



Rampion Offshore Wind Farm



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Baseline**

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GLOSSARY OF TERMS

BMM – Brown and May Marine Limited
BWEA – British Wind Energy Association
Cefas – Centre for Environment, Fisheries and Aquaculture Science
CFP – Common Fisheries Policy
CNPMEM – National Sea Fisheries and Aquaculture Committee – France
CRPMEM – Regional Sea Fisheries Committee - France
CPA – Coast Protection Act 1949
Defra – Department for Environment, Food and Rural Affairs
EC – European Commission
EIA – Environmental Impact Assessment
EU – European Union
FEPA – Food and Environment Protection Act 1985
FIR – Fishing Industry Representative
ICES – International Council for the Exploration of the Sea
IFREMER – French Institute for Exploration of the Sea
ILVO – Institute for Agricultural and Fisheries Research-Belgium
IMARES – Institute for Marine Resources and Ecosystem Studies
MCZ – Marine Conservation Zone
MLS – Minimum Landing Size
MMO – Marine Management Organisation
MPA – Marine Protected Area
nm – nautical mile
RIVO- Netherlands Institute for Fishery Investigations
SIH – Systeme d'Informations Halieutiques (run by IFREMER)
SSFDC – Sussex Sea Fisheries District Committee
IFCA- Inshore Fisheries and Conservation Authority
TAC – Total Allowable Catch
VCU – Vessel Capacity Unit
VMS – Vessel Monitoring System

12nm limit – Territorial waters of EU Member States extend to 12nm. Member States manage these waters exclusively within these limits
6nm limit – exclusive access to UK vessels only within 6nm
6nm-12nm limit – some access to certain EU Member States in identified areas around the UK coast, based upon historic access

Under-10m –Category of fishing vessels that are less than 10m in length
10-15m – Category of fishing vessels that are between 10m and 15m in length
Over-15m – Category of fishing vessels that are greater than 15m in length
Non-UK – Category of foreign fishing vessels that land into UK ports

Demersal – Activities or species located near or on the sea bed
Pelagic – Activities or species located in the water column

Quota – A measure of the quantity of a species that can legally be landed within a set period in the region.

18 COMMERCIAL FISHERIES

18.1 Introduction

Given below is the description of the commercial fisheries baseline by value, effort and intensity in respect of the Rampion Offshore Wind Farm (ROWF) and export cable corridor (project site). The principal guidance used to undertake this study are as follows:

- The Marine and Coastal Access Act (2009);
- Department for Environment, Food and Rural Affairs (Defra) and Centre for Environment, Fisheries and Aquaculture Science (Cefas) 2004. Offshore Wind Farms – Guidance note for Environmental Impact Assessment in respect of FEPA and CPA requirements – Version 2 (CEFAS 2004);
- Department of Energy and Climate Change (DECC). 2011. National Policy Statement for Renewable Energy Infrastructure (EN-3);
- British Wind Energy Association (BWEA) 2004 Recommendations for Fisheries Liaison (BWEA 2004).
- Department for business Enterprise and Regulatory Reform (BERR). 2008. Recommendations for Fisheries Liaison: FLOWW (Fishing Liaison with Offshore Wind and Wet renewable Group);
- UK Offshore Operators Association (UKOOA); Renamed UK Oil and Gas). 2006. Guidelines to improve Relations between Oil and gas Industries and Near-Shore Fishermen;
- International Cable Protection Committee. 2006. Fishing and Submarine Cables- Working Together.

For the purposes of this assessment, commercial fishing is defined as the activity by licensed fishing vessels undertaken for the legitimate capture and sale of finfish and shellfish.

Commercial fishing is a diverse and constantly evolving industry and fishing activities are not constant and may change over time. It is also subject to a wide range of continuously changing and often unpredictable legislation and regulation, frequently implemented without prior notification or consultation. Other factors such as fluctuations in target species stocks, market forces and operating costs, influence commercial fisheries baselines both spatially and temporally. As such, it should be recognised that, for the duration of the development's life, the commercial fisheries baseline may change.

At present there is no single data set or model for reliably determining the patterns of commercial fishing within relatively small sea areas such as those in which offshore wind farm developments are located. As such, the baseline given below has been compiled using a range of data and information derived from a variety of sources. Due to the sensitivities and large spatial units used for the collation of national fisheries statistics, emphasis has been placed upon undertaking direct consultation with the relevant national fishermen's federations, regional producer organisations, local associations and skippers fishing the project site. Since the inception of the project, a local Fishing Industry Representative (FIR) has been retained to maintain on-going liaison with the various fishing interests. In addition a

Fisheries Working Group (FWG) has been established, comprised of representatives of the various local fishing sectors and Eon, to act as a forum to discuss fishermen's concerns, feasible mitigation options, the EIA process and any other topics relevant to the development.

Both the ROWF and export cable corridor are entirely located within ICES statistical rectangle 30E9 (Figure 18.1).

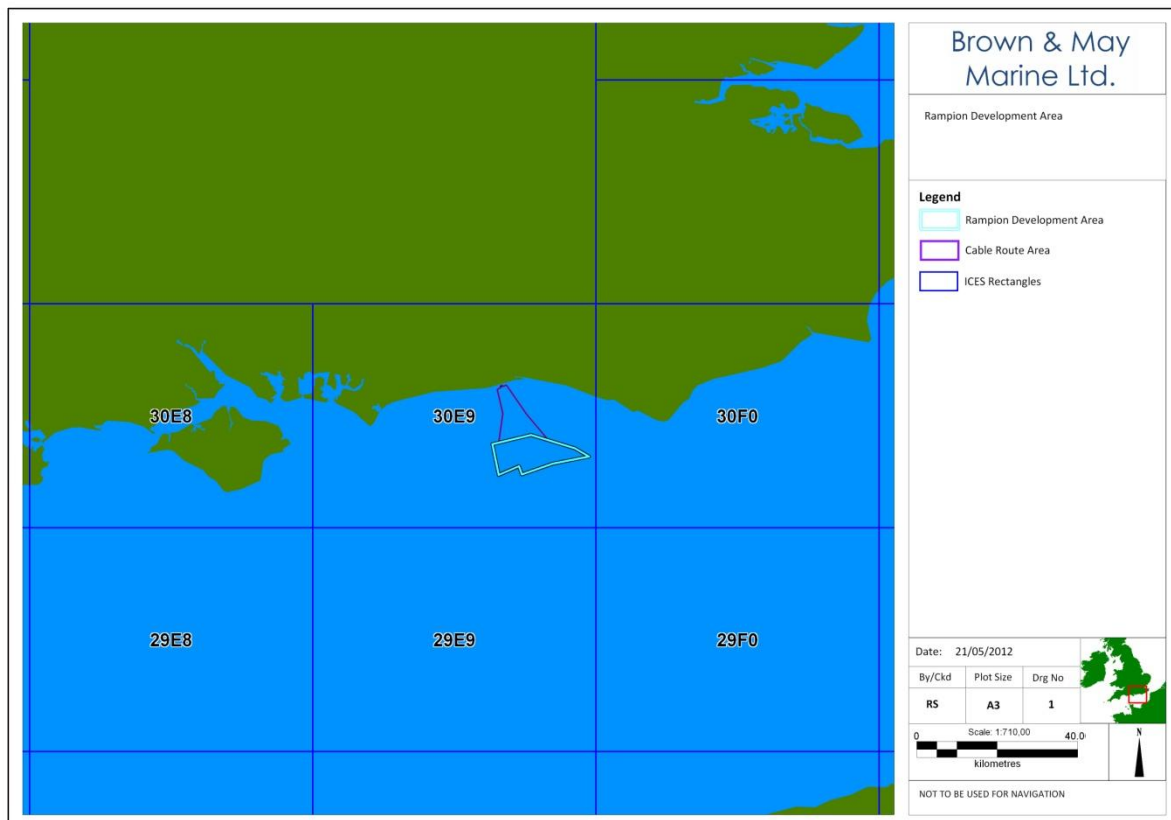


Figure 18.1 Chart illustrating the Rampion Development Area

The approach has been to provide a brief overview identifying the vessel categories by nationality and method fishing within the project site and to illustrate the importance of the project site in terms of the national context, followed by detailed descriptions of activity in regional and project specific contexts.

18.2 Data and Information Sources

As previously stated, there is currently no single data set or pre-defined model for establishing commercial fisheries baselines within small discrete sea areas such as wind farm sites. As such, in order to determine the levels of commercial fishing, a range of information and data sources were used:

- Marine Management Organisation (MMO)
 - Landings Values and Effort Fisheries Statistics (2001-2010)
 - Surveillance Sightings (2001-2010)
 - Satellite Tracking Data (2007-2010)
 - Consultations with the local District Fisheries Officer
- Institute for Agricultural and Fisheries Research (ILVO) - Belgium
 - Landings Weights and Effort Fisheries Statistics (2005-2009)
 - VMS charts
- Rederscentrale – Ostende
- Direction Départementale des Affaires Maritimes (France)
- System D'Information Halieutique (IFRAMER-France)
- National Sea Fisheries and Aquaculture Committee- France (CNPMEM)
- Regional Sea Fisheries Committee – France (CRPMEM)
- Centre for Environment, Fisheries, and Aquaculture Science (Cefas)
- Scallop Association
- European Union (EU), national and regional Fisheries Legislation
- Sussex IFCA (formerly Sussex Sea Fisheries District Committee)
- The Crown Estate Wind Farms Fishing Mapping Project
- Published literature
- Consultation undertaken with:
 - MMO Fisheries Officers
 - Fisheries data centres
 - Sussex IFCA Fisheries Officers
 - Fishermen's representative organisations
 - Skippers, vessel owners and landing agents

18.2.1 Fisheries Statistics by ICES Rectangle

The boundaries of an ICES rectangle align to 1° of longitude and 30' of latitude and, for the most part, cover sea areas of approximately 900nm². It should be recognised however that the sea area covered by the project site is relatively small in comparison to the area of an ICES rectangle. Furthermore, fishing activity within an ICES rectangle is unlikely to be evenly distributed across it and fishing events such as trawl tows may traverse more than one rectangle despite the catches being allocated to a single rectangle.

The principal source of raw data for the compilation of national fisheries statistical data is the European Commission (EC) daily log sheets which over-10m vessels are required to complete and submit.

Vessels under-10m in length are not however required to complete daily log sheets but can make voluntary submissions and, as such, data on under-10 m vessels is less comprehensive. The introduction of the 'Registration of Buyers and Sellers of First Sale Fish and Designation Auction Site Scheme' in 2005, national shellfish entitlement licensing (introduced in April 2004) and mandatory shellfish landings declarations implemented in January 2006 have improved the validity of recent years fisheries statistics for the under-10m fleet.

Vessels referred to as 'non-UK' in MMO fisheries statistics only include non-UK registered vessels landing into UK ports and the data therefore do not take account of non-UK vessels fishing in the area and landing into non-UK ports.

It should be noted that in its current form, the 2011 MMO landings data, is not sufficiently detailed to accurately illustrate activity in the area due to issues of confidentiality.

18.2.2 Surveillance Sightings

Surveillance sightings in UK Exclusive Economic Zone (EEZ) waters are recorded by fishery protection aircraft and surface craft as a means of policing fisheries legislation. This type of data provides an indication of the relative distribution of fishing activity by method and nationality. Due to the frequency of flights by surveillance aircraft however, which occur during daylight, surveillance data is not applicable to quantitative assessment of activity.

