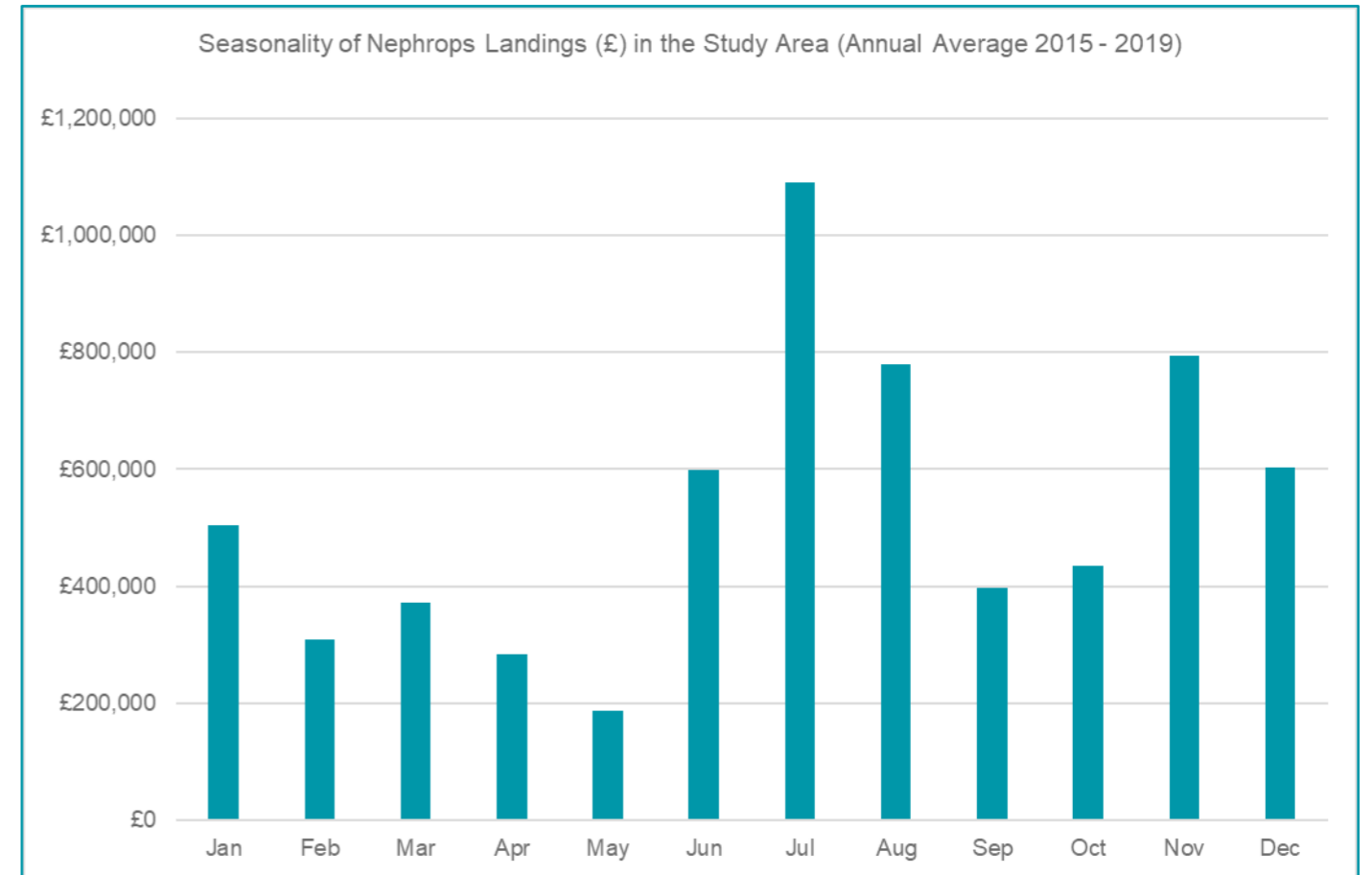


Figure 6.11: Monthly Nephrops Landings (£) in the Study Area (Annual Average 2015 - 2019) (Source: MMO)

Distribution of fishing activity

39. An indication of the distribution of *Nephrops* trawling activity within the commercial fisheries study area is provided in Figure 6.12 to Figure 6.14 based on MMO landings data, ScotMap data for under 15 m *Nephrops* trawlers (Kafas *et al.*, 2014) and Marine Scotland's VMS data (effort) for over 15 m *Nephrops* demersal trawlers (average 2009 -2017), respectively.
40. As it is apparent from the datasets, the *Nephrops* fishery concentrates in the inshore section of the commercial fisheries study area, particularly in rectangle 41E7 and 40E7, overlapping with the Proposed Development export cable corridor. The available data indicates that the Proposed Development array area supports negligible levels of activity by vessels engaged in this fishery and the majority of activity is focused within the 6 nm limit.
41. The main *Nephrops* grounds identified from the data above are consistent with those reported by fishermen during consultation (see Figure 5.2).

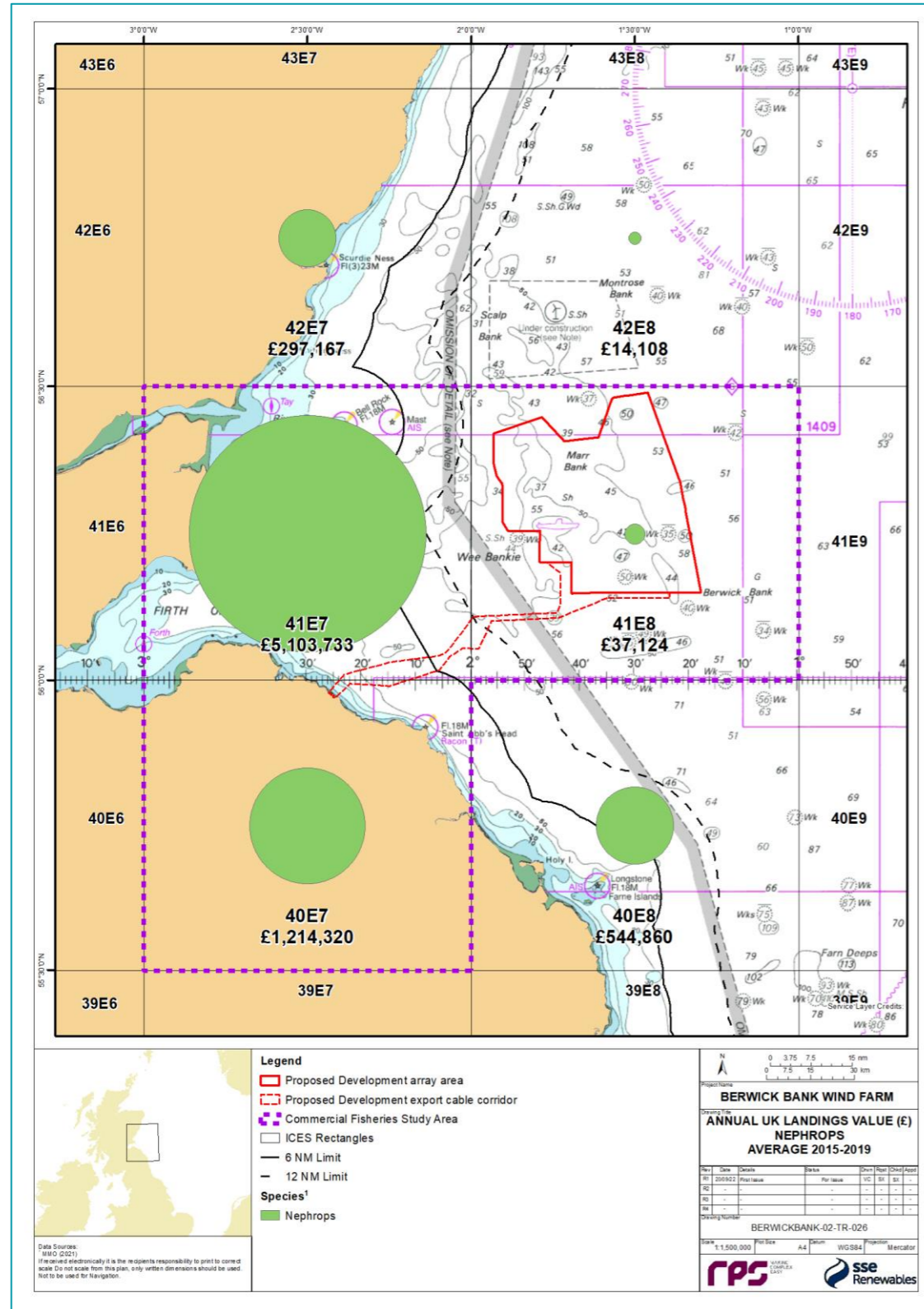


Figure 6.12: Annual Landings Value (£) *Nephrops* (Average 2015 - 2019) (Source: MMO)

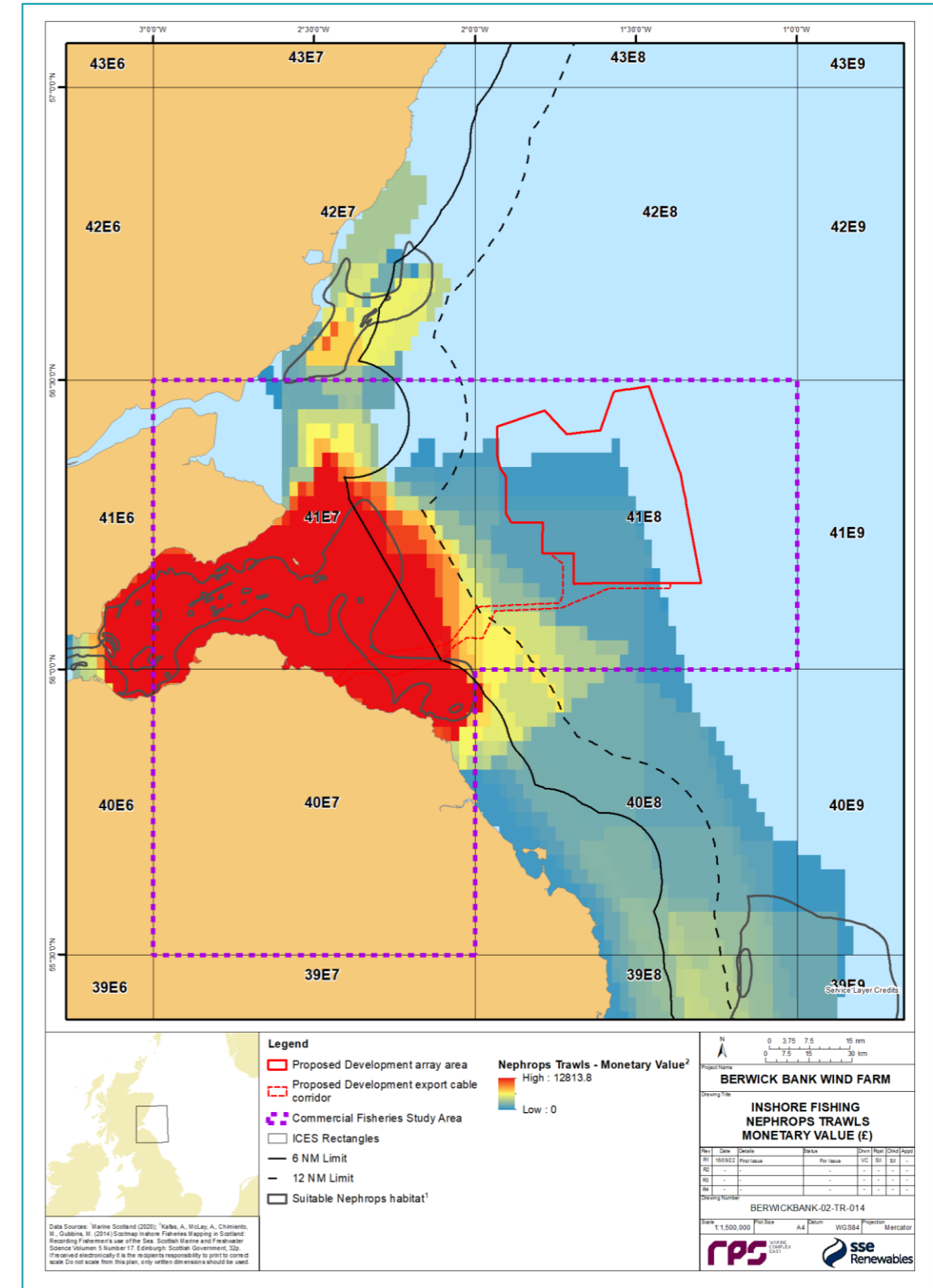


Figure 6.13: Inshore Fishing *Nephrops* Trawls Monetary Value (£) (Kafas et al., 2014)

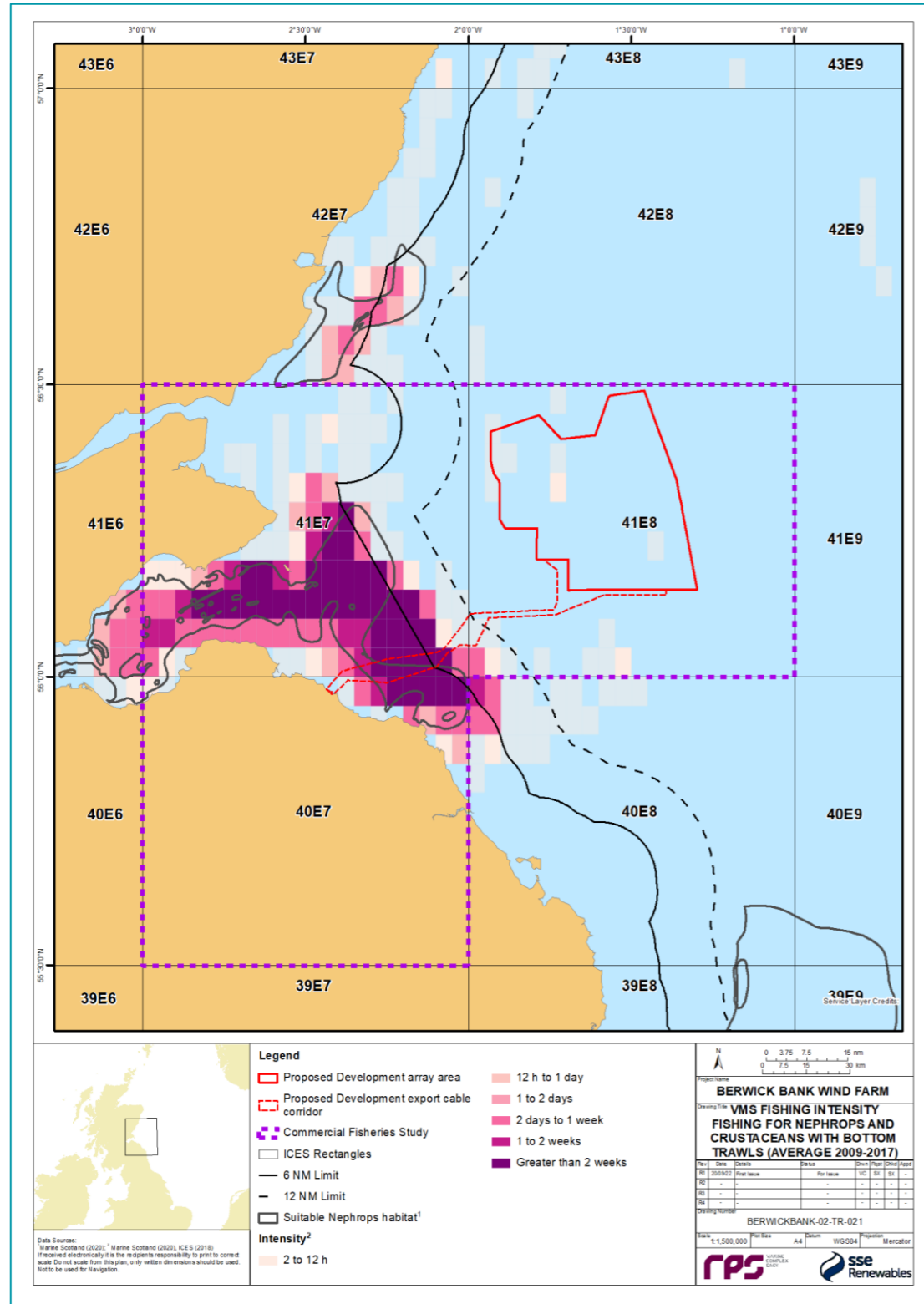


Figure 6.14: VMS Fishing Intensity (*Nephrops* and Crustaceans with Bottom Trawls) (Average 2009 - 2017) (Source: Marine Scotland)

6.2.2. SQUID FISHERY

Fishing gear, vessels and operating practices

42. The squid fishery in the Firth of Forth and Firth of Tay areas is relatively new, with the Moray Firth being a more established squid fishing ground. Nevertheless, the Firth of Forth and Firth of Tay seasonal squid fishery is becoming an increasingly viable alternative to the *Nephrops* fishery in the area.
43. Squid are semi-demersal and their distribution tends to be associated with specific rocky and hard seabed substrates. In Scottish waters, squid exhibit a distinct seasonal migration pattern, travelling up to 500 km from the west coast of Scotland to the east coast in the winter months (Hastie, *et al.*, 2009).
44. Squid are typically caught using a single demersal trawl net with rockhoppers (Figure 6.15,) with many of the trawlers that target *Nephrops* changing gear to target the seasonal squid fishery. As noted in section 6.2.1 the *Nephrops* fishery is year-round, however if catches of *Nephrops* are low fishermen may decide to switch gear and target squid instead during the squid season. In addition to local demersal trawlers, visiting vessels based in other areas in the north-east coast of Scotland may also target squid in the commercial fisheries study area at times.