18.2.3 MMO Satellite Tracking (VMS) Data

The most comprehensive data set to currently show the relative density of fishing vessel activity by over-15m vessels in an area is VMS data. Since January 2005, all EC vessels of over-15m in length have been fitted with satellite tracking equipment which transmits the vessel's position at a minimum of every two hours to the relevant Member States' fisheries authorities. The MMO monitors all UK vessels irrespective of location, and all foreign vessels within UK EEZ waters.

Since 2008, the MMO has not been able to provide the same high definition VMS data provided due to interpretation of the Data Protection Act. The MMO has therefore only been able to provide the aggregated number of position plots by general gear type (towed or static) in a grid of rectangles of approximately 5.3nm² for the years 2007 to 2010. These data have been cross-referenced with landings values.

The 2006 and 2009 data were released in different formats and has therefore been separately analysed. The densities of recorded position plots of the 2006 and 2009 data are shown in a larger grid formats than that provided previously. Prior to 2006, the data released was substantially more detailed but unfortunately as a result of petitions, the data subsequently provided is of much lower definition and confined to only UK registered vessels.

18.2.4 SIFCA Data

The distribution of inshore fishing activity off the coast of Sussex for an eight year period (2004 to 2011) is published by the Sussex IFCA (SIFCA, 2011). The data illustrates activity by fishing method observed by the Sussex Inshore Fisheries and Conservation Authority (SIFCA) patrol vessels within the 6 nm limit.

18.2.5 Non UK Data Sets

Fisheries statistics were provided by ILVO in Belgium and IMARES in Holland. Despite a number of requests to the relevant authorities, it has not been possible to obtain fisheries statistics or VMS data for French registered fishing vessels. In response to initial consultation, presumed to be by The Crown Estate, and the publication of the Round 3 Zones locations and boundaries, the National Comité, CNPMM, in association with IFREMER, produced “French Answer to the Consultation on Round 3 UK Windfarms Proposal 2009” and “Components on activity of French fishing vessels in 2008-2009 near the Rampion offshore wind farm project zone” and the data included in these publications have been used. Further analysis has been requested utilising the updated and reduced boundary of ROWF.

18.2.6 Consultation

In view of the limitations of officially recorded datasets, considerable emphasis has been placed on obtaining information from direct consultation with fishermen. In addition to a series of public and group meetings, individual consultation was undertaken with 41 Sussex fishermen as well as with the principal landing agents. A Commercial Fisheries Working Group with representation of each of the local fishing methods has been convened, allowing focused discussion of potential impacts and possible mitigation measures for the local fishing fleet.

Consultation was also undertaken in Belgium with the national federation, Rederscentrale, and with skippers and vessel owners. In France, consultation was undertaken with skippers and fishing organisations from ports along the northern coast within the Nord Pas de Calais and Haute Normandie regions.

18.3 Fisheries Controls and Legislation

The various controls and legislation, to which commercial fishing is subjected, have significant impacts on fishing activities and incomes and thus existing and future baselines. At present, the main bodies regulating fisheries at European, national and local levels are the EU, the MMO and local IFCA's.

The principal means of management of fisheries within the EU is the Common Fisheries Policy (CFP). The CFP's declared remit is to ensure the sustainable development of fishing activities in European waters from an environmental, economic and social perspective, whilst aiming to protect and conserve living aquatic resources and minimise the impact of fishing activities on marine ecosystems.

The CFP has been recently reviewed and revisions have been announced for implementation within the next five years (EU, 2011). These include managing fisheries by multi-annual plans governed by an ecosystem approach and the precautionary principle. There is a planned policy for discards are to be banned, with fishermen obliged to land all the commercial species that they catch with full documentation of all fishing and processing activities. A system of transferable catch shares, known as concessions, will be introduced from 2014 onwards for vessels over-12 metres in length and for all vessels using towed gear. Operators will be able to lease or trade their concessions within Member States. Full details of how this will be implemented are still to be finalised via international negotiation. It should be noted that these changes are likely to impact on future baselines.

The five principal instruments currently used by the CFP, which have formed the basis of EU and national policies, to conserve and manage fish stocks within its jurisdiction are:

- Vessel and gear restrictions;
- Quotas - Total Allowable Catches (TACs);
- Days at sea restrictions;
- Minimum landing sizes (MLSS); and
- Closed seasons and closed areas.

18.3.1 Vessel Licensing and Gear Restrictions

All EU registered fishing vessels are required to hold a valid license. The vessel licensing scheme was designed to stabilise fleet numbers and to reduce its catching capacity over time through a system of Vessel Capacity Units (VCUs). New or additional licenses are not allocated and license transfers between vessels are subject to VCU restrictions. In addition, decommissioning schemes have resulted in significant reductions in the size of UK and several other Member States' fleets. Technical measures relating to gear type and mesh size have also been introduced.

18.3.2 Total Allowable Catches (TACs) and Quotas

In EU waters, national quotas are allocated to Member States by ICES areas on the basis of assessments of Total Allowable Catches (TACs) and historic rights for species identified as

requiring management (also known as 'pressure stocks'). Annual TACs are subsequently allocated to individual vessels either via Producer Organisations or collectively via non-sector allocations.

The project site is located within ICES division VIIId, and the TACs allocated for the principal pressure stock species in VIIId are given in Figure 18.2 and Figure 18.3. All TACs and the zones to which they relate are shown in Table 18.1. For the most part however, TACs for individual species are not allocated by individual ICES divisions or sub-areas, instead being allocated to larger sea areas of combined ICES areas. As is discussed below, the fishery in the region of the project is diverse, deploying differing gear types, targeting a variety of species, many of which are not currently categorised as pressure stock species. A proportion of the fishing activity in the project area is therefore not directly restricted by quotas.



Figure 18.2 ICES Division VIIId Top 5 Species TACs by Year for all Countries (Source: Europa 2012)

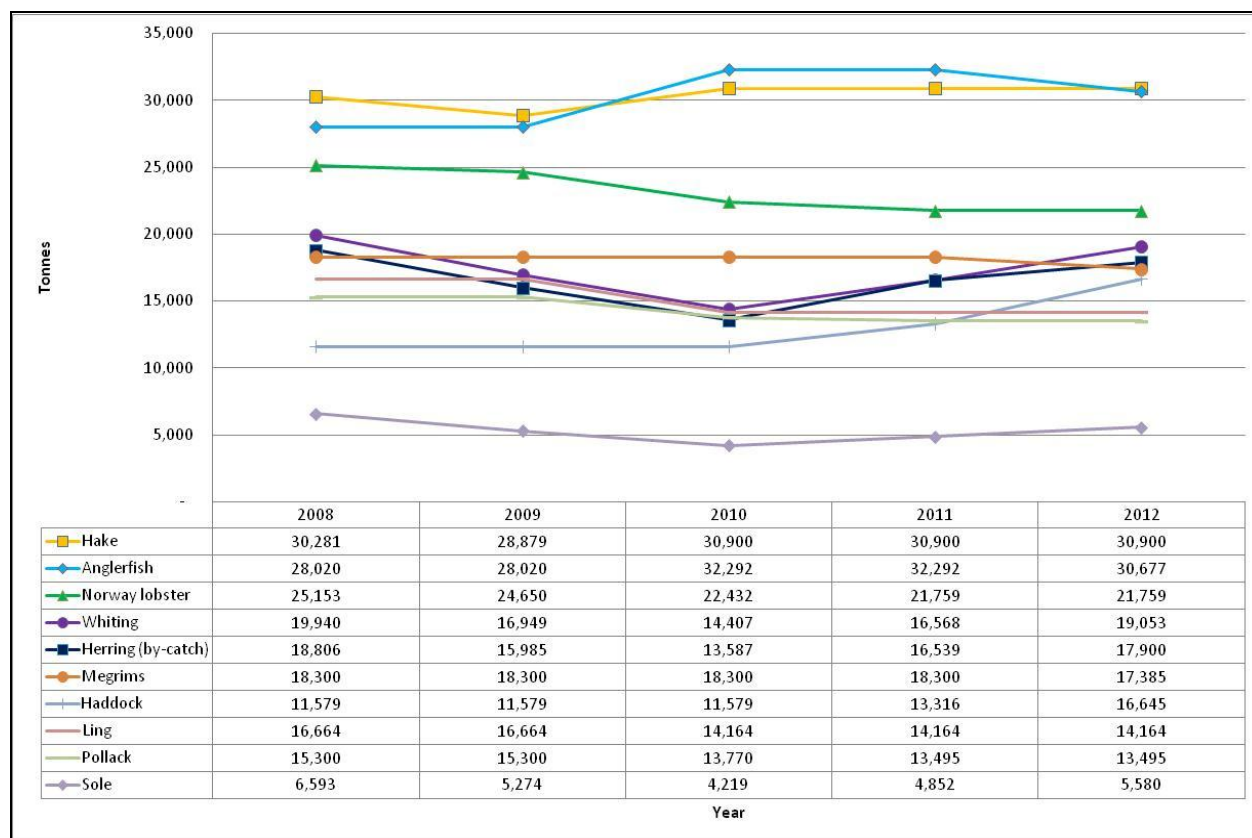


Figure 18.3 ICES Division VIId Species TACs by Year for all Countries (Source: Europa 2012)

Table 18.1 ICES Division VIId Species TAC by Year and Area for all Countries (Source: Europa 2012)

Species	Zone	2008	2009	2010	2011	2012
Herring	VIId; IVc	201,227	171,000	164,300	26,536	405,000
Blue Whiting	EC and international waters of I, II, III, IV, V, VI, VII, VIIIa, VIIIb, VIId, VIIf, XII and XIV	1,266,282	590,000	540,000	40,100	391,000
Mackerel	VI, VII, VIIIa, VIIIb, VIId and VIIf; EC waters of Vb; non-EC waters of IIa; international waters of XII and XIV	385,366	511,287	311,528	339,295	269,592
Boarfish	EU and international waters of VI, VII and VIII from 2011 onwards				33,000	82,000
Horse Mackerel	VI, VII and VIIIa, VIIIb, VIId and VIIf; EC waters of Vb; international waters of XII and XIV (EU waters of IVb, IVc and VIId from 2010 onwards)	170,000	170,000	47,454	46,505	44,180
Hake	VI and VII; EC waters of Vb; international waters of XII and XIV	30,281	28,879	30,900	30,900	30,900
Anglerfish	VII	28,020	28,020	32,292	32,292	30,677
Norway Lobster	VII	25,153	24,650	22,432	21,759	21,759
Whiting	VIIb, VIIc, VIId, VIIf, VIIf, VIIg, VIIh and VIIk	19,940	16,949	14,407	16,568	19,053
Herring (by-catch)	By-catches in IV, VIId and in EC waters of IIa	18,806	15,985	13,587	16,539	17,900

Species	Zone	2008	2009	2010	2011	2012
Megrim	VII	18,300	18,300	18,300	18,300	17,385
Haddock	VII, VIII, IX and X; EC waters of CECAF 34.1.1 (VIIb-k, VIII, IX and X; EU waters of CECAF 34.1.1 from 2009 onwards)	11,579	11,579	11,579	13,316	16,645
Ling	EC and international waters of VI, VII, VIII, IX, X, XII and XIV	16,664	16,664	14,164	14,164	14,164
Pollack	VII	15,300	15,300	13,770	13,495	13,495
Sole	VII	6,593	5,274	4,219	4,852	5,580
Sprat	VIIId and VIle	6,144	6,144	5,532	5,421	5,150
Plaice	VIIId and VIle	5,050	4,646	4,274	4,665	5,062
Greater Silver Smelt	EC and international waters of V, VI and VII	5,311	5,311	5,099	4,691	4,316
Saithe	VII, VIII, IX and X; EC waters of CECAF 34.1.1	3,790	3,790	3,411	3,343	3,343
Tusk	EC and international waters of V, VI and VII	435	3,785	3,217	3,217	3,217
Blue Ling	EU waters and international waters of Vb, VI, VII	150	-	1,732	2,032	2,032
Cod	VIIb-k, VIII, IX and X; EC waters of CECAF 34.1.1 (VIIId only from 2010 onwards)	4,316	4,023	1,955	1,564	1,543
Skates and Rays	EU waters of VIIId from 2009 onwards		1,044	887	887	887

18.3.3 Days at Sea Restrictions

In addition to quota restrictions, vessels over-10m in length are subject to days at sea restrictions as part of the CFP measures to reduce fishing effort in EU waters (Annex V, EC Regulation 2287/2003). The system is somewhat complex and relates to target species, gear types, net mesh sizes and elected management periods. The MMO oversee management of days at sea restrictions with respect to the cod and sole recovery schemes.

Vessels utilising specific gear types to target whitefish are generally limited to between 125 and 152 days at sea per year dependant on the gear used. Additional days can be allocated in a number of ways; firstly under the Cod Recovery Scheme, skippers agreeing to catch less than 5% cod on each trip will receive a total allocation of 200 days. Alternatively, vessels can receive an extra 50 days on top of their basic days at sea allocation via participation in the Catch Quota Scheme (MMO, 2011).

Vessels may also receive an additional allocation of days by agreeing to fish exclusively with selective gears. These gears are adapted to reduce capture of fish by size or to allow release of undersize or non-target species.

A sole recovery zone is currently in place in ICES Zone VIle, to the west of the project site. Within this zone, beam trawlers with a mesh size of less than or equal to 80mm are allocated 192 days, whilst vessels operating static gears (gill, trammel and tangle nets) with mesh sizes less than 200mm receive an allocation of 164 days.

Under certain circumstances, a percentage of days at sea can be transferred between vessels.

18.3.4 Minimum Landing Sizes

Minimum landing sizes (MLS) for certain fish and shellfish species are set by the EC Council Regulation 850/98 (Annex XII) and by local IFCAs in waters within their jurisdiction. This conservation measure has been criticised as promoting the discarding of large quantities of smaller fish at sea and is one of the main areas under CFP review.

18.3.5 Shellfish Entitlements

National Shellfish Entitlement Licensing was introduced in April 2004. Ownership of a fishing licence with shellfish entitlements allows unrestricted amounts of crabs and lobsters to be caught and landed by vessels which have a historic track record. Monthly returns have to be submitted for crab and lobster landings. The size and quality of crabs and lobsters landed is governed by both EU regulations and by local IFCA byelaws within the 6nm limit.

18.3.6 Scallop Dredging Entitlements

The English Channel scallop fishery is managed in the main through minimum landing sizes (110mm shell width), restriction on dredge numbers and seasonal closures. There are no other limits in the form of catch or effort. Restrictions on the number of dredges that can be used depend upon the distance the vessel is operating from the coast. The Scallop Fishing (England) Order 2012 which came into force on 1st October now limits scallop dredges to 8 per side inside the 12nm limit.

18.3.7 Regional and Local Fishing Restrictions

The UK is currently in the process of establishing a network of Marine Conservation Zones (MCZs) in both inshore and offshore waters, in order to fulfil its European and international commitments. MCZs are a type of Marine Protection Area (MPA) created by the Marine and Coastal Access Act (2009) aimed at protecting areas with habitats and species of national importance. It is possible that some fishing activities will be restricted within designated MCZ sites.

Balanced Seas was the regional project tasked with identifying and recommending MCZs to the Government in the area of the English Channel. The Balanced Seas Regional Stakeholder Group (RSG) recently finalised their recommendations (Figure 18.4) although the exact location, sea area and level of restrictions associated with any potential MCZs have to be assessed by a governmental panel prior to designation in 2013 of only those considered to be backed by robust evidence. At this stage, all other nominated sites will either be required to submit further evidence or be considered unsuitable to progress. It is intended that MCZs will be fully implemented by 2016 (Jones, 2012). There are further marine and intertidal conservation zones within the local area, as illustrated in Figure 18.5.

18.3.8 Sussex Inshore Fisheries and Conservation Authority

The jurisdiction of the Sussex IFCA extends from Hayling Island to Dungeness and out to 6nm. Although the project site is situated outside of this area, the export cable corridor falls within Sussex IFCA waters.

Sussex IFCA will manage MCZs within their jurisdiction and also regulates fishing within its waters by means of byelaws. These include trawling restrictions close to the shore and closed seasons for scallop fishing between 1st June and 31st October and for bass fishing within Chichester harbour between 30th April and 1st November.

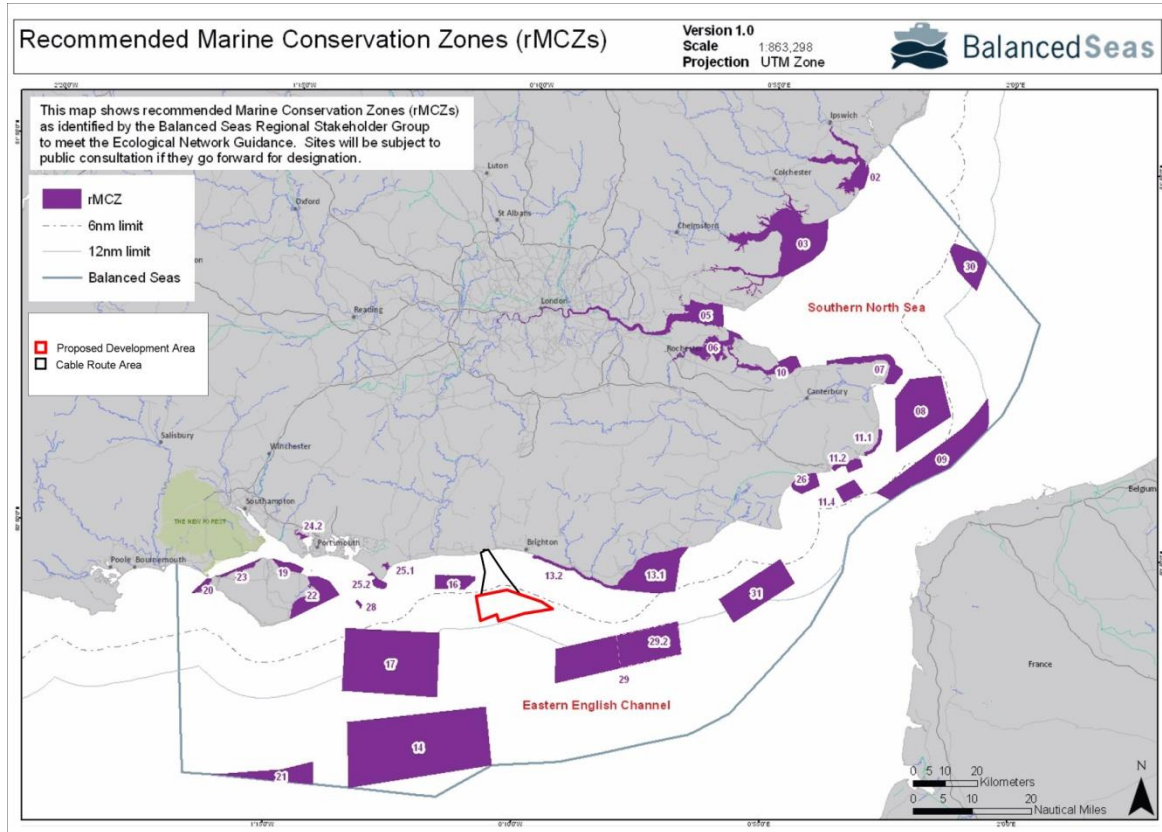


Figure 18.4 Recommended Marine Conservation Zones as defined by the Balanced Seas Regional Stakeholder Group (Source: Balanced Seas, October 2011) in relation to the Project Site

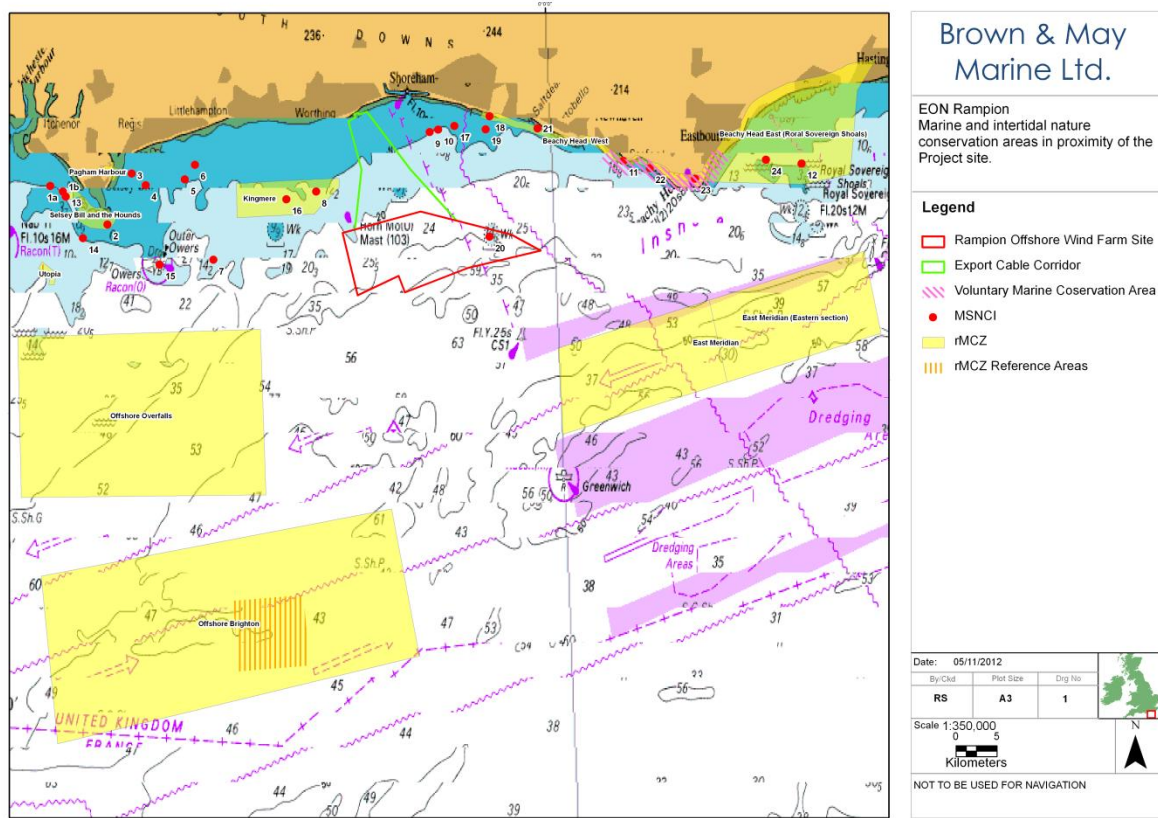


Figure 18.5 Proposed Marine Conservation Zones and other conservation areas in proximity to the ROWF site.