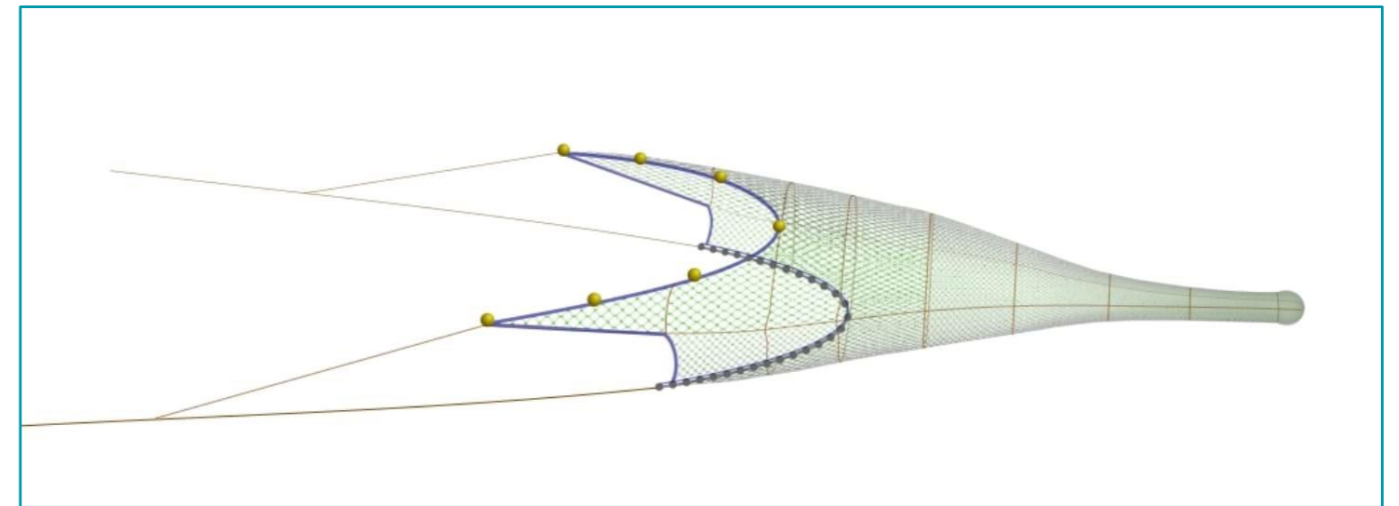


Figure 6.15: Single Demersal Rockhopper Trawl (Seafish©)

45. Monthly landings of squid in the commercial fisheries study area (average 2015 - 2019) are shown in Figure 6.16 based on analysis of landings (£) by month (average 2015 - 2019). As shown, the squid fishery is highly seasonal and is primarily undertaken during the late summer/early autumn months with peak landings generally recorded around September. In line with this, during consultation, local fishermen targeting squid in the commercial fisheries study area reported that the main squid season runs between August and December (Table 5.3).

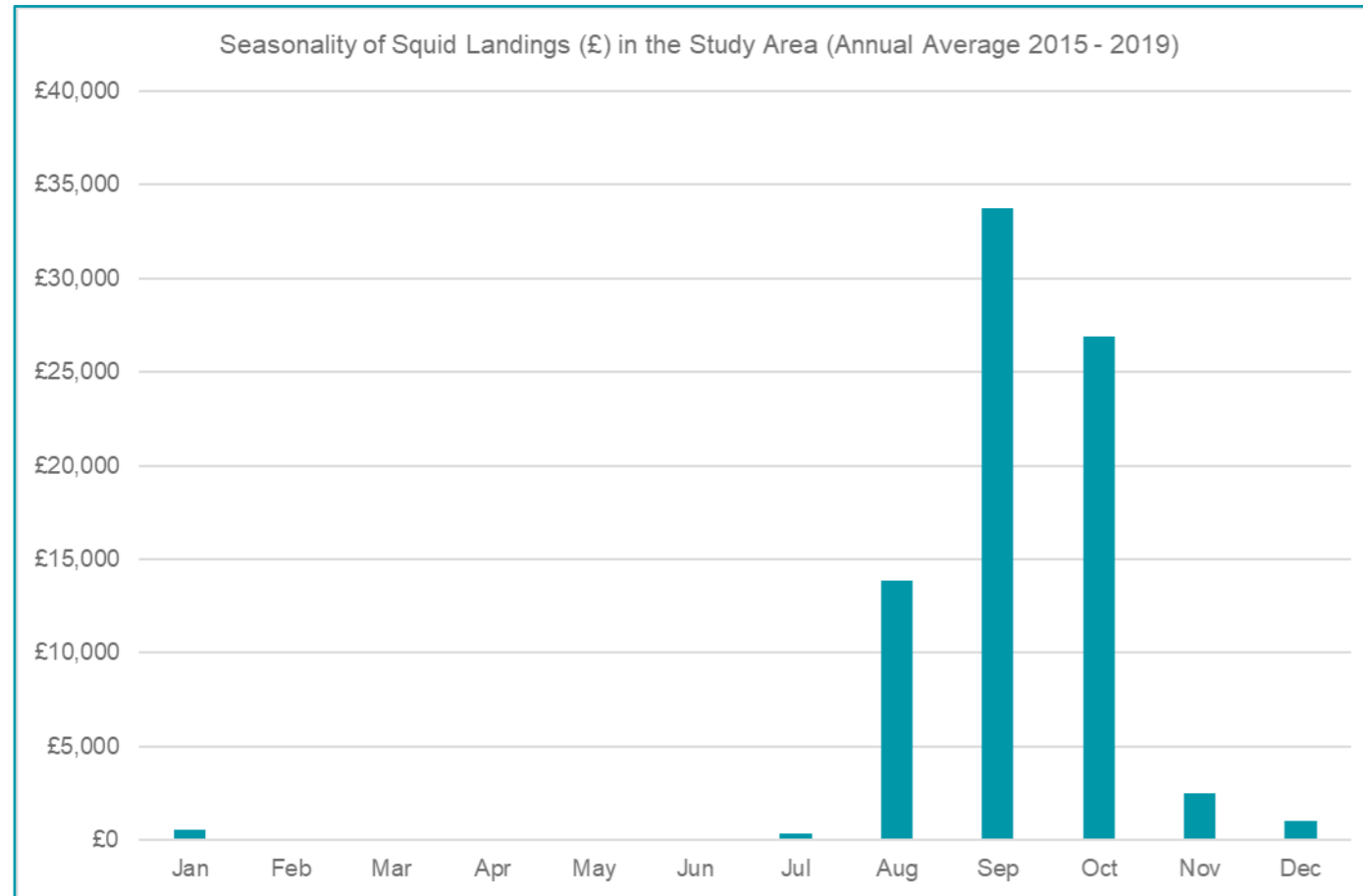


Figure 6.16: Monthly landings of Squid (£) in the Commercial Fisheries Study Area (Annual Average 2015 - 2019) (Source: MMO)

Distribution of fishing activity

46. As shown in Figure 6.17, overall, landings of squid within the commercial fisheries study area are low compared to those recorded in other areas off the east coast of Scotland and are for the most part recorded in inshore rectangles 41E7 and 40E7, with limited landings in rectangle 41E8, where the Proposed Development array area is located.
47. Squid grounds are often located in inshore areas; however, their location may vary from year to year and activity generally moves further offshore as the season progresses. The level of activity and distribution of this fishery will consequently vary depending on year and period within the season.
48. There are no recent publicly available squid specific data layers showing fishing activity around the area of the Proposed Development. In the absence of more recent data, historic data for under 15 m demersal trawlers potentially targeting squid ("not *Nephrops* trawls") collected as part of the ScotMap project (Kafas *et al.*, 2014) is provided in Figure 6.18. In addition, VMS intensity data for over 15 m squid trawlers (average 2009 -2013) available from Kafas *et al.* (2013) is also illustrated in Figure 6.19.
49. The above historic data suggests that activity by squid trawlers for the most part concentrates on inshore areas within the commercial fisheries study area. Activity in the immediate area of the Proposed

Development export cable corridor is relatively low, compared to fishing levels across nearshore areas within ICES rectangle 41E7. Information on squid grounds provided by fishermen during consultation (Figure 5.2) indicates that squid is targeted by some vessels in the nearshore section of the Proposed Development export cable corridor as well as within the boundaries of the Proposed Development array area. It is also noted that recent VMS data for over 15 m demersal trawlers, suggest potential for some squid fishing activity to occur at times within the Proposed Development array area (Figure 6.19.). Although this dataset does not specify target species, given the lack of *Nephrops* suitable habitat in the array area, it is likely that that the demersal trawling activity recorded in the VMS dataset in this area corresponds with vessels engaged in the squid fishery.

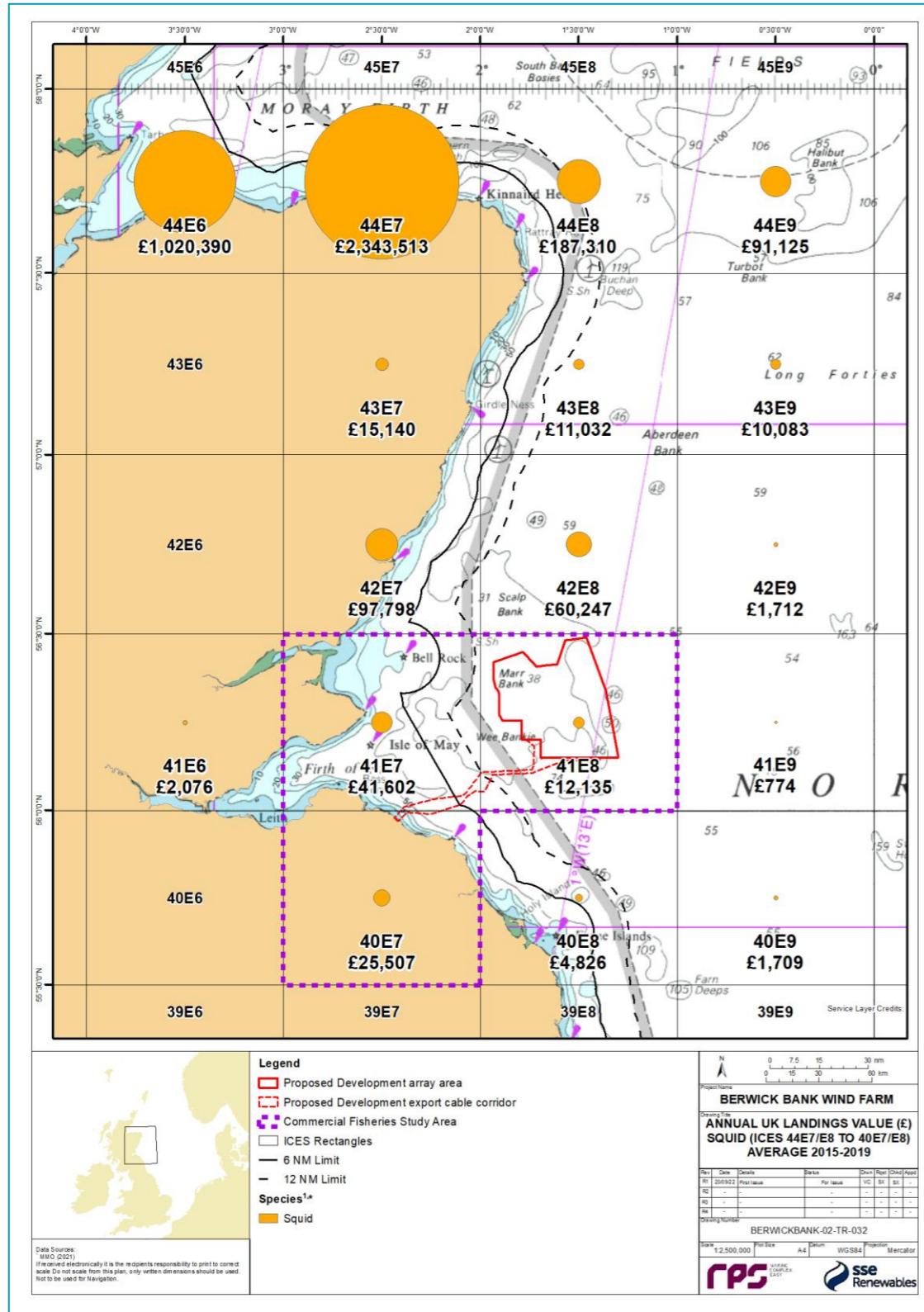


Figure 6.17: Annual Landings Value (£) Squid (Average 2015 - 2019) (Source: MMO)

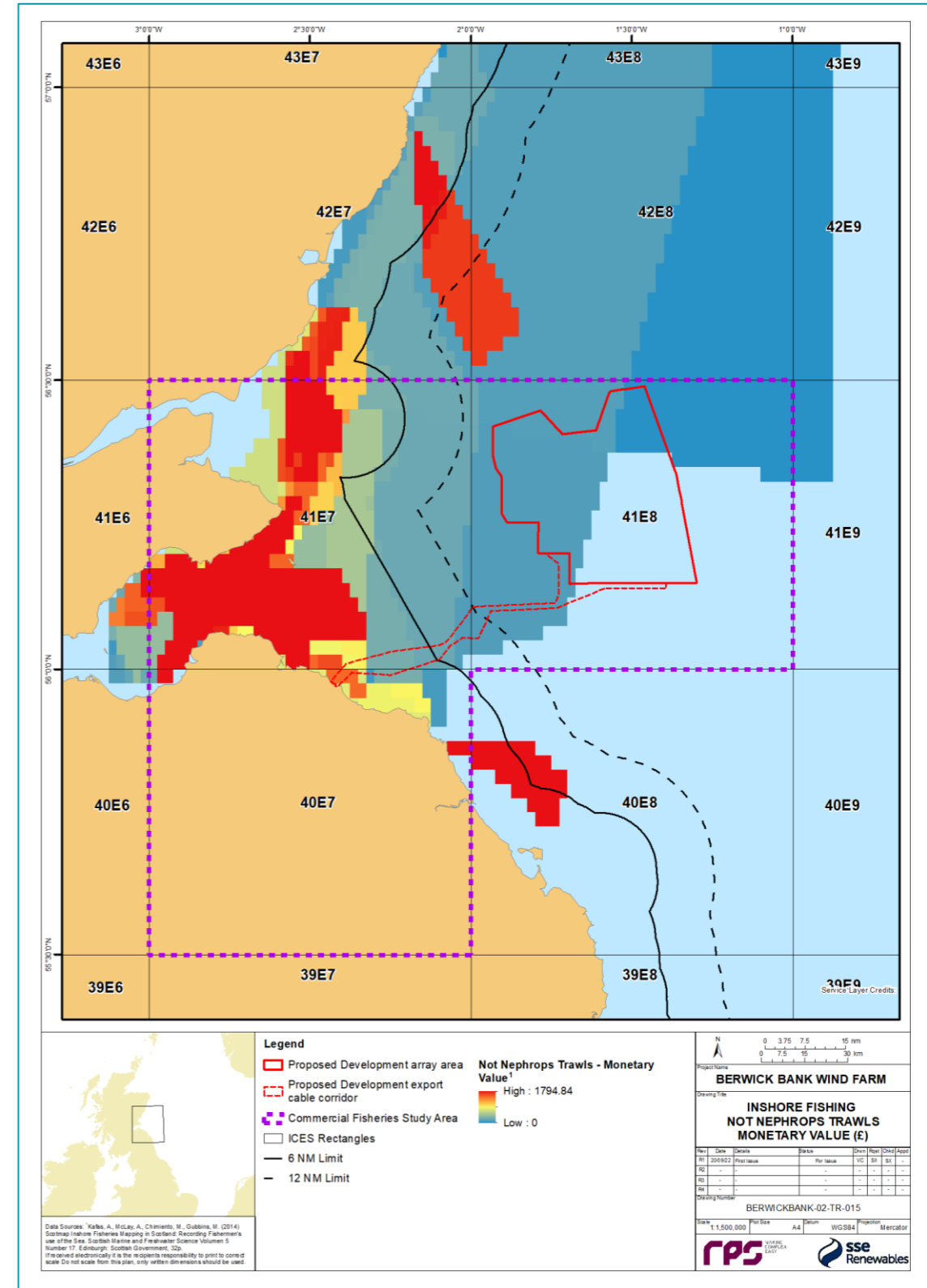


Figure 6.18: Inshore Fishing Not Nephrops Trawls Monetary Value (£) (Kafas et al., 2014)

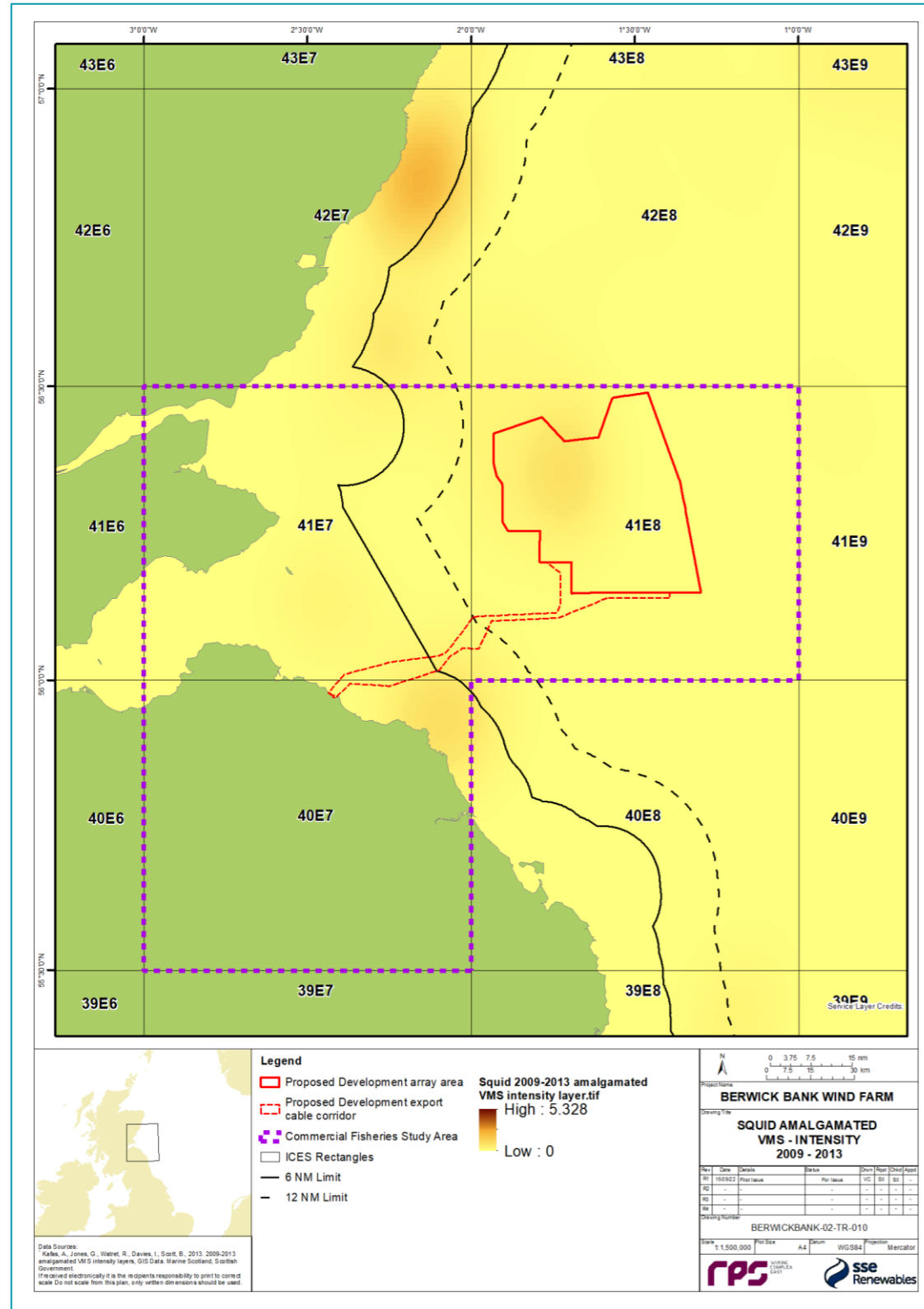


Figure 6.19: Squid Amalgamated VMS Intensity (2009 - 2013) (Kafas et al., 2013)

6.3. LOBSTER AND CRAB FISHERY

6.3.1. FISHING GEAR, VESSELS AND OPERATING PRACTICES

50. European lobster *Homarus gammarus*, edible crab *Cancer pagurus* and velvet crab *Necora puber* are typically caught in creels. A variety of creels can be used depending on the target species, but parlour creels are the preferred type in the east coast of Scotland (Figure 6.20) (Marine Scotland, 2017).
51. As shown in Table 5.1 Table 5.2, vessels active in the commercial fisheries study area are typically under 10 m in length. The majority of them concentrate their activity on creeling only; however, a few vessels are multi-purpose and target *Nephrops* with demersal trawls seasonally. Typical fishing trip durations were reported to be generally between 10 and 18 hours with steamed distances typically ranging from 2 nm to 28 nm. A few vessels, however, reported greater operational ranges.



Figure 6.20: Parlour Creels (© BMM)

52. Creeling for lobster and crab is not subject to total allowable catch (TAC) or similar restrictions on the tonnage that can be landed. The principal method to control landings is through the implementation of Minimum Conservation Reference Sizes (MCRS) to protect juvenile animals. In addition, vessels targeting these species are required to have a shellfish entitlement attached to their licence.

53. Monthly landings of crab and lobster are illustrated in Figure 6.22. As shown, overall, lobster and crab landings are higher over the summer and autumn months, peaking in August and September, respectively. However, the fishery is active all year round, with significant landings reported throughout the year.
54. The year-round importance of the fishery was noted by local fishermen during consultation (Table 5.2).



Figure 6.21: Creelers at Dunbar (© BMM)

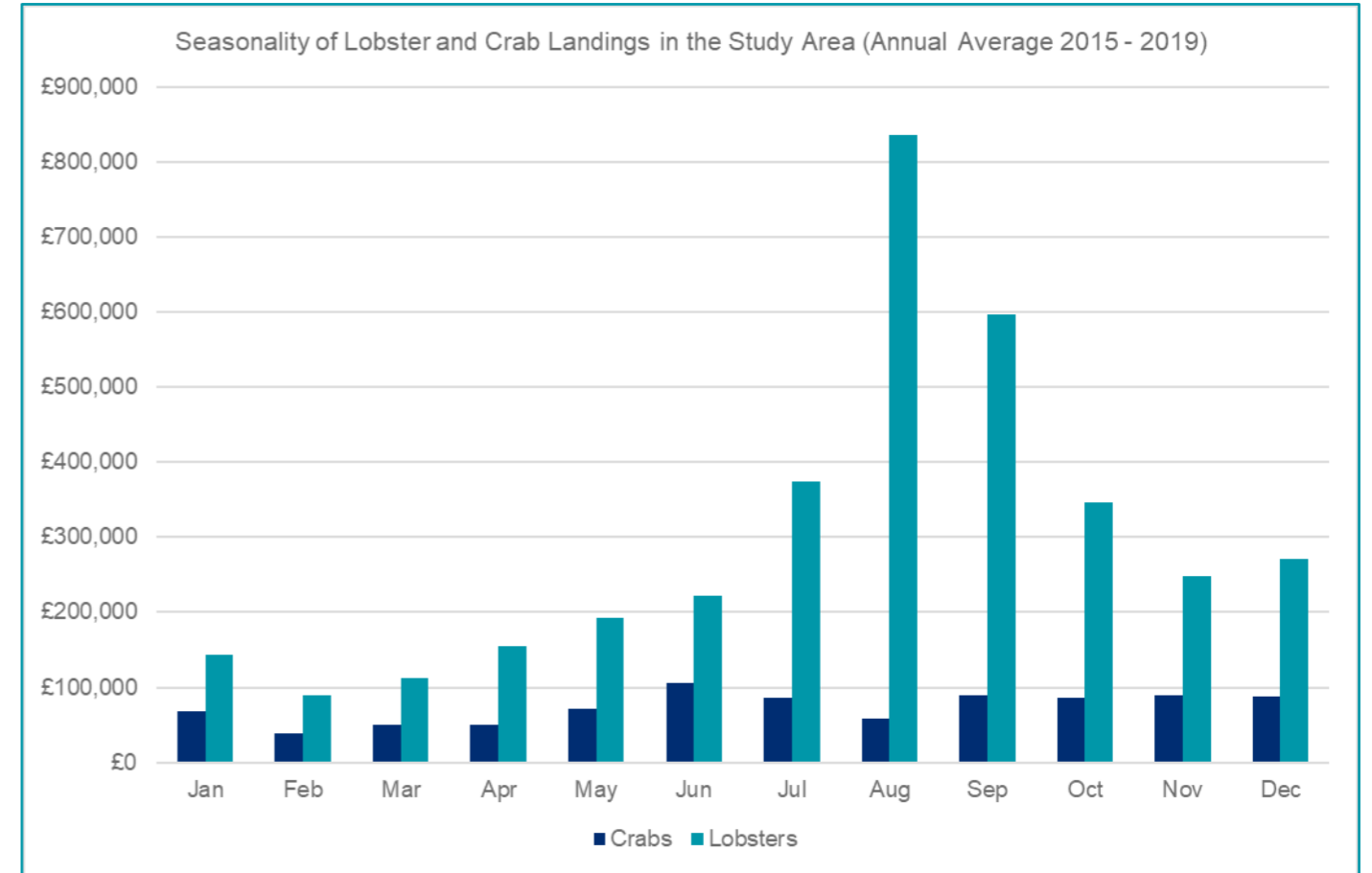


Figure 6.22: Monthly Lobster and Crab Landings in the Commercial Fisheries Study Area (Annual Average 2015 - 2019) (Source: MMO)

6.3.2. DISTRIBUTION OF FISHING ACTIVITY

55. An indication of the distribution of fishing by creelers in the commercial fisheries study area is given in Figure 6.23 to Figure 6.29.
56. Based on surveillance sightings (Figure 6.23), landings (Figure 6.24) and data gathered as part of the Shelmerdine and Mouat (2021) study (Figure 6.25), the Creel Fishery Effort Study (Marine Scotland, 2017) (Figure 6.26), and the ScotMap project (Kafas *et al.*, 2014) (Figure 6.27), indicate that in the commercial fisheries study area, creeling is undertaken at higher levels close to shore. Although at lower levels, significant activity has also been reported from offshore areas, including within the Proposed Development array area, particularly around its north-western section.
57. The presence of creels within the Proposed Development array area is also evident from recent information on the location of static gear available from the SWFPA website. This is illustrated in Figure 6.28.
58. Creelers active in the commercial fisheries study area are predominantly under 15 m in length. As shown in Figure 6.29, analysis of VMS data suggests that activity by larger creelers (over 15m) in areas of relevance to the Proposed Development occurs at negligible levels and is restricted to the north-western section of the Proposed Development array area.

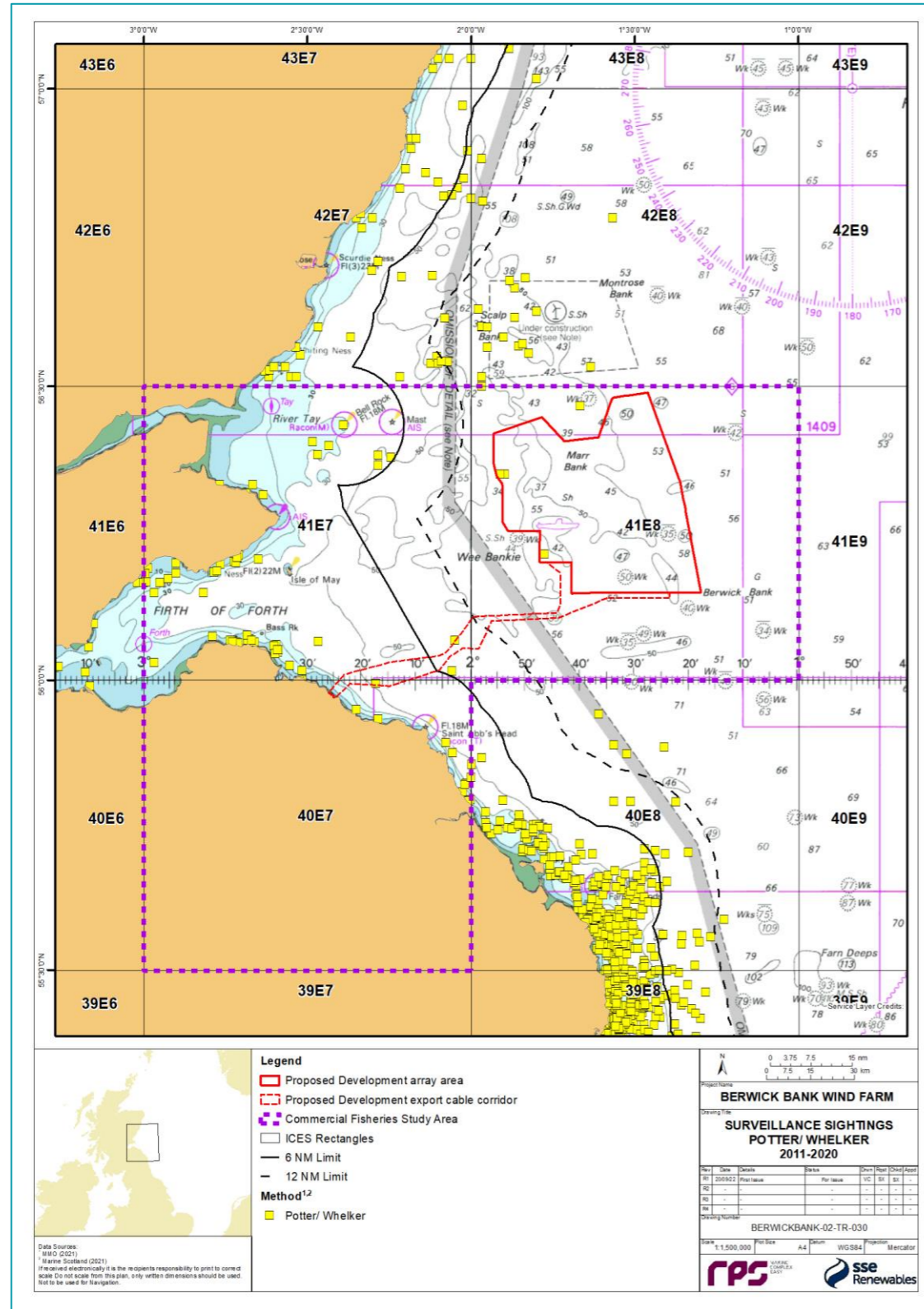


Figure 6.23: Surveillance Sighting of Creelers (2011 to 2020) (Source: MMO and Marine Scotland)