18.3.9 Historic Fishing Rights of EU Member States

Member States' territorial fishing limits extend out to 12nm. Access within 6nm of the coast is generally restricted to the vessels of a Member State. Access to fishing grounds between the 6 and 12nm limit is only granted to vessels from other member states which have historic rights.

The project site is located between the 6 to 12nm limit, where Belgian and French vessels have historic fishing rights for demersal species and all species, respectively (Figure 18.6). It is therefore expected that non-UK fishing may account for a proportion of the fishing activity in the area.

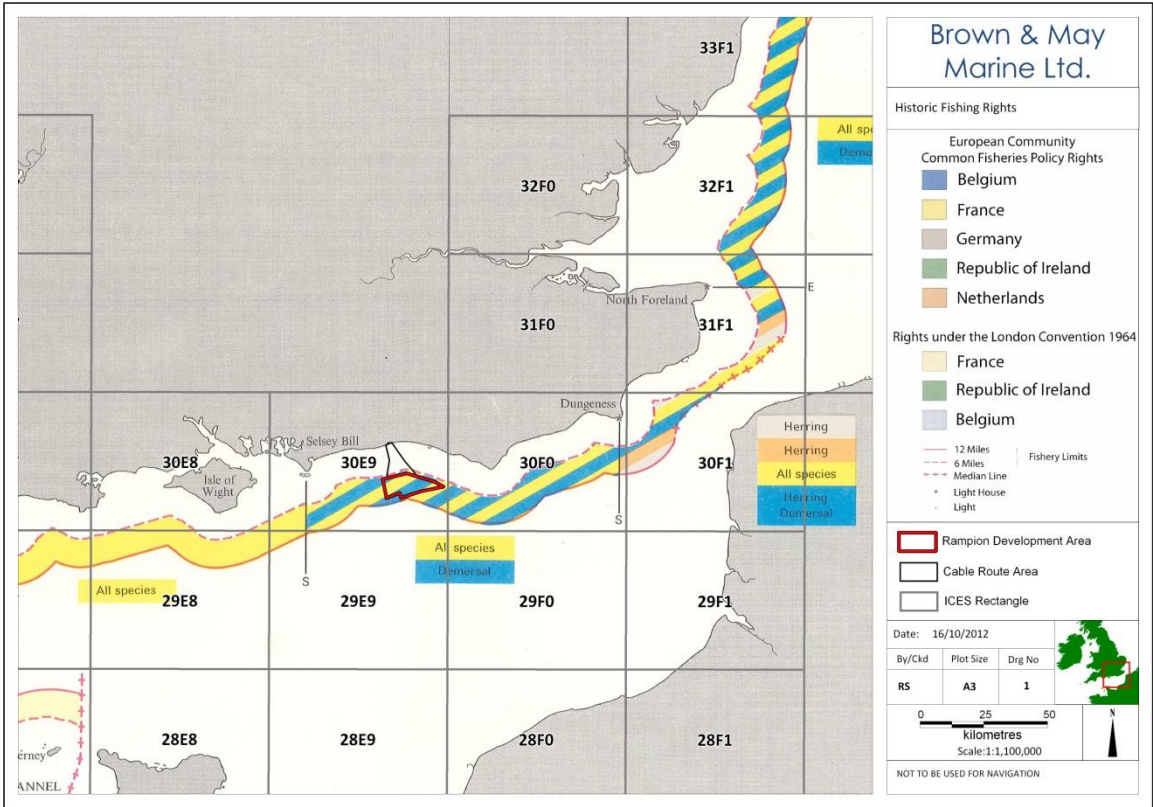


Figure 18.6 Historic Fishing Rights of Non-UK Vessels in the Area Relevant to the Project Site (Source: Admiralty Chart Q6385)

18.4 Overview of Fishing Activity

As illustrated by Figure 18.6, in addition to UK registered vessels, only Belgian and French registered vessels have historic rights and therefore are legally entitled to fish between the 6 and 12 nm limits, between which the project is located. Only UK registered vessels are permitted to fish between the 6nm limit and the coast. This is confirmed by MMO surveillance sighting data for the ten years, 2001 to 2010 (Figure 18.7), which records the presence of only UK, Belgian and French fishing vessels within the ROWF boundary. It is also apparent that the area, through which the export cable corridor passes, being located within the 6 nm limit, is only fished by UK vessels.

Figure 18.7 illustrates the distribution of observed VMS position plots between 2007 and 2010 for UK fishing vessels of over 15.0 m in length in the national context. As is apparent, the general region in which the project site is located records moderate to high levels of activity by the larger class of UK fishing vessels.

Given in Figure 18.9 are the average values of landings by ICES rectangles (2001-2010) in English waters for all categories of UK fishing vessel. As shown the ICES rectangle in which the project site is located (30E9) has been recorded amongst the higher annual landings values at an average of £4,638,579/yr.

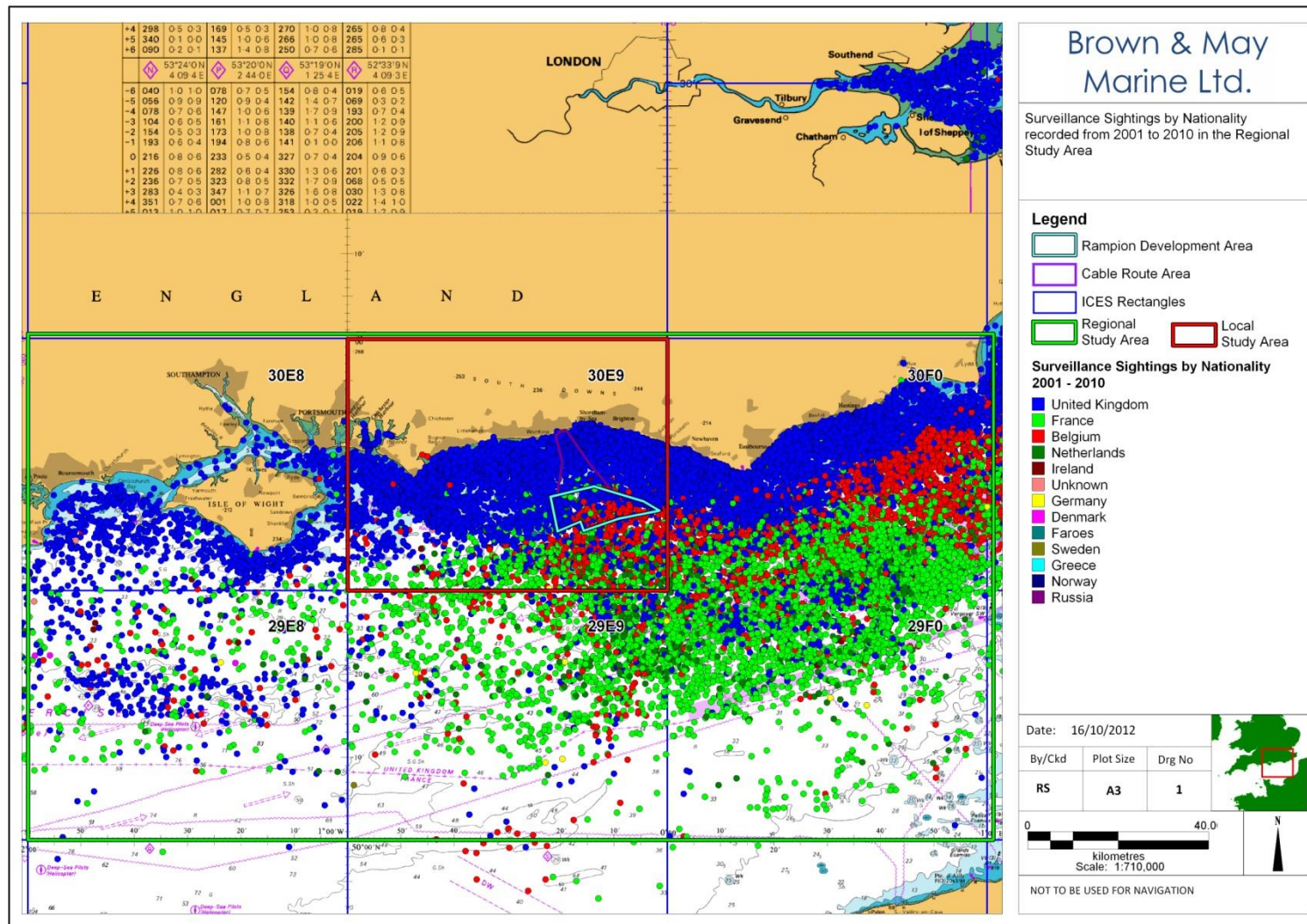


Figure 18.7 Surveillance Sightings of all Fishing Vessels (2001-2010) by Nationality in the Regional Study Area (Source: MMO, 2011)

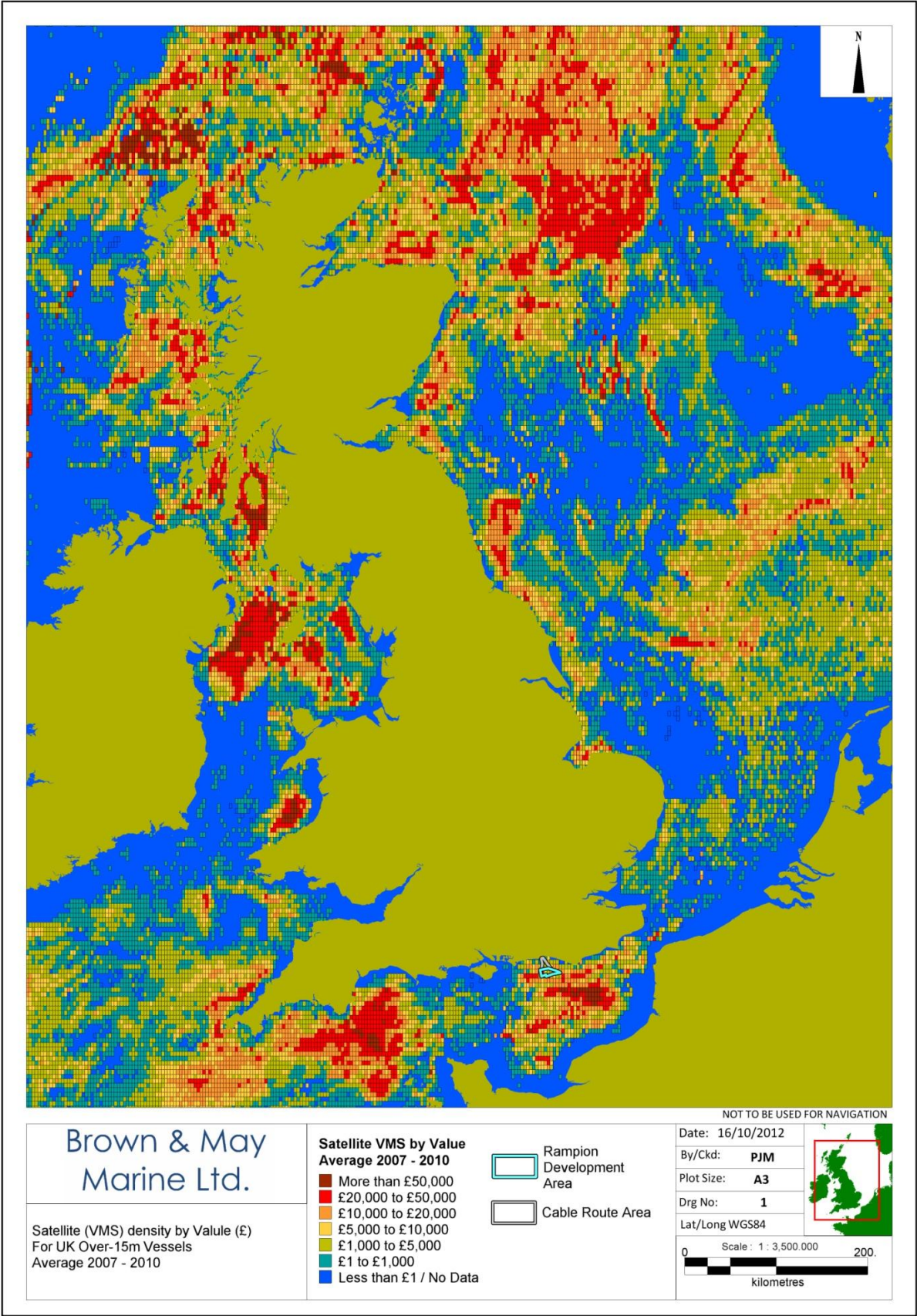


Figure 18.8 Satellite Density of UK vessels in waters around the UK by Value (Average 2007-2010) (Source: MMO, 2010)