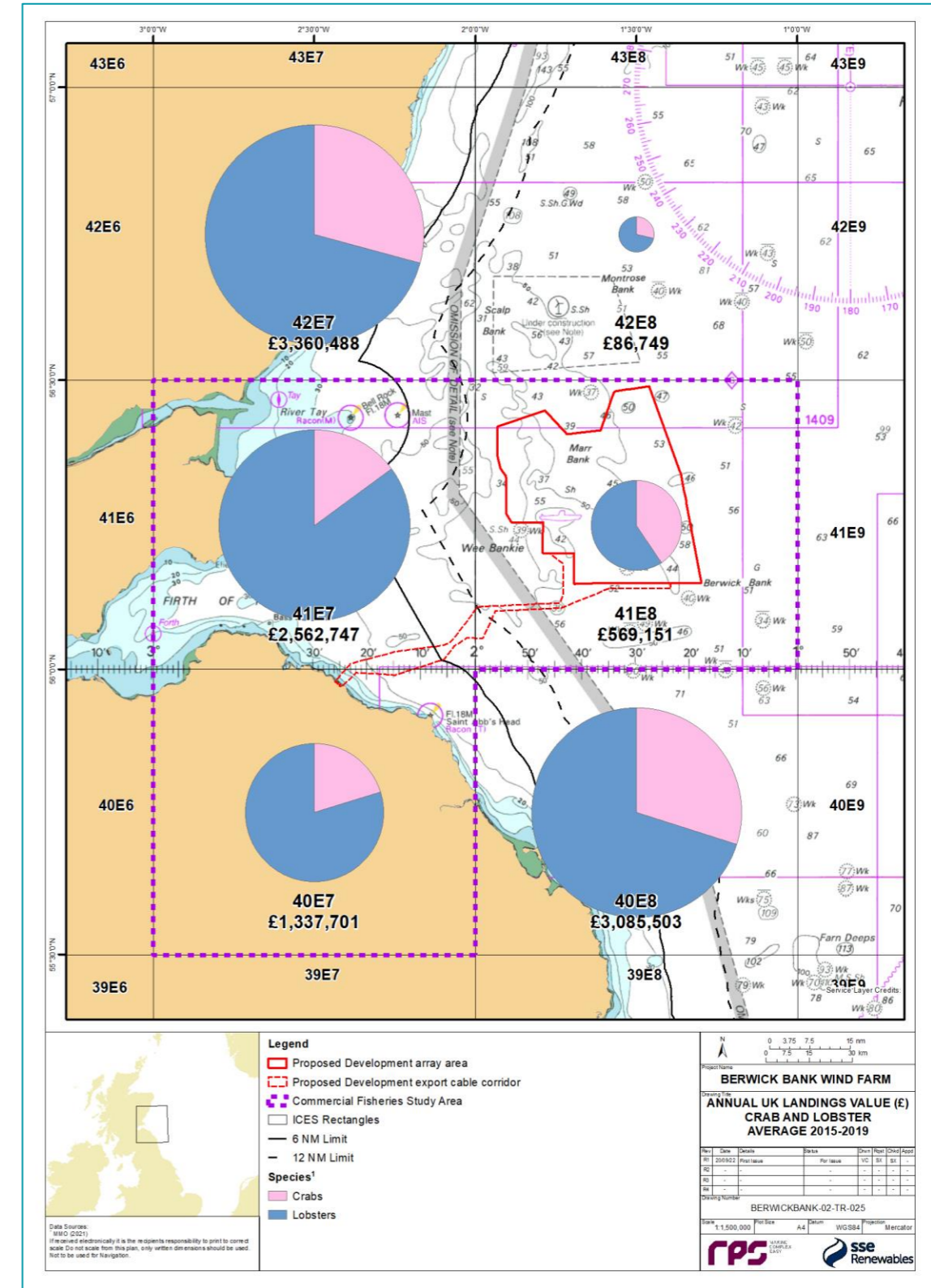


Figure 6.24: Annual Landings Value (£) of Crab and Lobster (Average 2015 - 2019) (Source: MMO)

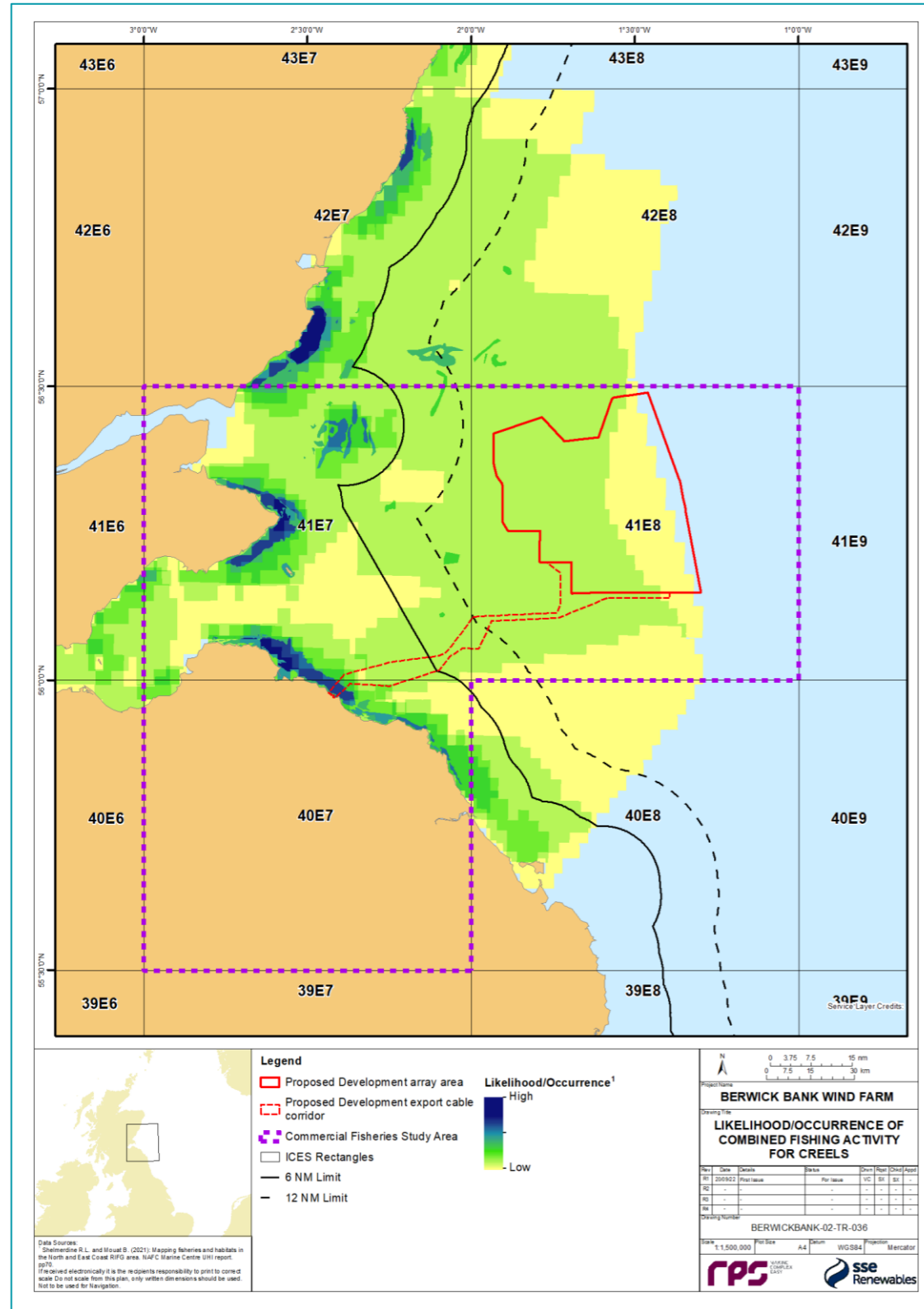


Figure 6.25: Combined Fishing Activity for Creels (Source: Shelmerdine and Mouat, 2021)

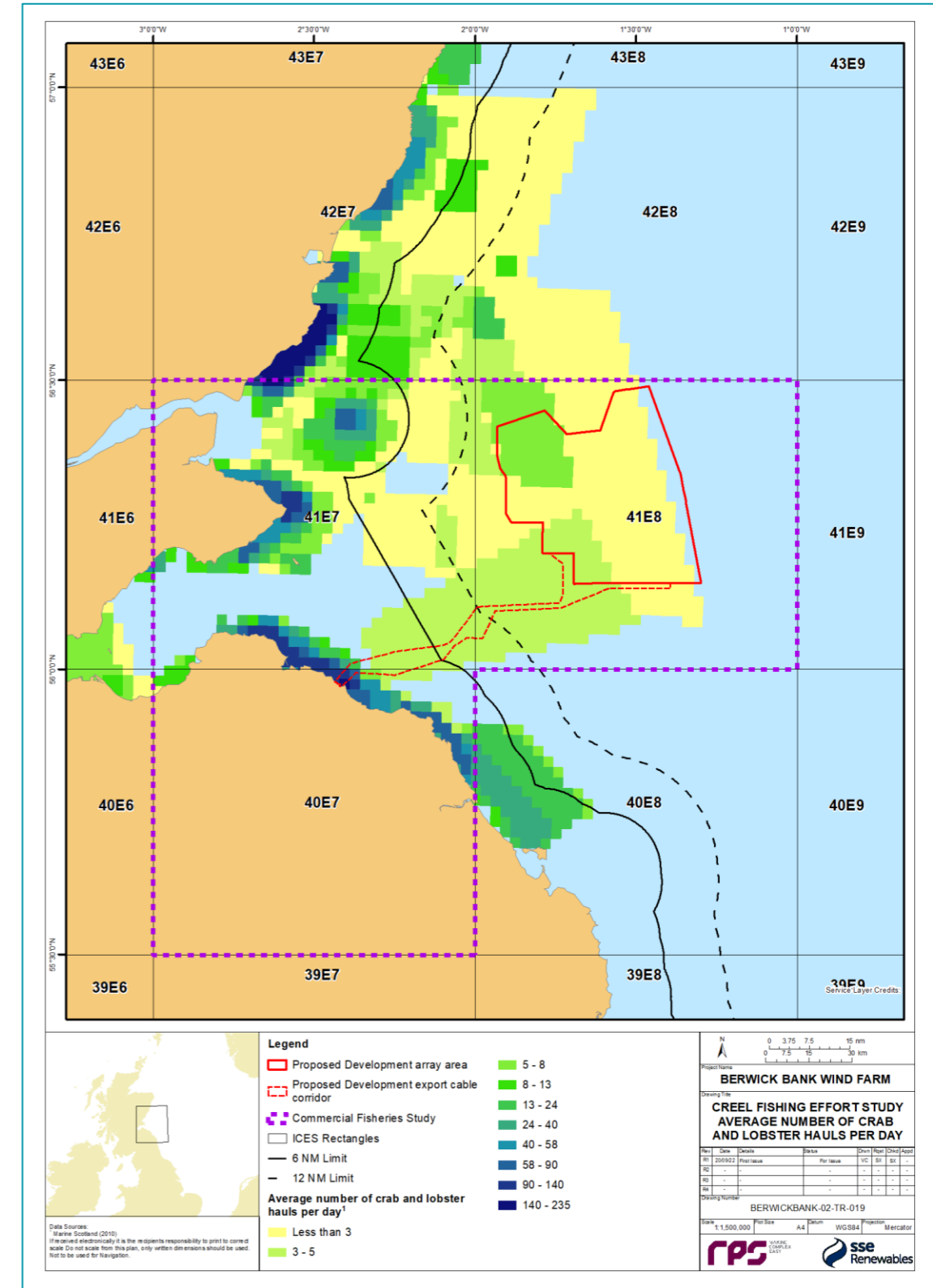


Figure 6.26: Creel Fishing Effort (Marine Scotland, 2017)

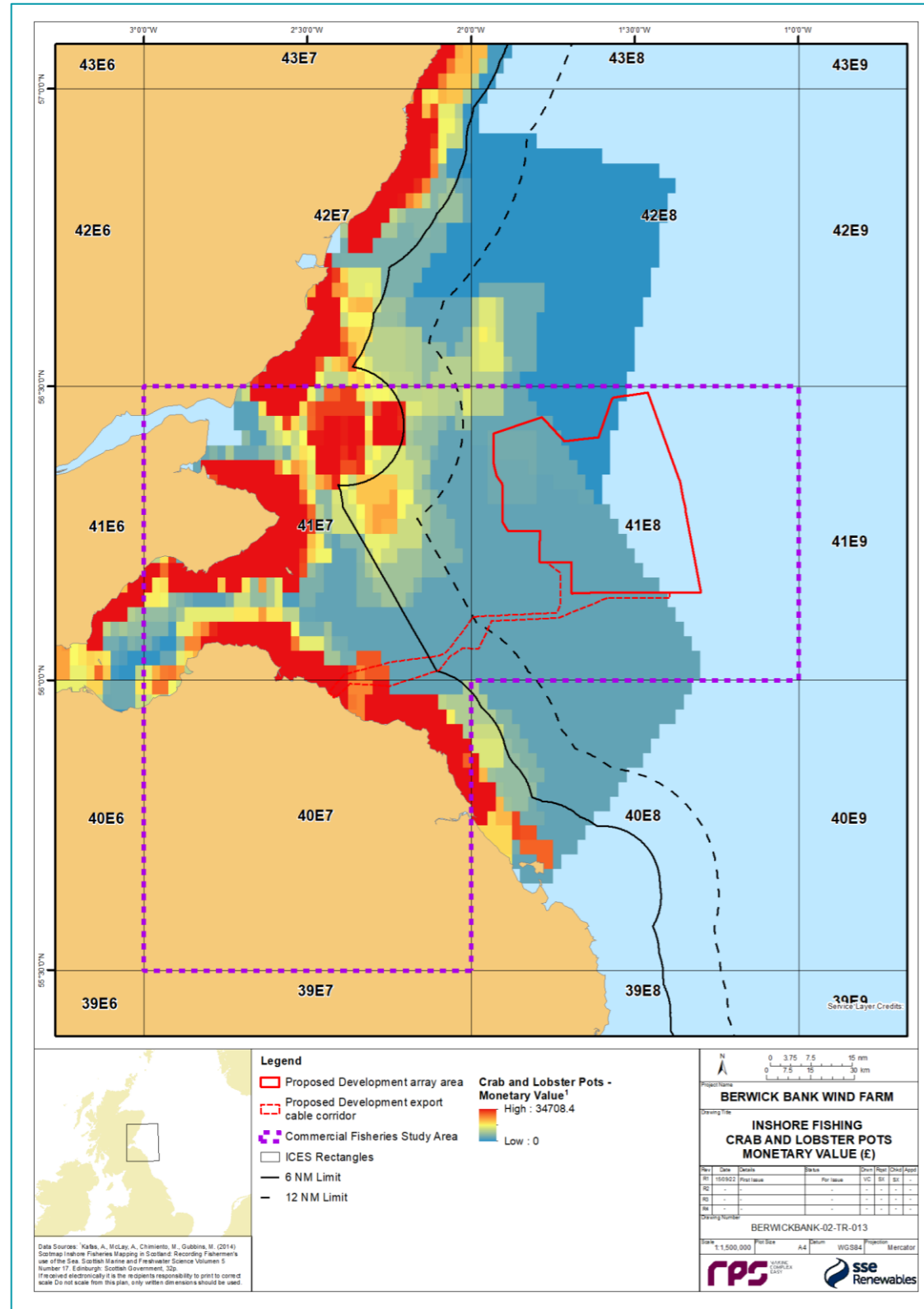


Figure 6.27: Inshore Fishing Crab and Lobster Pots Monetary Value (£) (Kafas et al., 2014)

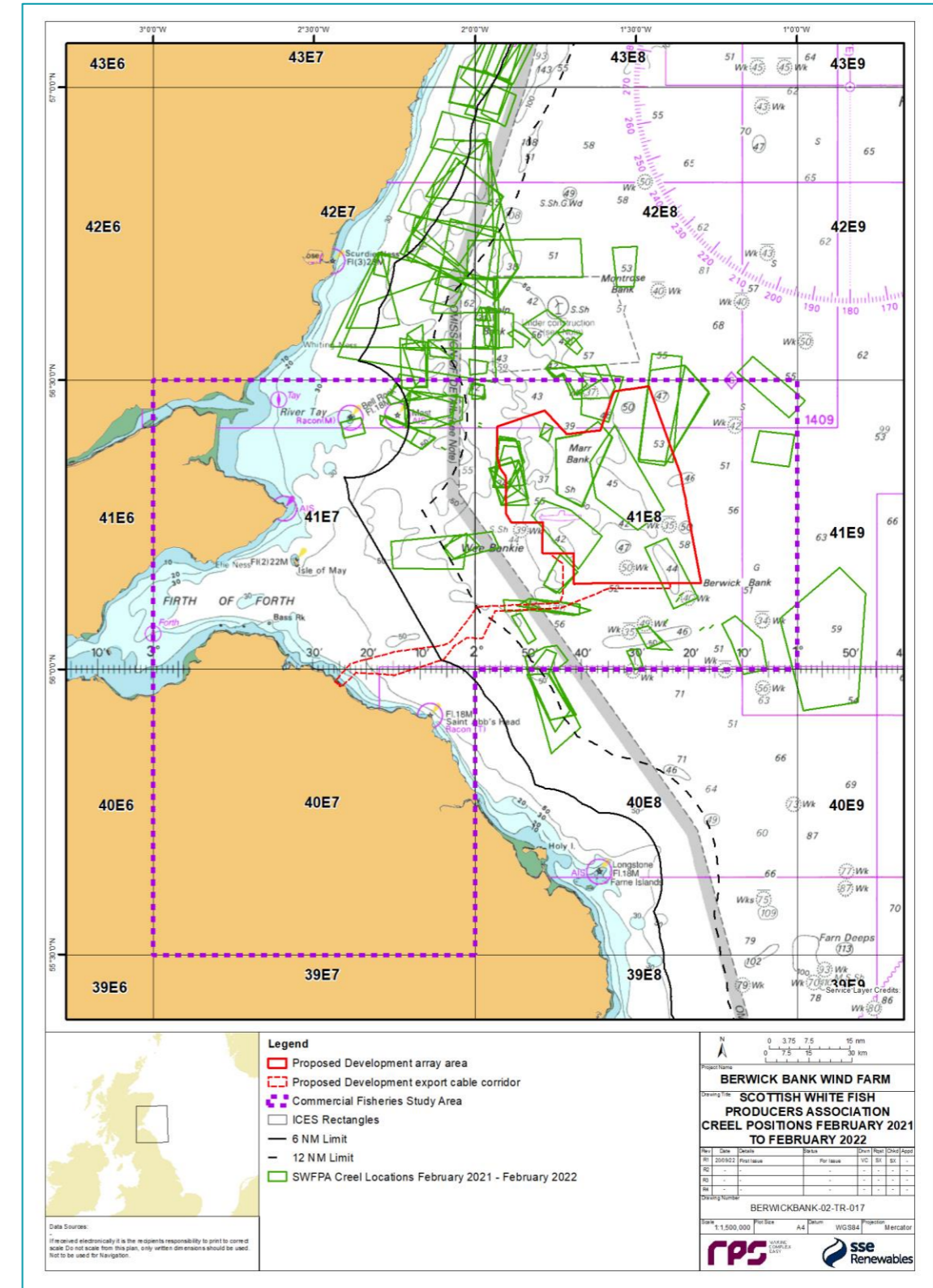


Figure 6.28: Creel positions (2022) (SWFPA, 2022)

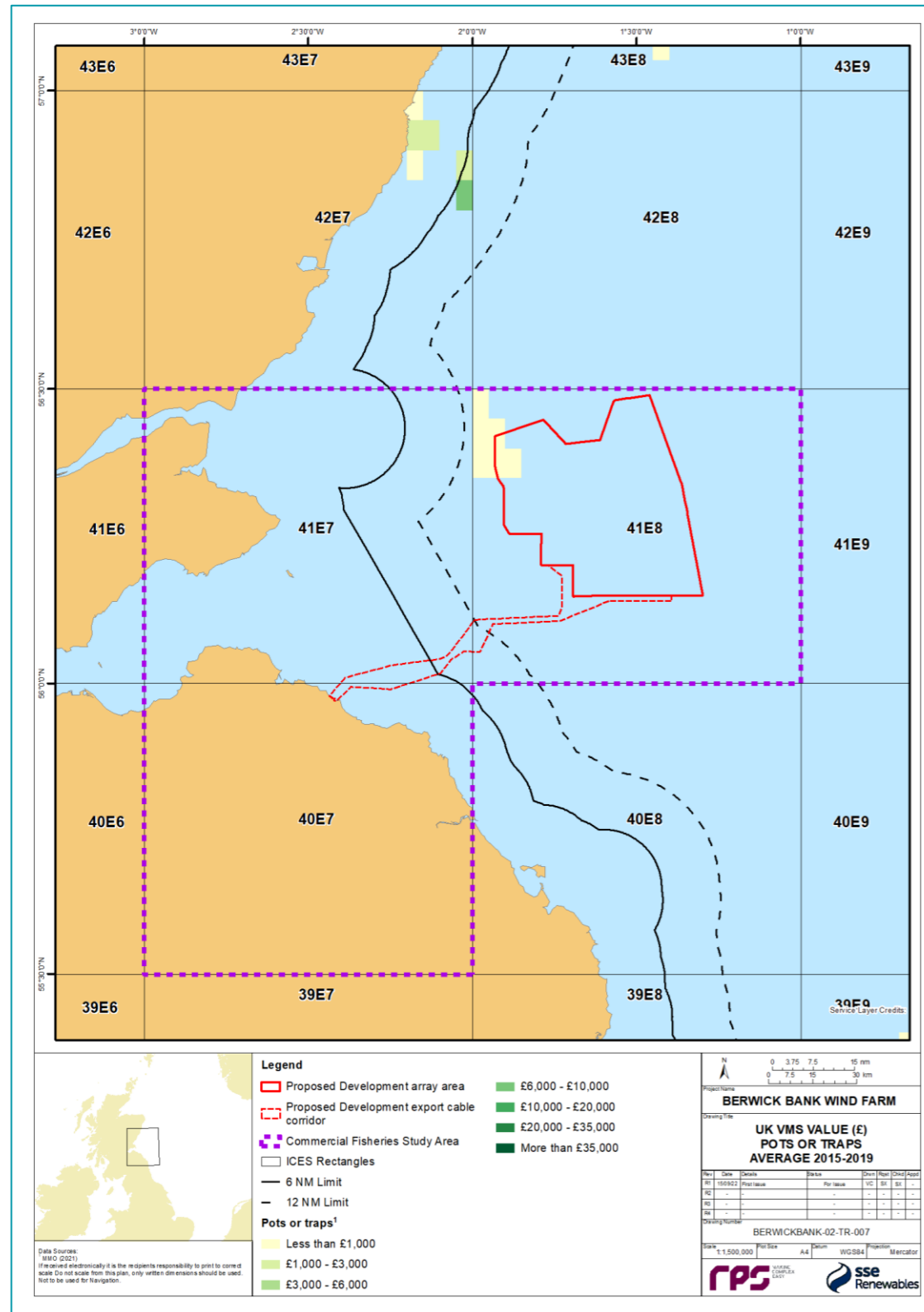


Figure 6.29: VMS Value (£) Pots or Traps (Average 2015 - 2019) (Source: MMO)

6.4. SCALLOP FISHERY

6.4.1. FISHING GEAR, VESSELS AND OPERATING PRACTICES

59. King scallop *Pecten maximus* is typically found in areas of sandy gravel interspersed with cobble (Catherall and Kaiser, 2014). The 'Newhaven' scallop mechanical dredge is typically used by the larger scallop fishing fleet to flip scallops out of the seabed (Figure 6.30). It comprises heavy steel tow bars with toothed dredges that are connected to a collector bag dragged on the seabed behind the teeth (Catherall and Kaiser, 2014).
60. Scallop dredging vessels require a license and are restricted by the number of dredges they can use, depending upon the distance they are operating from the coast. Vessels fishing outside the 12 nm limit are allowed up to 14 dredges per side; between 6 nm and 12 nm up to ten dredges per side are permitted; and up to eight dredges per side inside 6 nm. The minimum landing size for scallops is 105 mm in all areas around Scotland with the exception of the Irish Sea and Shetland.
61. The Scottish scallop fishery is split into two main fleets; a category of smaller vessels (generally under 15 m in length) that work in inshore areas, and a category of larger vessels (generally above 15 m in length) that work further offshore, and are typically nomadic in nature (Cappell, *et al.*, 2013; Cappell, *et al.*, 2018). The nomadic component of the scallop fleet moves around the UK targeting scallop grounds in peak abundance.

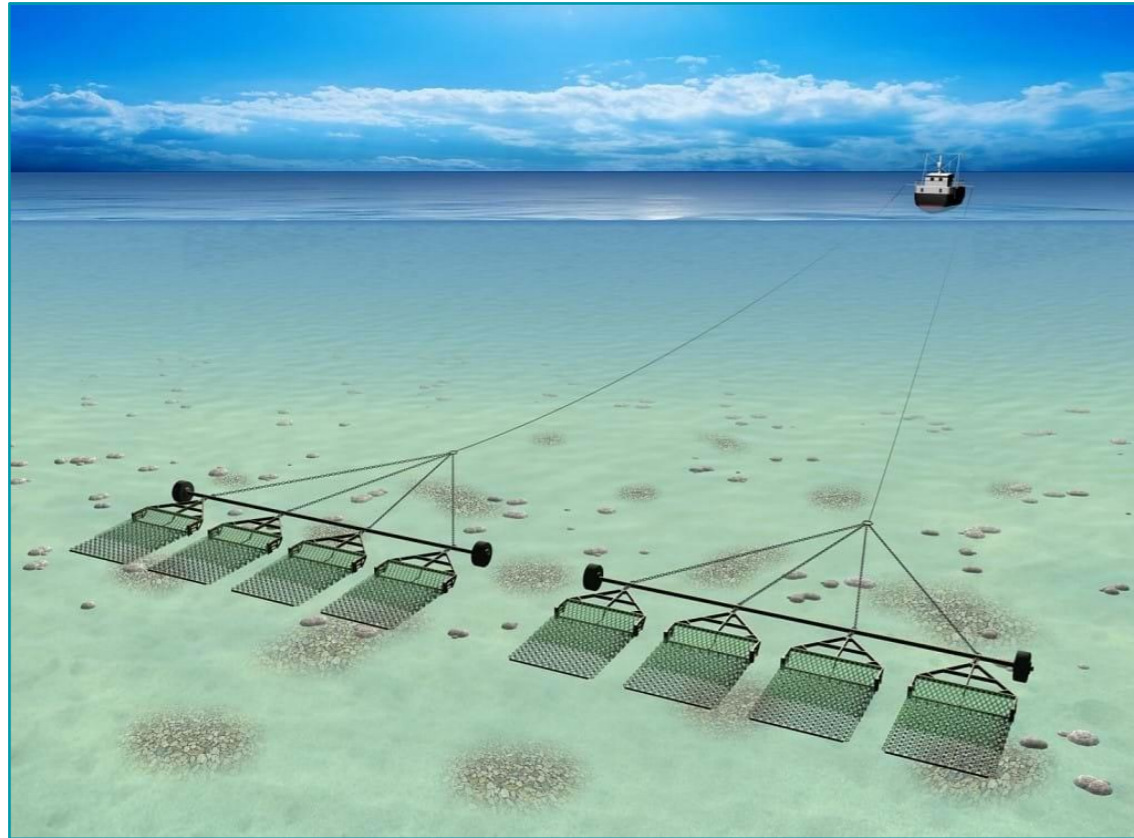


Figure 6.30: Example of Scallop Dredge (Seafish©)

62. Monthly landings of scallops in the commercial fisheries study area are illustrated in Figure 6.31 (average 2015 -2019). As shown, scallop dredging is undertaken all year round, however, higher landings tend to be recorded over the spring and summer months, peaking in May.
63. It is important to note that the scallop fishery is cyclical in nature, and productive grounds rotate around the UK on a seven-to-eight-year cycle (Cappel *et al.*, 2018). An indication of the annual variation/cycle of the scallop fishery in the commercial fisheries study area is given in Figure 6.32 based on analysis of scallop landings. The value of landings generally increased from 2011, peaking between 2016 and 2018. The value of landings was c. £200,000.00 less in 2019.

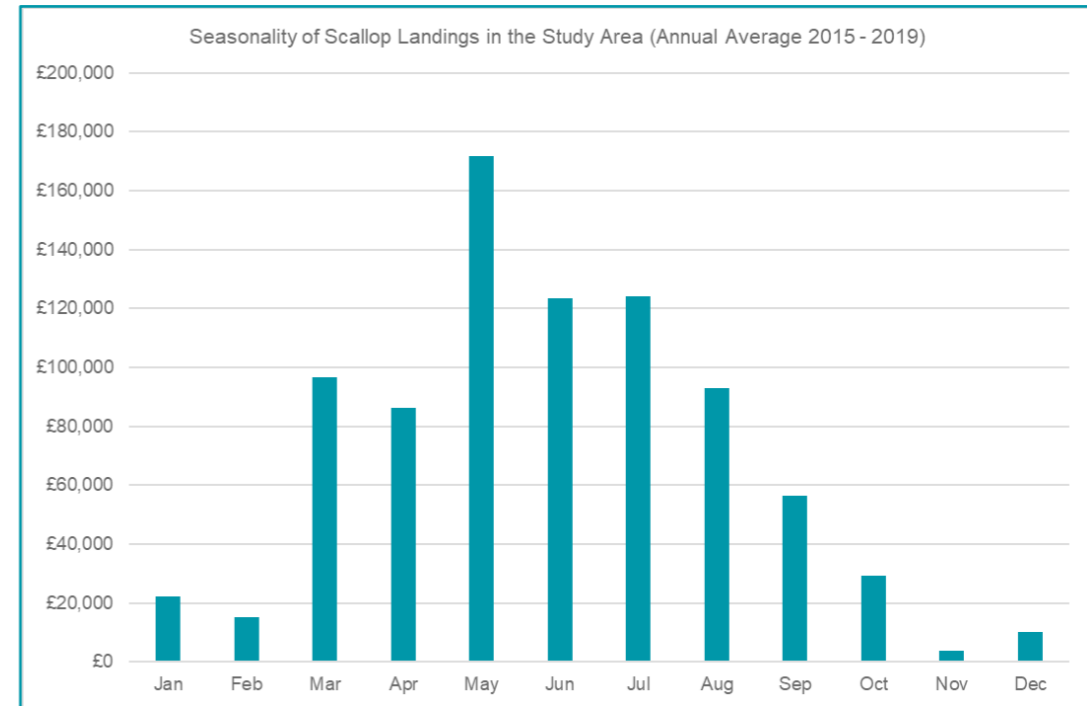


Figure 6.31: Monthly Scallop Landings in the Study Area (Annual Average 2015 - 2019) (Source: MMO)