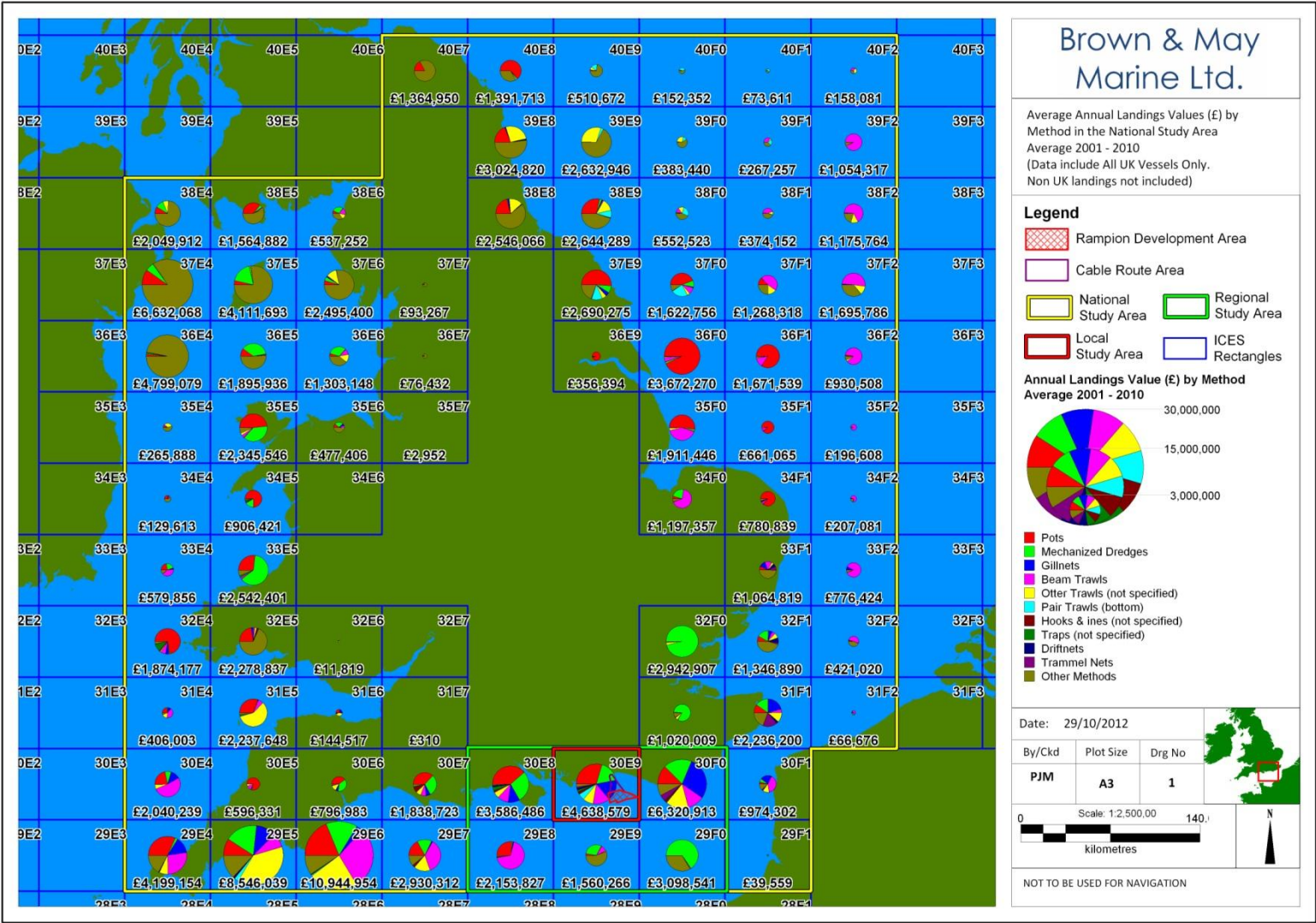


Figure 18.9 Landings Values by Method (Average 2001-2010) in the National Study Area (Source: MMO, 2011)

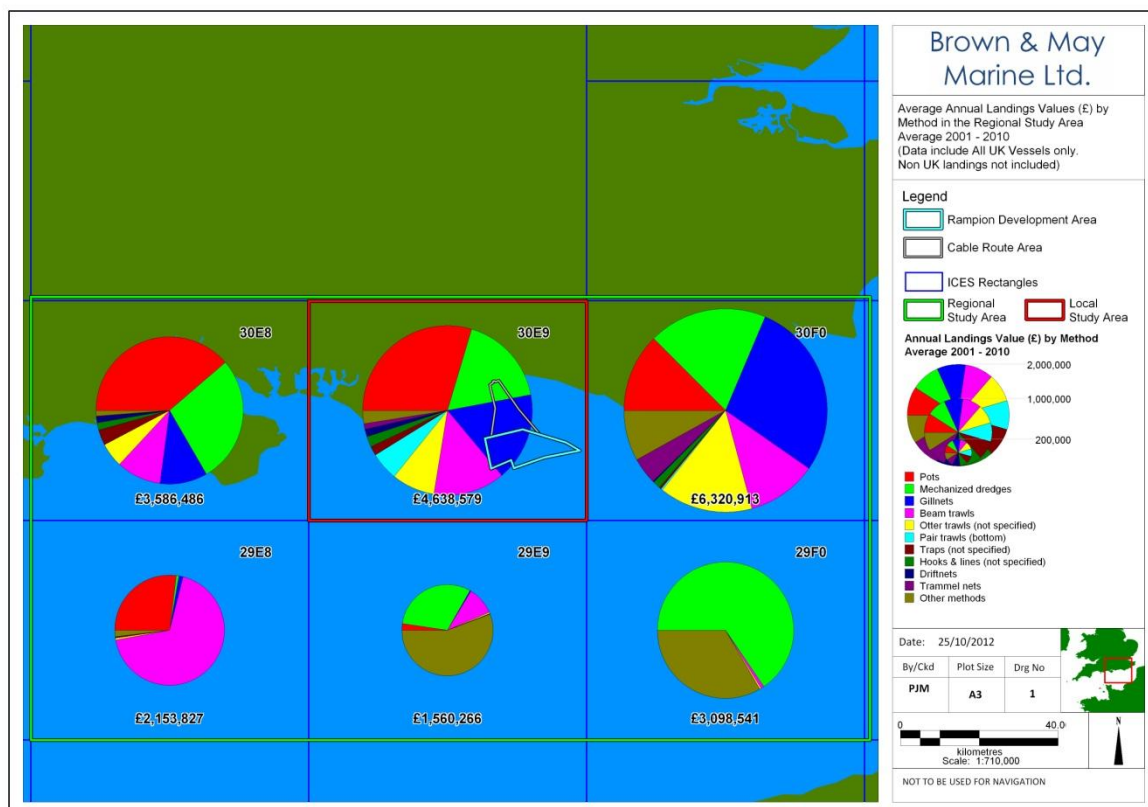
18.5 UK Fishing Activity

18.5.1 Fishing Methods and Species Targeted

As shown by Figure 18.10, the area in which the project site is located is identified by MMO statistics as being fished by vessels deploying a number of gear types, which in terms of landings values, are predominantly: pots, mechanised dredges (for scallops), gill nets, beam, otter and pair trawls and traps. It is of note that pair trawling, which according to vessels owners consulted is primarily for the capture of black bream, is only recorded as occurring in rectangle 30E9.

Figure 18.11 gives the proportional effort (days fished) by method for the six rectangles covering the region. As is indicated from comparison of effort with the values shown in Figure 18.10, the values per unit effort are higher for dredging and the various trawling methods, than for gears such as potting and netting.

It is possible that the collection and classification of netting data may, to some extent, misrepresent the effort and values by netting method. The MMO uses the terms gill nets, drift nets and trammel nets, with much of the values and effort being ascribed to gill netting. During consultation with netting fishermen however, it was stated that netting in the project site area was predominantly by demersal drift trammel netting, primarily for sole. It is therefore assumed that much of the activity recorded as gill netting is in fact drifting trammel netting.