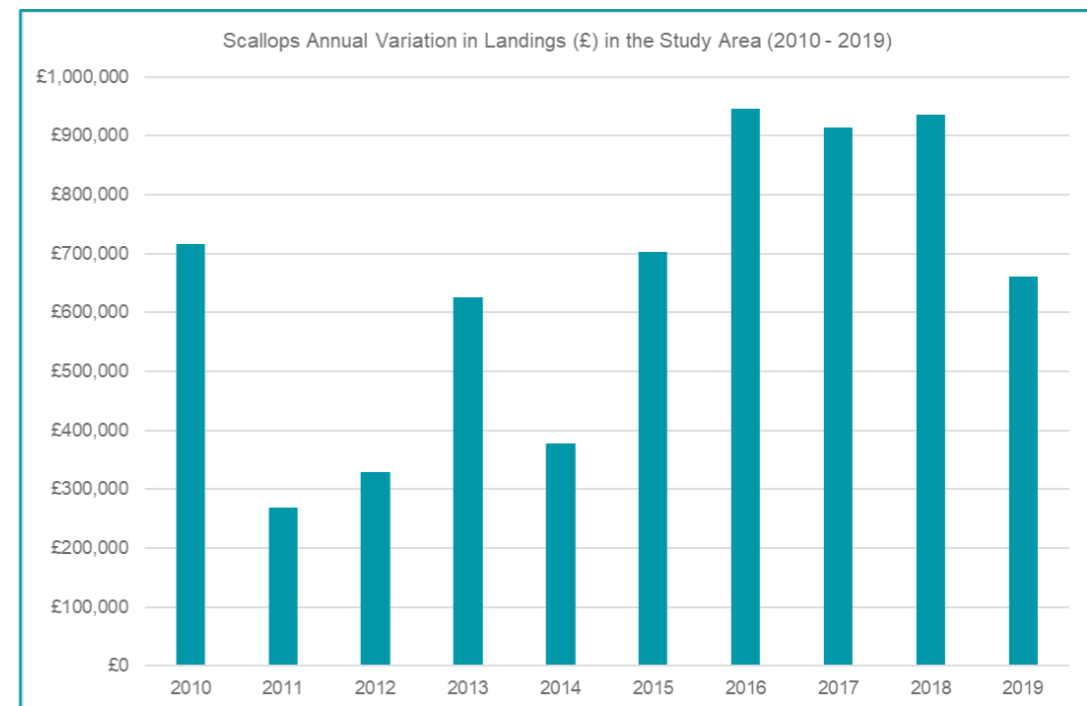


Figure 6.32: Annual Landings of Scallops in the Study Area (2010 to 2019) (Source: MMO)

6.4.2. DISTRIBUTION OF FISHING ACTIVITY

- 64. An indication of the distribution of fishing activity by scallop dredgers in the commercial fisheries study area is provided in Figure 6.33 to Figure 6.40. This includes analysis of surveillance sightings (Figure 6.33), annual landings values (Figure 6.34), data gathered as part of the Shelmerdine and Mouat (2021) study (Figure 6.35) and VMS data for over 15 m scallop dredgers (Figure 6.36 to Figure 6.39). In addition, information on the distribution of activity by smaller vessels (under 15 m) available from the ScotMap Project (Kafas *et al.*, 2014) is presented in Figure 6.40.
- 65. Surveillance sightings and landings data show that the majority of activity by scallop dredgers within the commercial fisheries study area is undertaken in areas of relevance to the Proposed Development array area (ICES rectangle 41E8).
- 66. As shown in Figure 6.36, VMS data suggests that scallop dredging activity by larger vessels (over 15 m), takes place at moderate levels in the Proposed Development array area and for the most part is concentrated in its north-western section. The level of activity recorded within the Proposed Development is however relatively low compared to that recorded in other grounds around Scotland and the UK (Figure 6.37).
- 67. Analysis of VMS data by year for the period 2012 to 2019 is presented in Figure 6.38 and Figure 6.39 and illustrates the cyclical nature of the fishery. As shown, grounds in areas of relevance to the Proposed Development are targeted at varying degrees depending on the year under consideration.
- 68. In the case of smaller under 15 m vessels, data collected as part of the ScotMap Project (Figure 6.40) suggest that activity within the Proposed Development array area occurs at very low levels, with activity concentrating primarily inshore, within ICES rectangle 41E7. In line with this, information on inshore scallop fishing grounds gathered during consultation with fisheries stakeholders indicates the presence of inshore scallop grounds within the commercial fisheries study area. As shown in Figure 5.3, these are found immediately to the east of the inshore section of the Proposed Development export cable corridor, with limited overlap with it.

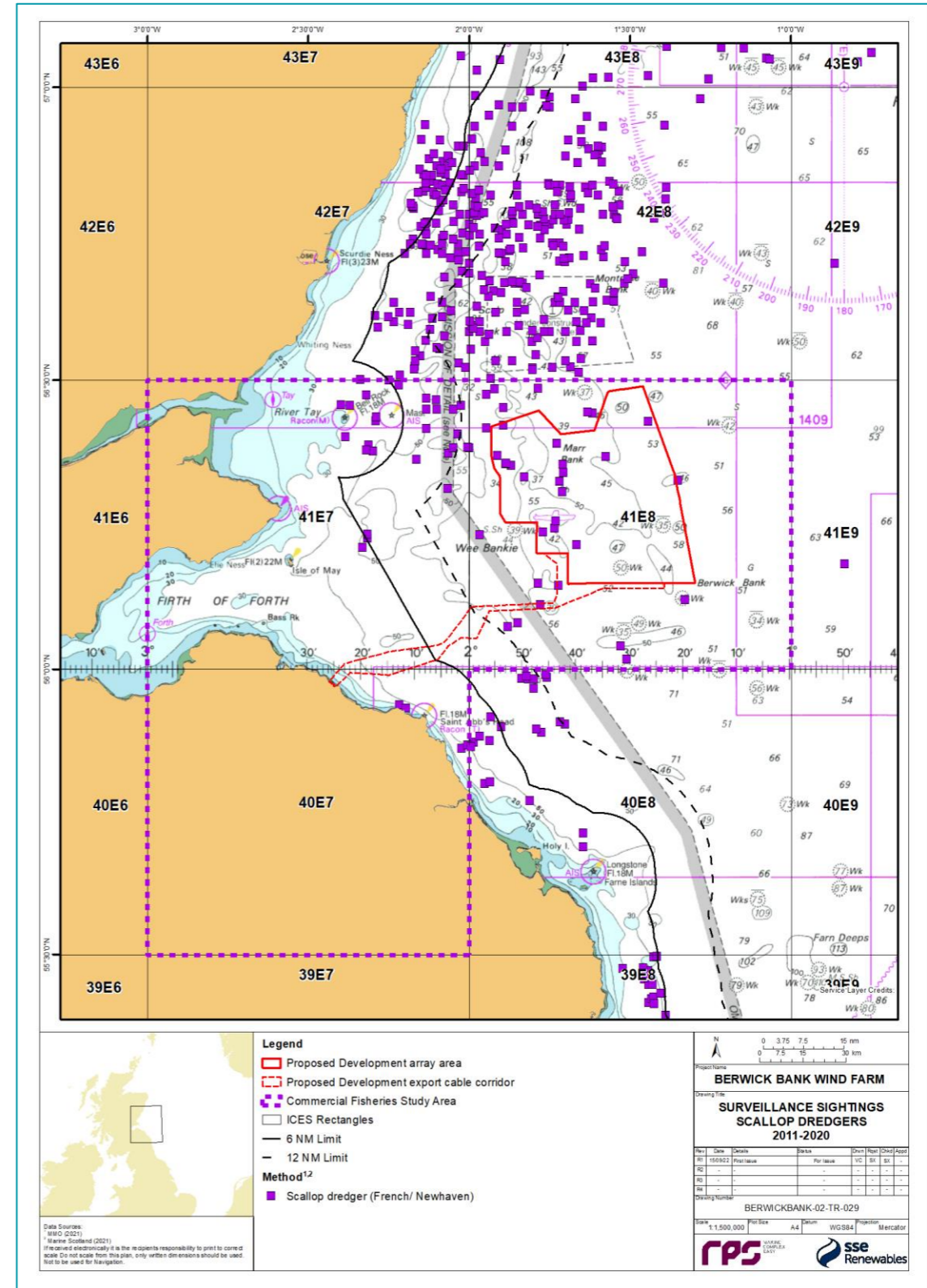


Figure 6.33: Surveillance Sightings of Dredgers (2010 to 2020) (Source: MMO and Marine Scotland)

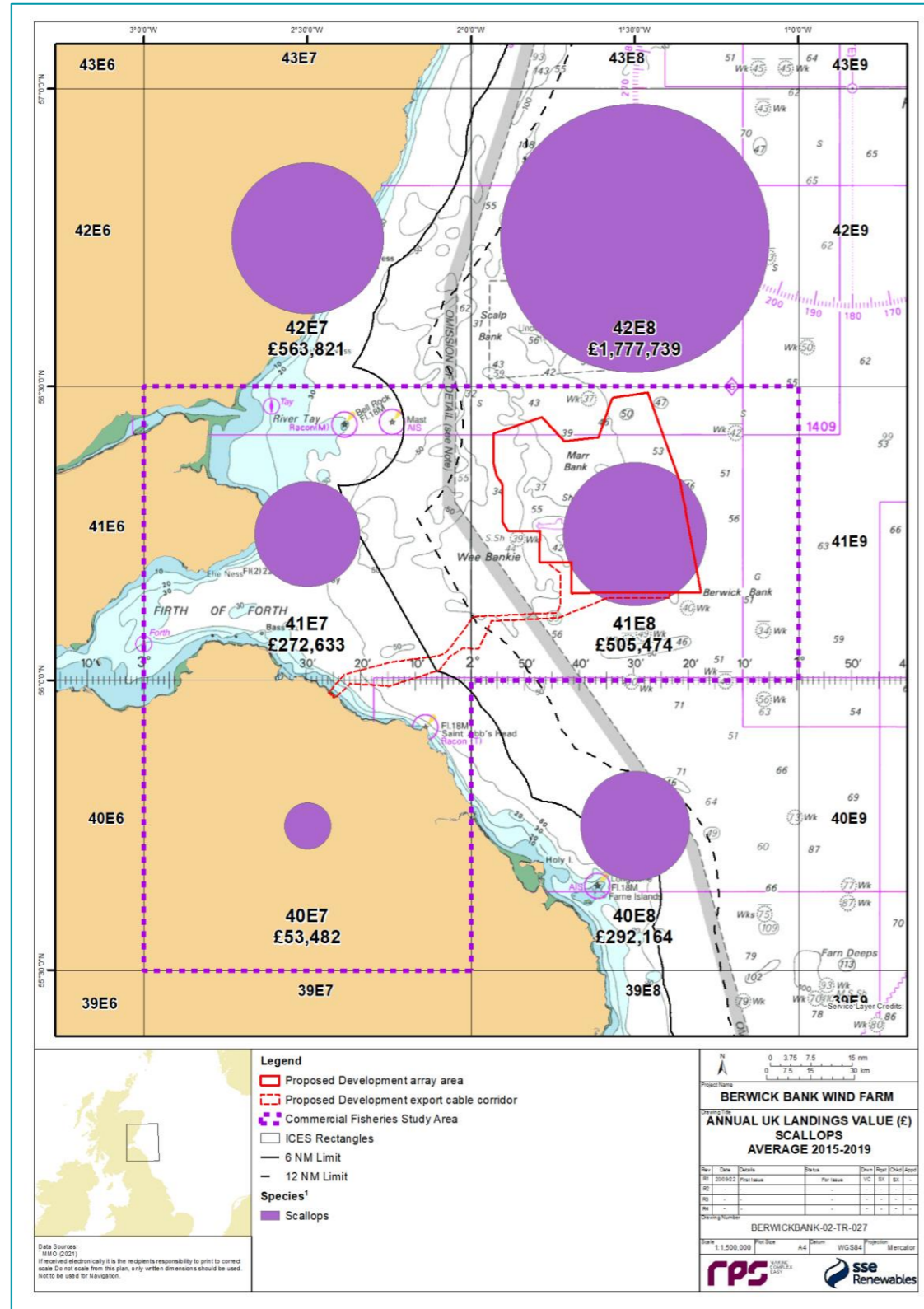


Figure 6.34: Annual Landings Value (£) Scallops (Average 2015 - 2019) (Source: MMO)

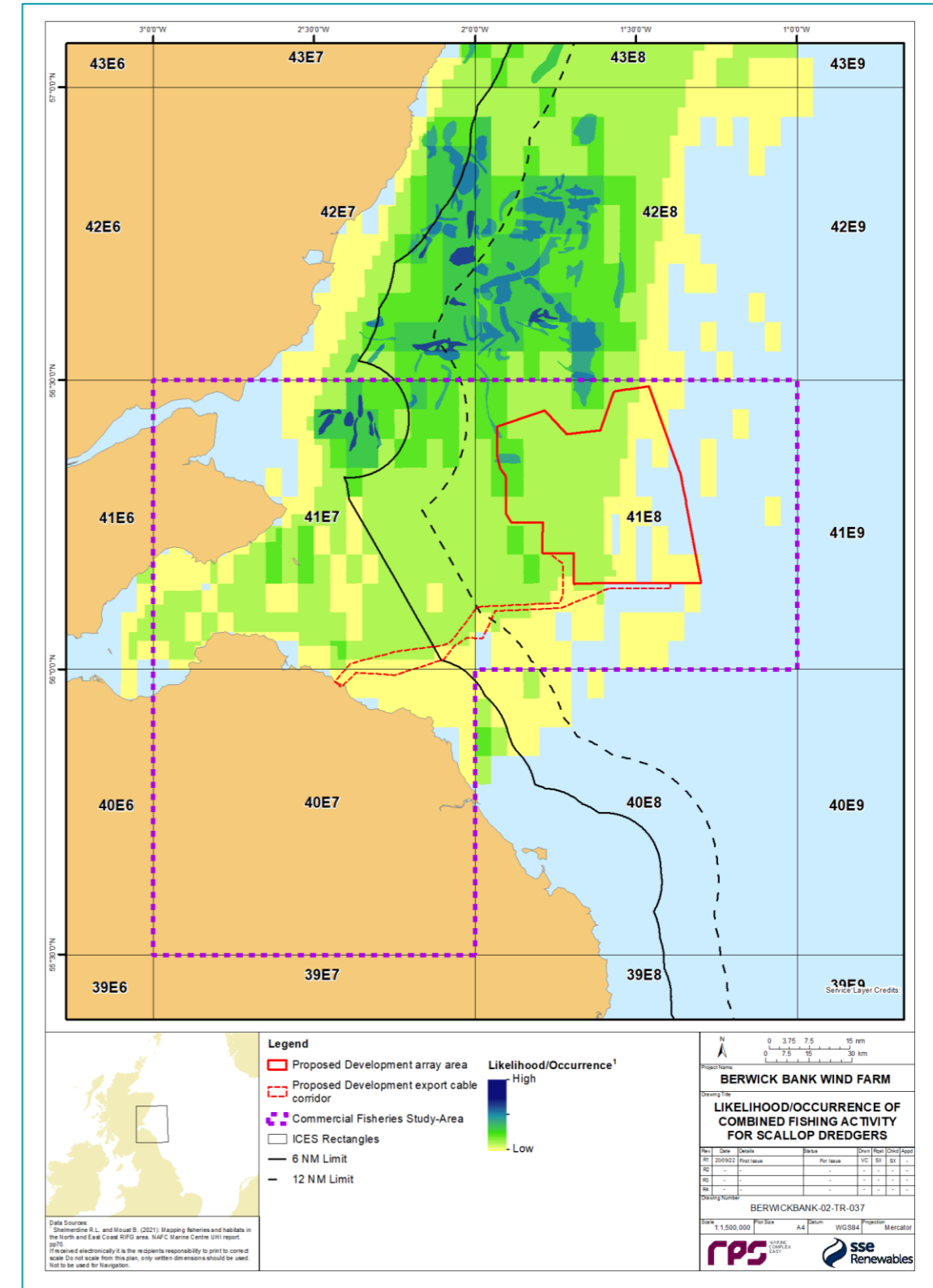


Figure 6.35: Combined Fishing Activity for Scallop Dredgers (Shelmerdine and Mouat, 2021)