**Figure 18.10 Annual Landings Values (Average 2001-2010) by Method in the Regional Area
(Source: MMO, 2011)**

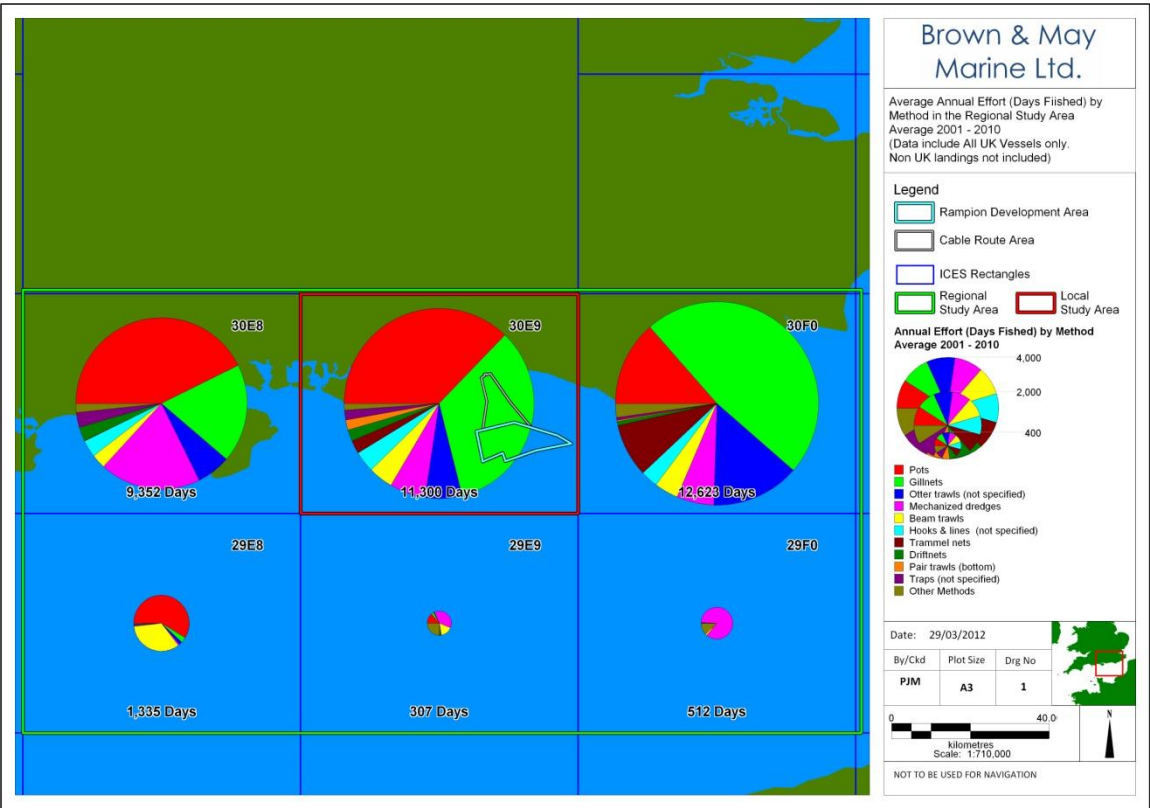
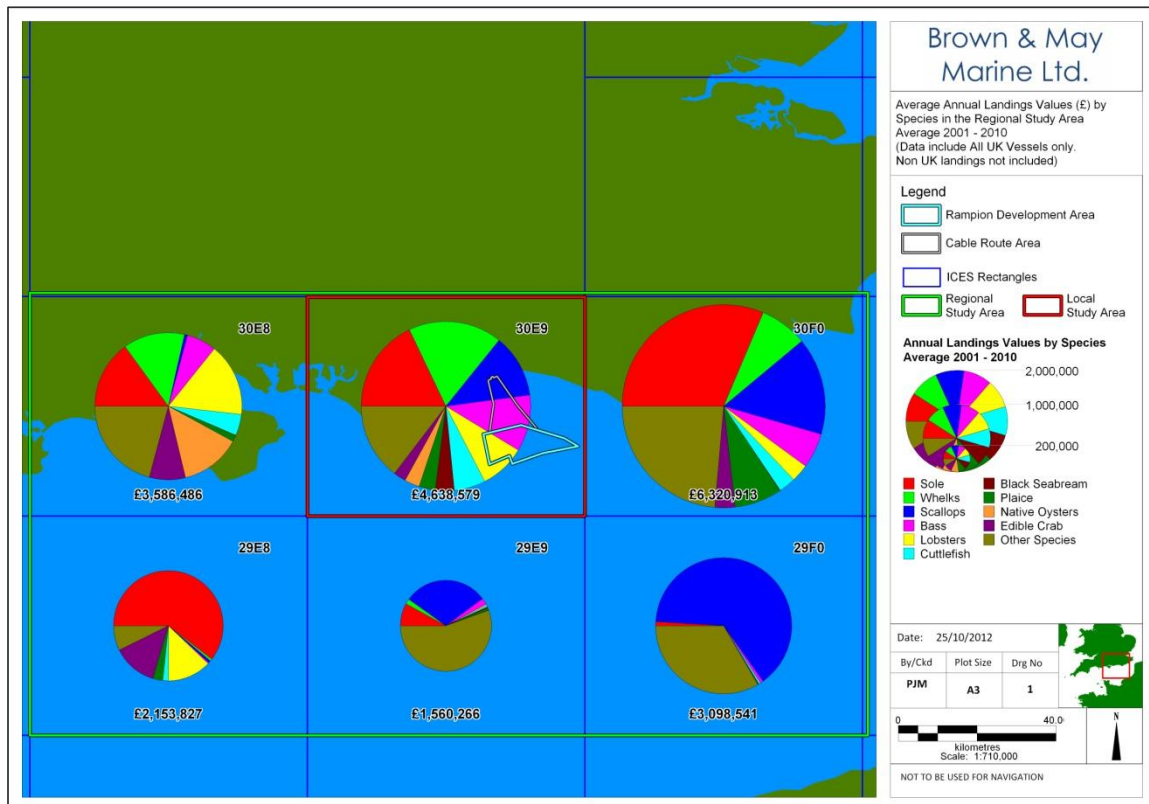


Figure 18.11 Annual Effort (Days Fished) by Method (Average 2001-2010) in the Regional Area (Source: MMO, 2011)

Figure 18.12 illustrates the relative importance of target species within the regional area. As is apparent, in rectangle 30E9, covering the immediate project site, sole, whelks, scallops, bass, lobsters and cuttlefish are the principal target species.



**Figure 18.12 Annual Landings Values (Average 2001-2010) by Species in the Regional Area
(Source: MMO, 2011)**

The MMO obtains and collates fisheries data by three categories of vessel size, namely vessels of overall length of; under-10 metres, 10-15 metres and over-15.0 metres. This is largely based on vessel and skipper certification requirements, reporting and monitoring obligations and quota allocations. For example under-10 m vessels are not required to complete and submit daily EU log sheets whereas over-10 m vessels are obliged to do so. Also, at present only over-15 m vessels are subject to VMS monitoring.

Figure 18.13 and Figure 18.14 show the relative landings values and fishing effort for the regional area. In 30E9, the highest proportions of values, and the majority of effort are recorded by under-10 m vessels followed by the 10-15 m category.

The prevalence of activity by under-10m vessels in rectangle 30E9 engaged in potting and netting, is illustrated in Figure 18.15, with all of the netting and fish trap effort and the majority potting effort being by under-10m vessels. Also shown is that all of the trawling activity, with the exception of beam trawling is by 10-15m vessels. Mechanised dredging is recorded as occurring by all three vessel categories.

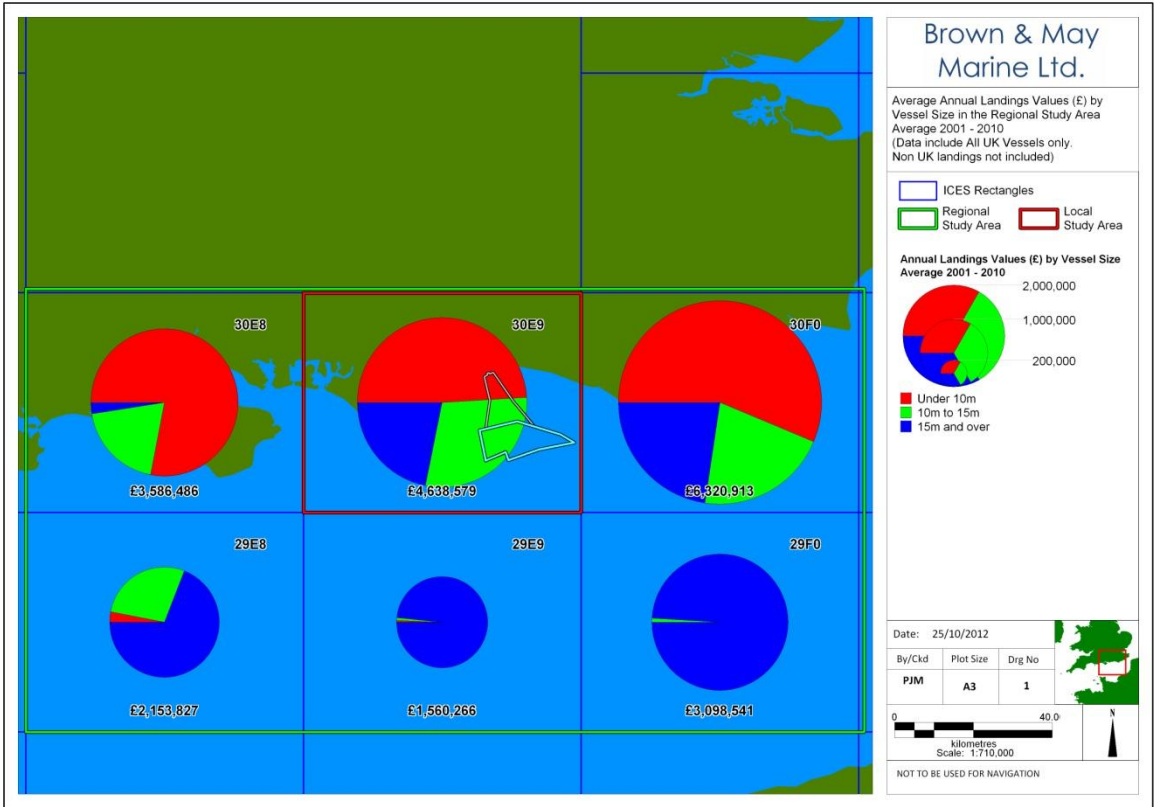


Figure 18.13 Annual Landings Values (Average 2001-2010) by Vessel Category in the Regional Area (Source: MMO, 2011)

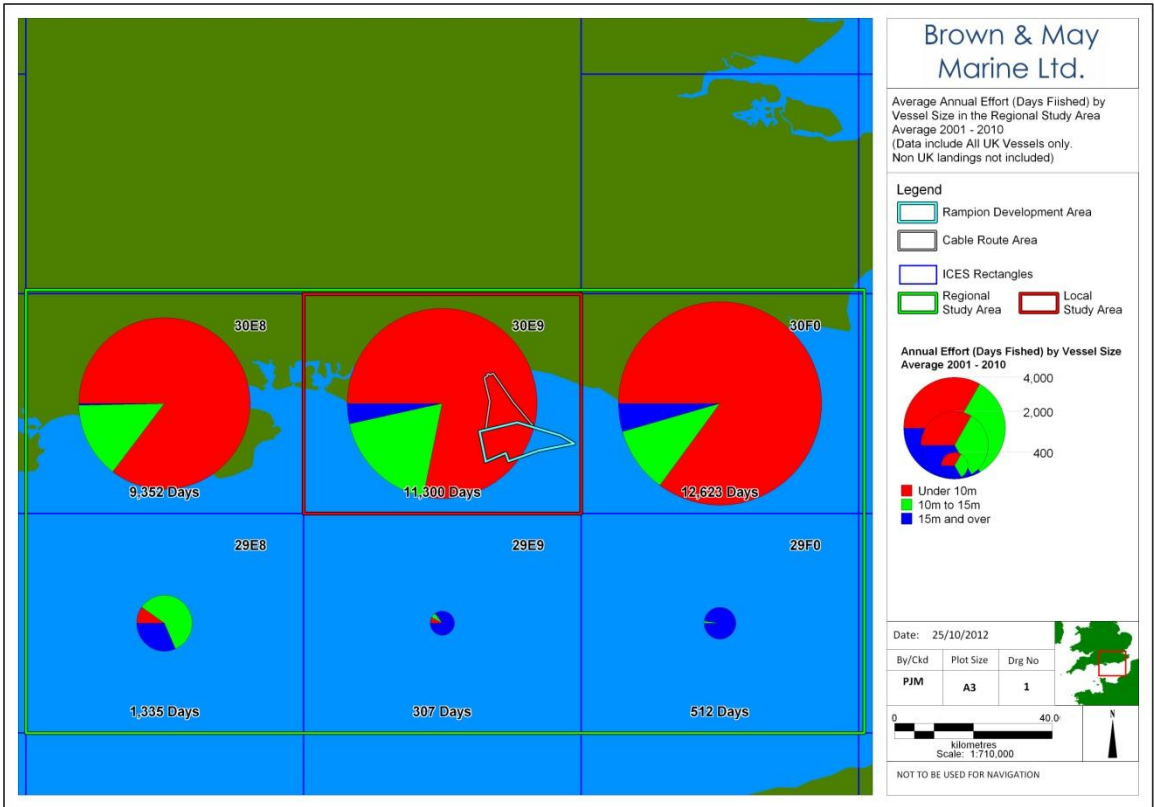


Figure 18.14 Annual Effort (Days Fished) by Vessel Category (Average 2001-2010) in the Regional Area (Source: MMO, 2011)