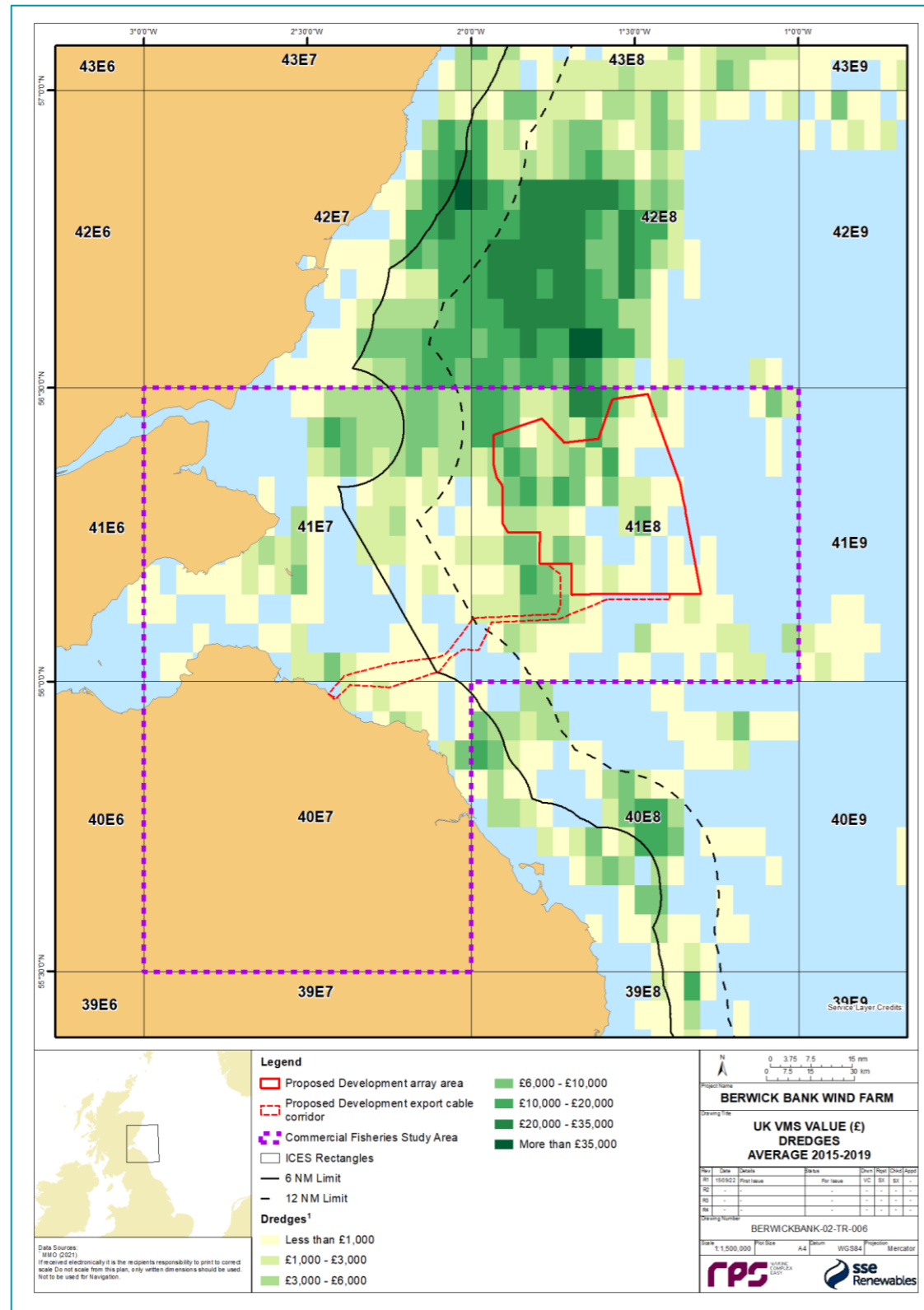


Figure 6.36: VMS Value (£) Dredges (Average 2015 - 2019) (Source: MMO)

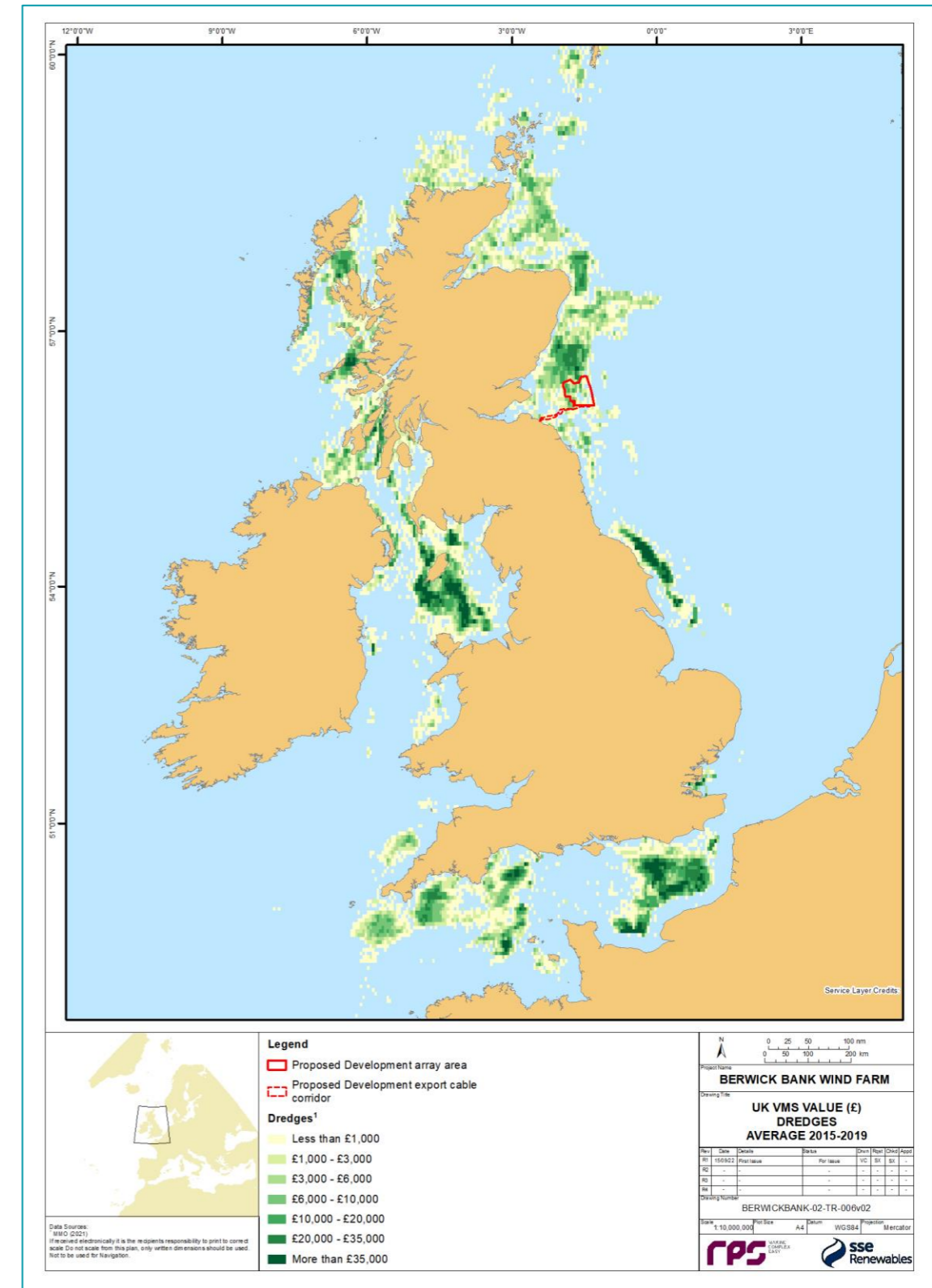


Figure 6.37: VMS Value (£) Dredges UK Wide (Annual Average 2015 - 2019) (Source: MMO)

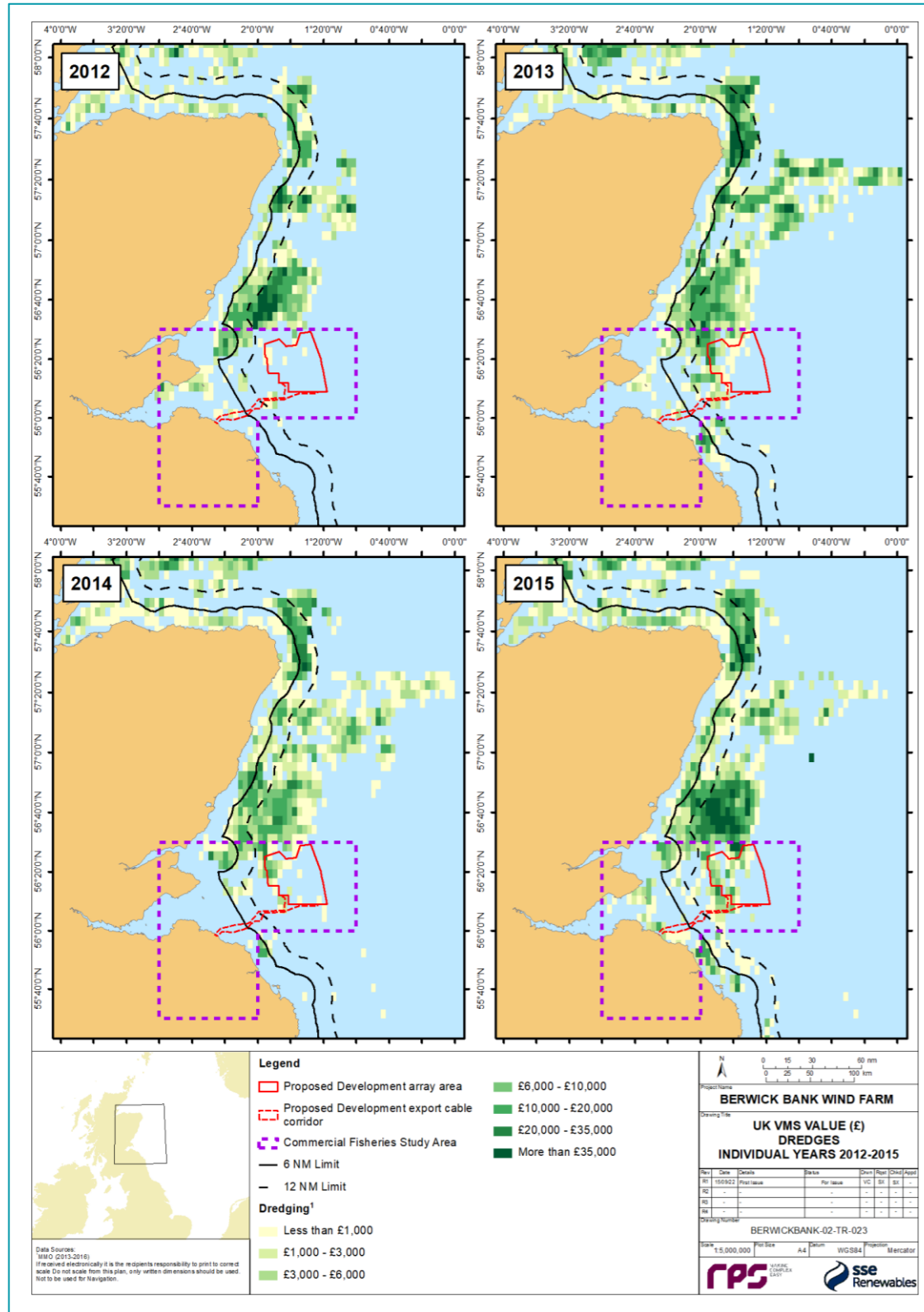


Figure 6.38: VMS Value (£) Dredges for Individual Years (2012 - 2015) (Source: MMO)

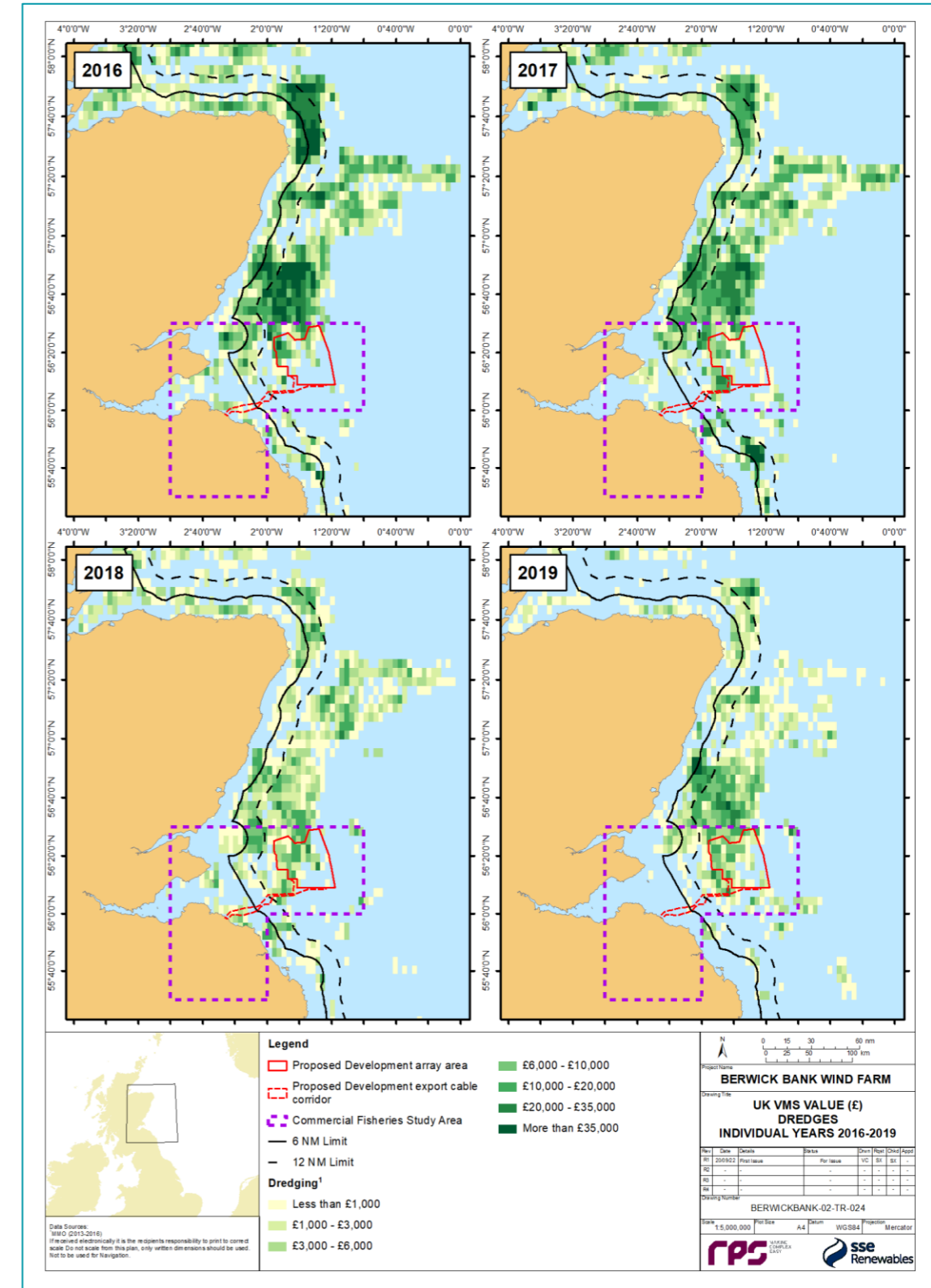


Figure 6.39: VMS Value (£) Dredges for Individual Years (2016 - 2019)

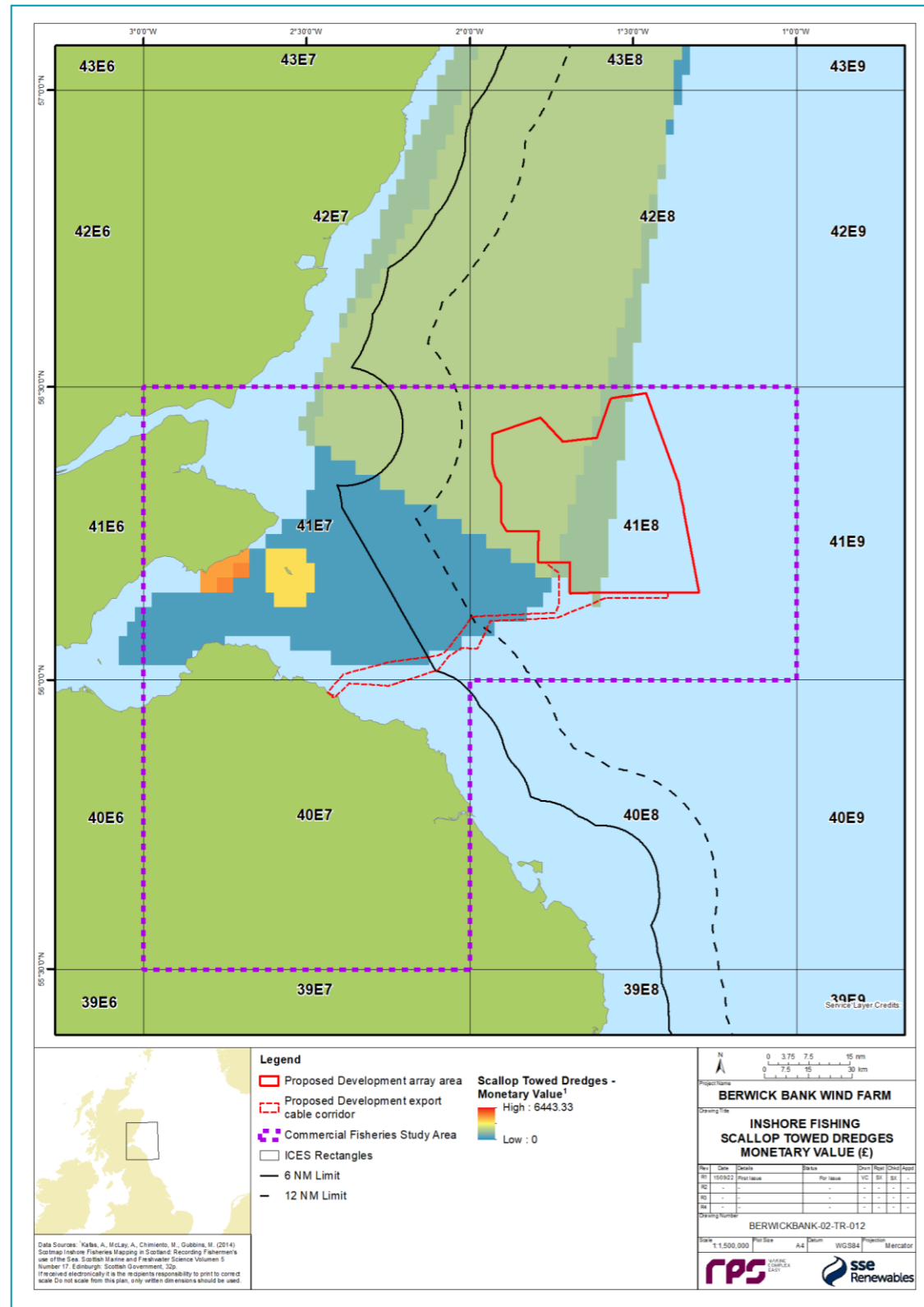


Figure 6.40: Inshore Fishing Scallop Towed Dredges Monetary Value (£) (Kafas et al., 2014)

7. SUMMARY

69. The commercial fisheries study area supports the following main commercial fishing activities:
- demersal otter trawling (predominantly for *Nephrops* and to a much lesser extent squid);
 - creeling for lobster and crab; and
 - scallop dredging.
70. Demersal trawling for *Nephrops* concentrates on inshore areas of the commercial fisheries study area, predominantly within the 6 nm limit, including in areas that overlap with the Proposed Development export cable corridor. Within the Proposed Development array area, negligible levels of trawling for *Nephrops* are expected, due to the unsuitability of the predominant ground conditions.
71. Demersal trawling for squid is often undertaken by *Nephrops* trawlers that change gear to target the squid fishery seasonally. Vessels targeting squid in the commercial fisheries study area are primarily active in inshore areas, including in sections of the Proposed Development export cable corridor. There is also potential, however, for some activity to take place within the Proposed Development array area. This is expected to be primarily undertaken by visiting squid vessels from other areas of the east coast of Scotland.
72. Creeling, targeting lobster and crab, is undertaken at higher levels in inshore areas of the commercial fisheries study area. Although at relatively lower level, considerable activity by local creelers has also been reported from offshore areas, including the Proposed Development array area, particularly around its north-western section.
73. Scallop dredging by vessels over 15 m in length (typically nomadic vessels) is undertaken at moderate levels in areas of relevance to the Proposed Development array area, being predominantly concentrated in its north-western section. The level of activity recorded within the Proposed Development is however relatively low compared to that recorded in other grounds around Scotland and the UK that are targeted by the nomadic scallop fleet. There is also some activity by smaller scallop dredgers (under 15 m local vessels) within the commercial fisheries study area. This is however limited to inshore areas and shows limited overlap with the Proposed Development export cable corridor.

8. REFERENCES

Catherall, C.L. and Kaiser, M.J. (2014). *Review of king scallop dredge designs and impacts, legislation and potential conflicts with offshore wind farms*. Fisheries & Conservation Report No. 39.

Cappell, R., Robinson, M., Gascoigne, J. and Nimmo, F. (2013). *A review of the Scottish Scallop Fishery. Poseidon report to Marine Scotland*.

Cappell, R., Huntington, T., Nimmo, F., and MacNab, S. (2018). *UK scallop fishery: current trends, future management options and recommendations*. Report produced by Poseidon Aquatic Resource Management Ltd.

Hastie, L., Pierce, G., Pita, C., Viana, M., Smith, J. and Wangvoralak, S. (2009). *Squid Fishing in UK Waters*. Seafish. Available at: <https://www.seafish.org/document/?id=72bdf841-6e5b-435f-9dee-b87ffd2c481b>. Accessed on: 30 September 2021.

Hawkins, T., Christie, J. and Coull, K. (1998). *The industrial fisheries for sandeels*. Scottish Office, Agriculture, Environment and Fisheries Department, Marine Laboratory Aberdeen.

Kafas, A., McLay, A., Chimienti, M., Gubbins, M. (2014). *ScotMap Inshore Fisheries Mapping in Scotland: Recording Fishermen's use of the Sea*. Scottish Marine and Freshwater Science Volume 5 Number 17. Edinburgh: Scottish Government, 32p.

Kafas, A., Jones, G., Watret, R., Davies, I. and Scott, B. (2013). *2009 -2013 amalgamated VMS intensity layers, GIS Data*. Marine Scotland, Scottish Government. doi: 10.7489/1706.

Marine Scotland Science. (2017). *Creel Fishing Effort Study. Marine Analytical Unit*. Available at: <https://www.gov.scot/publications/creel-fishing-effort-study/documents/>. Accessed on: 30 September 2021.

Shelmerdine, R. L. and Mouat, B. (2021). *Mapping fisheries and habitats in the North and East Coast RIFG area*. S.I: NAFC Marine Centre.

SWFPA (2022). *Gear locations*. Available at: [Gear Locations — The Scottish White Fish Producers Association Ltd \(swfpa.com\)](https://www.swfpa.com). Accessed on: 28 February 2022.

ANNEX A: CONSULTATION QUESTIONNAIRE

Skipper name	
Vessel name	
Reg. No	
Home port	
Fishing Association	

VESSEL DETAILS		
Length		metres
Beam		metres
Draft		metres
Vessel tonnage		tonnes
Main engine HP		HP

Average no. of days fishing per year		days
Days at sea allocation this year		days

Typical fishing trip duration		Hours/days
Typical distance steamed per fishing trip		n.miles
Average steaming speed		knots

Principal fishing method(s) (potting, trawling etc.)	
<p>If main method is potting, what type of pots are used?</p> <p>No. fleets?</p> <p>No. of pots per fleet?</p> <p>If scallops, how many dredges per side?</p> <p>If demersal trawling, twin or single rig?</p>	
Seasonality of fishing method(s) (if multiple methods, seasons for each)	
Main species targeted by method(s)	
Main fishing areas by species, method & month (illustrate on chart provided or provide plotter shot)	

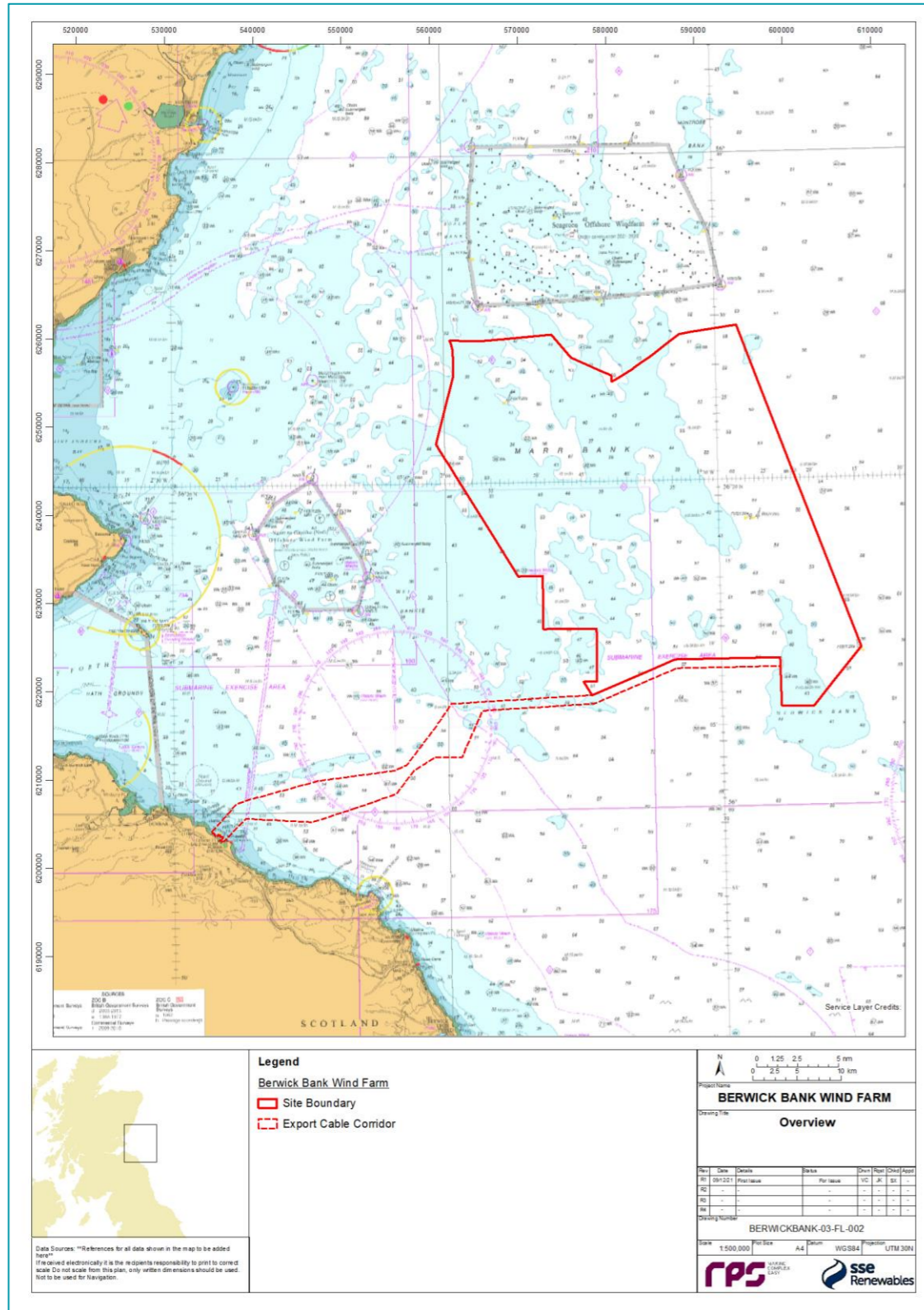


Figure 0.1: Map of Proposed Development (Overview)

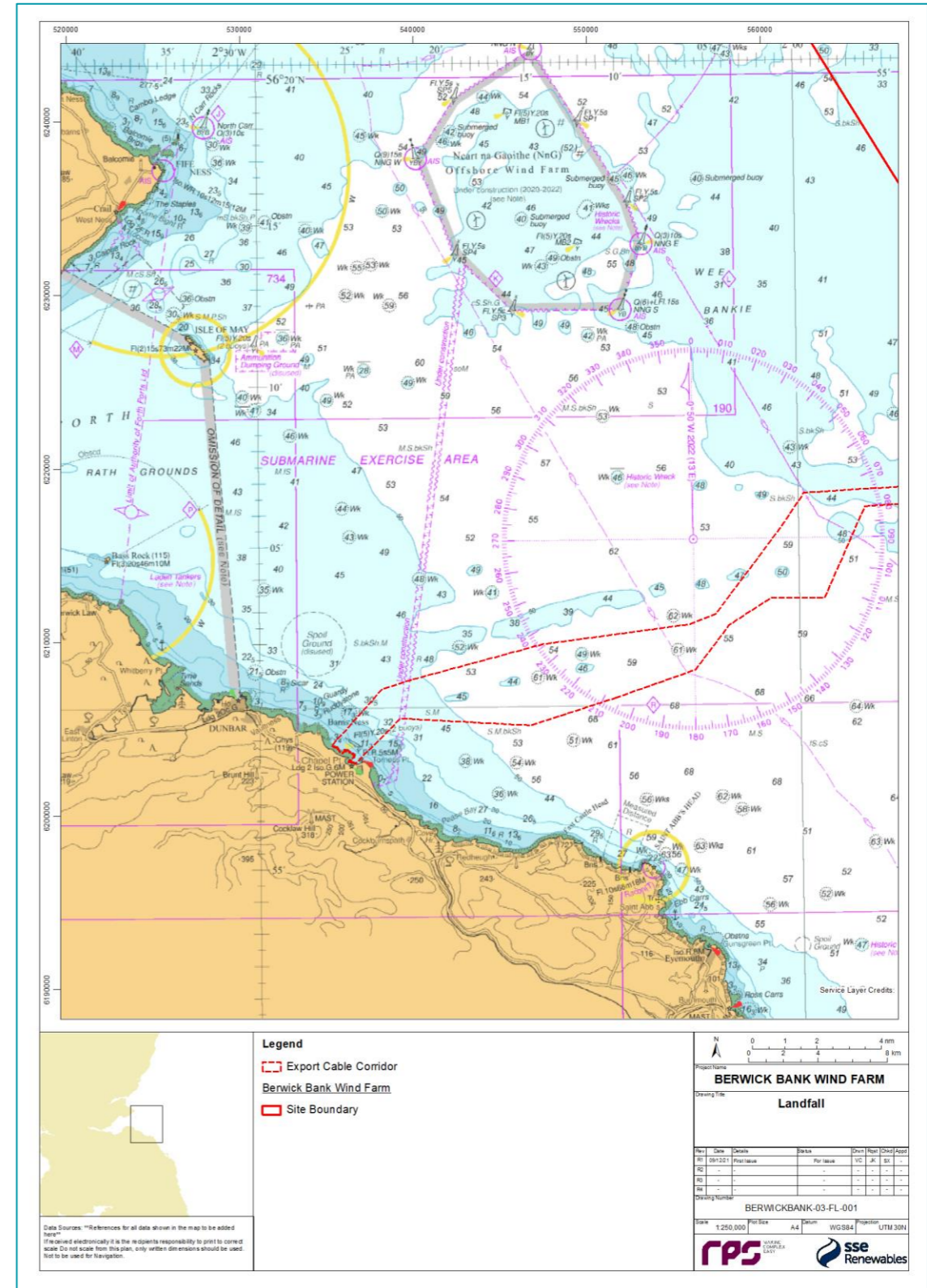


Figure 8.2: Map of Proposed Development (Landfall)