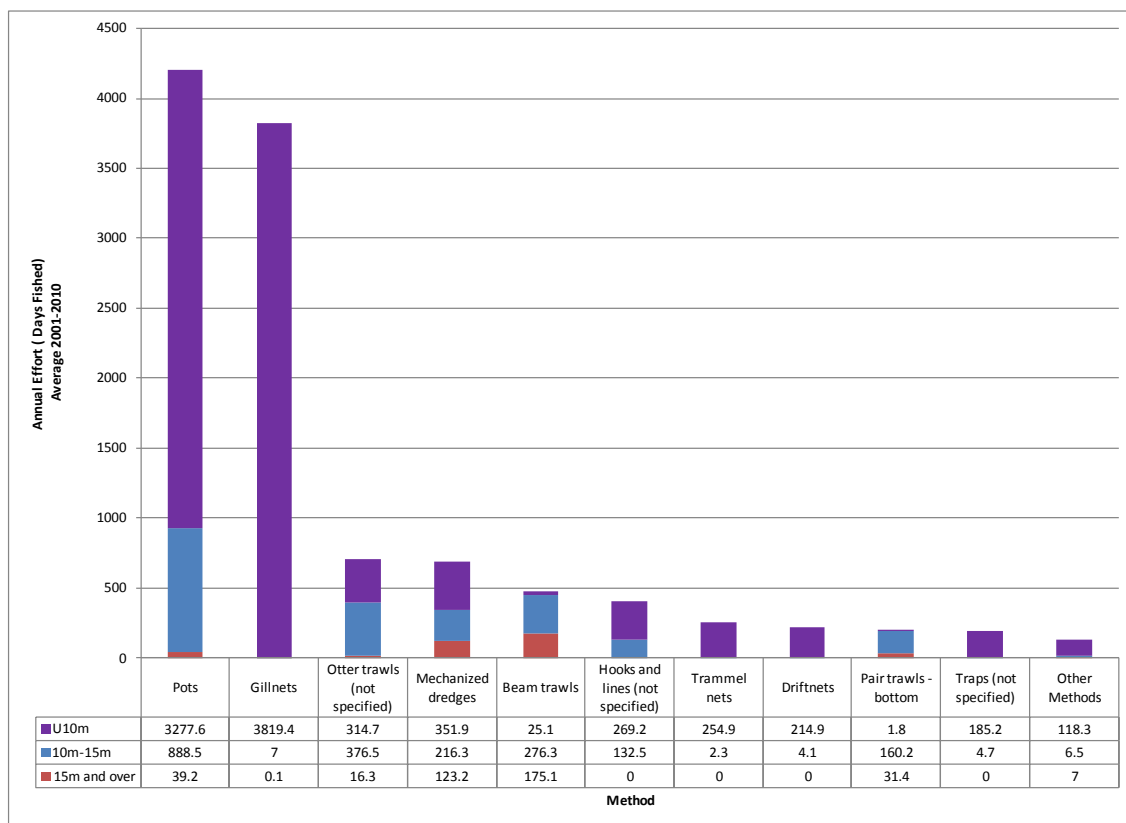


Figure 18.15 Annual Effort (Days Fished) of Fishing Methods (Average 2001-2010) by Vessel Category in ICES Rectangle 30E9 (Source: MMO, 2011)

Figure 18.16, Figure 18.17 and Figure 18.18 illustrate the relative landings values of target species by method of capture within rectangle 30E9 for the three length categories of vessel as recorded by the MMO.

For under-10m vessels (Figure 18.16), the highest values for potting are of whelks, lobsters, cuttlefish and crabs. Sole and bass account for the majority of netting landings classified as gill nets, although significant landings of whelks are also recorded for this method. With the exception of native oysters, under-10 m vessels record only low values for mechanised dredging. According to the Sussex IFCA (2012) however, “there is only a small oyster fishery within the Sussex IFCA district; it exists within the confines of Chichester Harbour” and this will not be impacted by ROWF or the export cables. The landings values for traps are confined almost exclusively to cuttlefish. Otter trawling by under-10 m vessels is generally of lower value than the other main methods with most of the value being derived from bass and sole. In the case of drift netting and hook and lines, the values are almost entirely from the capture of bass. The highest values of trammel netting are from the capture of sole, although other species such cod, bass, plaice and crabs make modest contributions to earnings.

The pattern of values of potting for the 10-15m class of vessels (Figure 18.17) is similar to that of the under-10m vessels, with whelks, lobsters, cuttlefish and crabs constituting the majority of the landings by value. Otter trawling for bass, squid and to a lesser extent plaice are the main species by value, although the recorded landings of “other species” (below the Top 10) have an average per annum value of £100,530. For beam trawling, as would be expected, the majority of landings values are from sole and plaice. The highest proportion of

values for mechanised dredging is from the landing of scallops although significant values are also recorded for mussels. Mussel dredging is however to the west of the area under consideration (Pers. Comm, R.Clark 2012). As shown, with pair trawling, the target species are almost entirely bass and black bream and for hooks and lines, the landings values are entirely from bass.

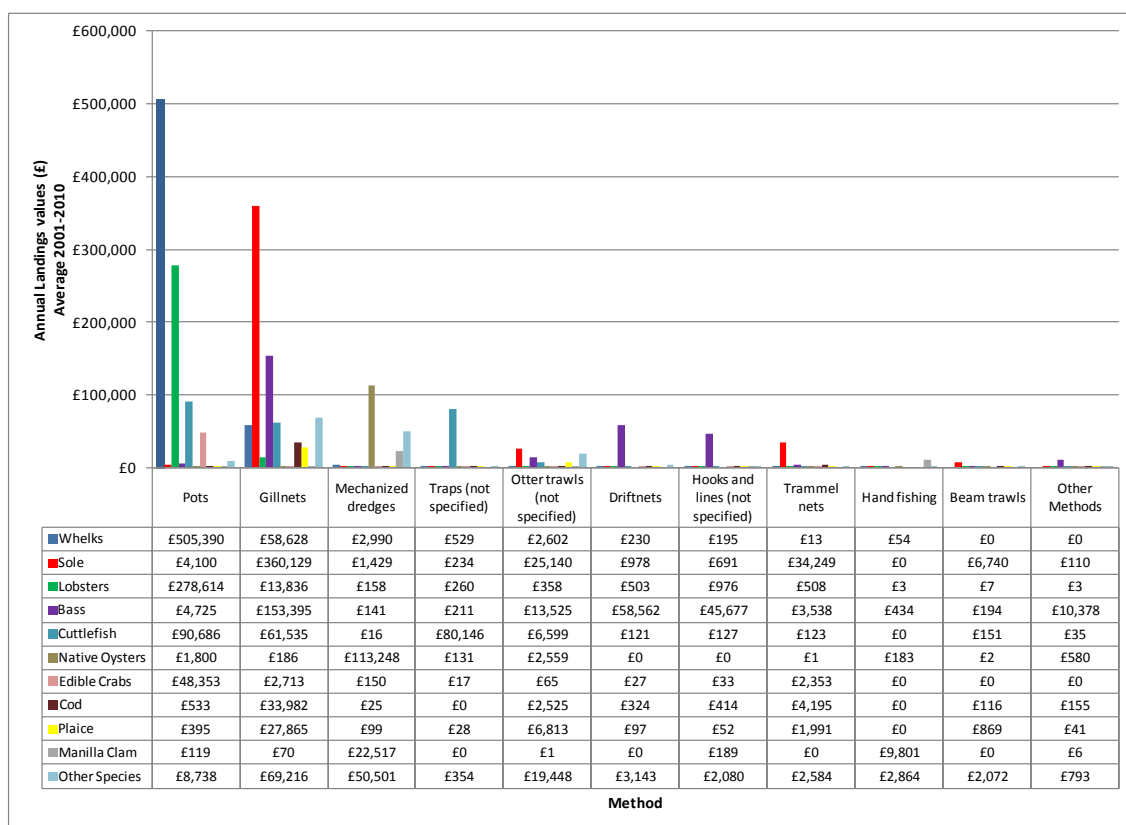


Figure 18.16 Under-10m Vessel Annual Landings Value (Average 2001-2010) for Species by Fishing Methods in ICES Rectangle 30E9 (Source: MMO, 2011)

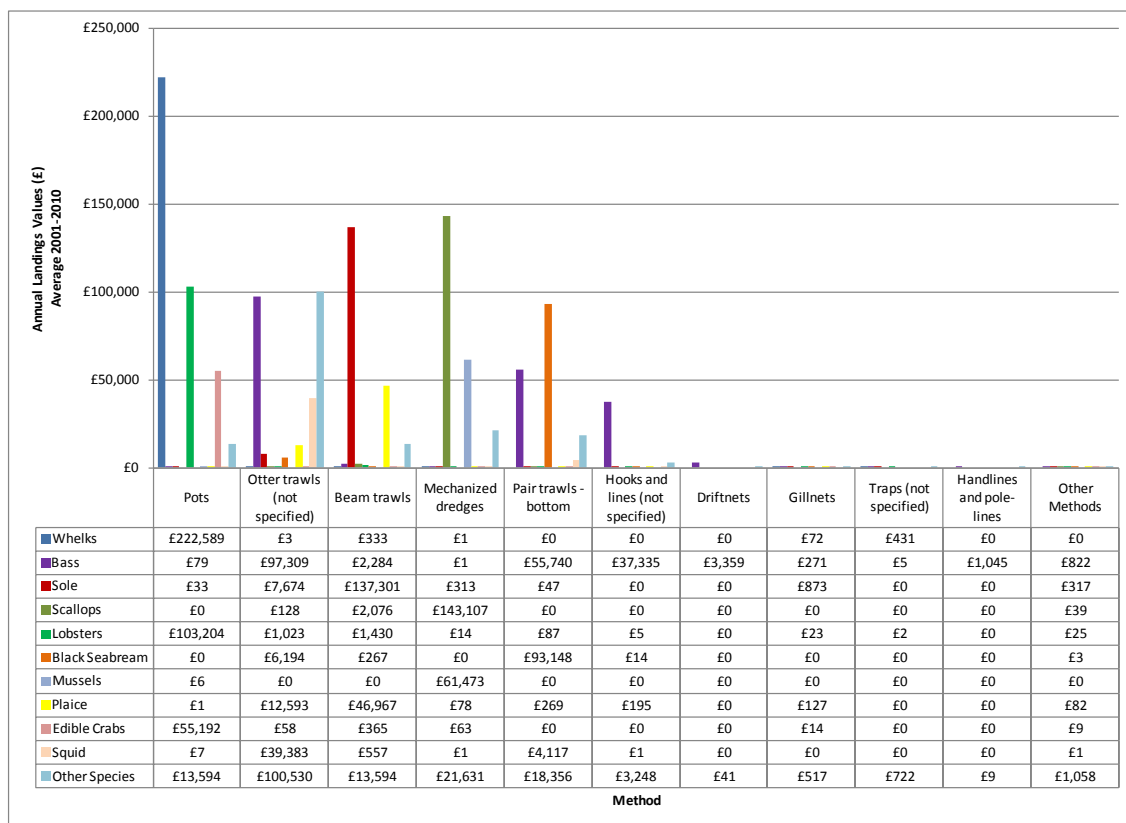


Figure 18.17 10-15m Vessel Annual Landings Values (Average 2001-2010) for the Principal Species by Fishing Methods in ICES Rectangle 30E9 (Source: MMO, 2011)

For the larger, over 15.0m class of vessels (Figure 18.18), mechanised dredging for scallops and beam trawling for soles and, to a lesser extent, other flatfish species, contribute the bulk of the landings values, with pair trawling for black bream and mid-water and pair trawling for horse mackerel accounting for moderate values.

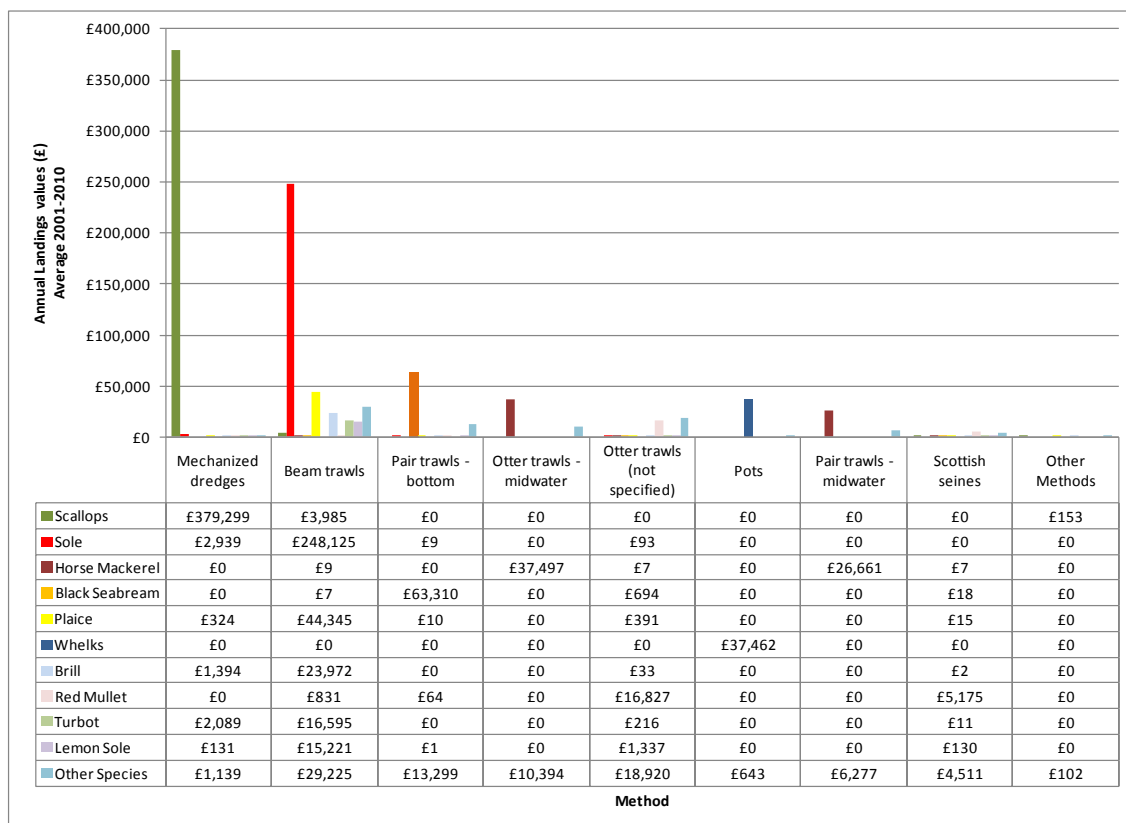


Figure 18.18 Over-15m Vessel Annual Landings Values (Average 2001-2010) for the Principal Species by Fishing Methods in ICES Rectangle 30E9 (Source: MMO, 2011)

Table 18.2 gives the total averaged landings values by port, the values into the port derived from fish and shellfish caught in rectangle 30E9 and the relative importance of catches from rectangle 30E9 expressed as a percentage of the ports total landings value.

The highest landings values from 30E9 are into Shoreham, which serves as the home port for a significant number of the local vessels and is the main landing and selling port for inshore vessels from other ports such as Worthing and Brighton. As shown, 30.2% of the value of fish landed into Shoreham is recorded as being caught in rectangle 30E9.

In the case of smaller ports such as Brighton, Littlehampton and Worthing, virtually all of the total landings values, albeit at much lower levels, are recorded as being caught in rectangle 30E9. Whilst high percentages of the total landings values of Selsey, Langstone Harbour, Bognor Regis and Itchenor/East Wittering are derived from 30E9, from consultation and the views of the FWG, it is understood that the main fishing grounds of vessels based at these ports are not within the areas of the ROWF or export cable corridor.

The catches from rectangle 30E9 also make a significant contribution to the landings recorded for Portsmouth and Brixham. As a number of the vessels (larger beam trawlers based at these ports) have engines of more than 300hp and are therefore prohibited from fishing within the 12 nm limit, it is assumed that a proportion of the values into these ports from 30E9 will be from areas other than those of the project site.

Table 18.2 Port by Landings Values (Average 2001-2010) in 30E9 (Source: MMO, 2011)

Port	Average Annual Landings Values (£) in 30E9	Total Average Annual Port Value	% of Total Average Annual Port Value that 30E9 represent
Shoreham	£1,543,300	£5,116,609	30.2%
Selsey	£901,283	£978,901	92.1%
Portsmouth	£746,286	£1,973,126	37.8%
Brighton	£328,538	£340,733	96.4%
Newhaven	£303,028	£2,034,173	14.9%
Brixham	£296,463	£18,785,729	1.6%
Littlehampton	£124,972	£133,554	93.6%
Langstone Harbour	£66,051	£111,997	59.0%
Ijmuiden	£50,436	£19,552,069	0.3%
Worthing	£43,495	£43,815	99.3%
Bognor Regis	£38,962	£67,667	57.6%
Scheveningen	£33,956	£4,177,921	0.8%
Plymouth	£29,476	£10,489,276	0.3%
Isle Of Wight	£21,724	£418,082	5.2%
Emsworth	£19,534	£24,498	79.7%
Boulogne	£11,593	£618,437	1.9%
Eastbourne	£9,936	£1,524,126	0.7%
Itchenor/East Wittering	£7,793	£17,387	44.8%
Poole	£7,524	£1,554,976	0.5%
Weymouth	£6,702	£1,954,020	0.3%

The zones of influence for vessel home ports were assessed for ports within the SIFCA district in Vanstaen et al (2010) and are illustrated in Figure 18.19 below in relation to the ROWF and its associated cable route. These were defined within the report as “the geographic area where fishing activity contributes to the characteristics of the social, economic and /or environmental conditions”. The zones of influence overlay the ROWF for vessels operating from Portsmouth, Shoreham, Brighton and Newhaven.

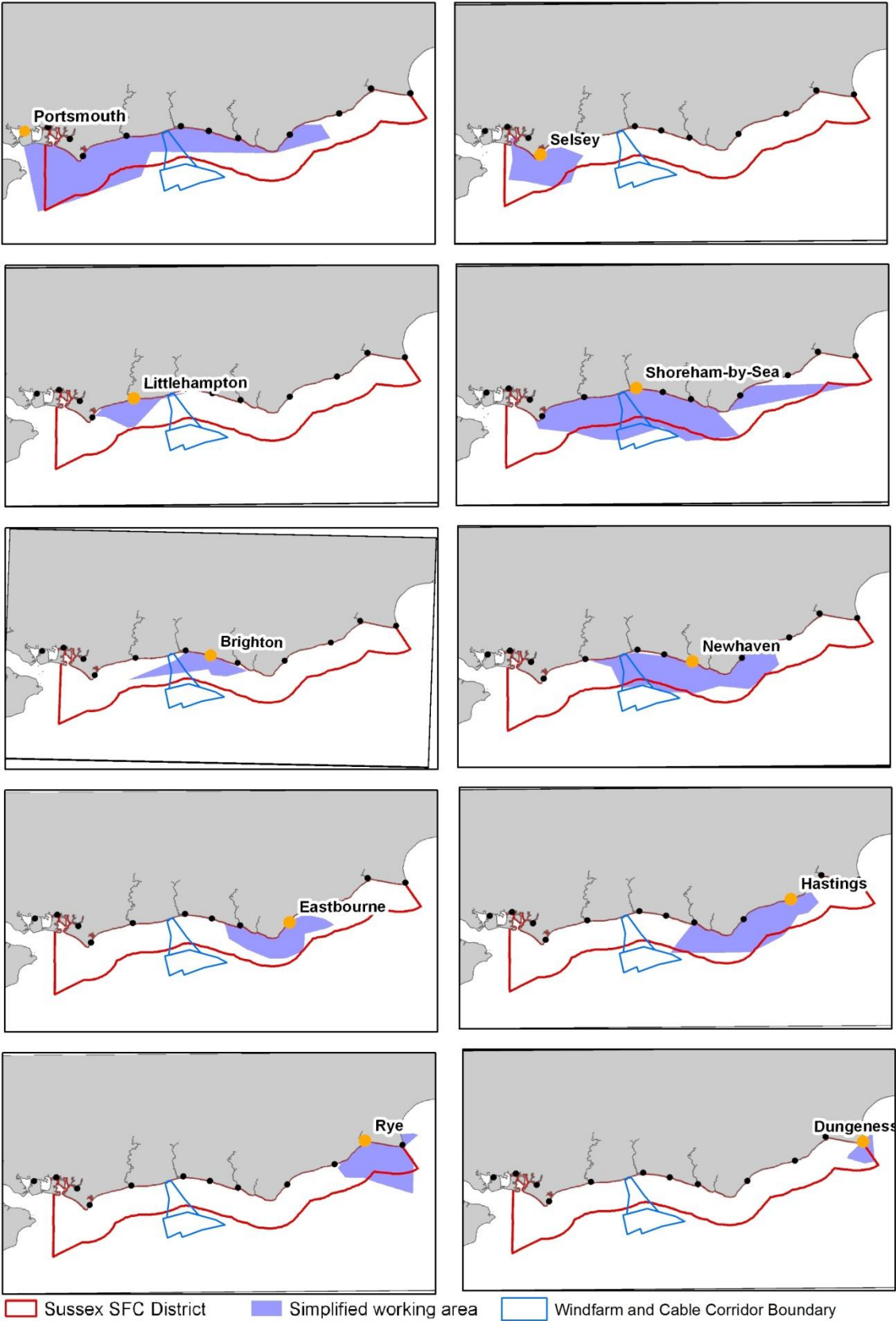


Figure 18.19 Zone of Influence for Vessel Home Ports within the SIFCA District in Relation to the ROWF and Associated Cable Route (Source: Vanstaen et al., 2010)

18.5.2 Annual Trends in Fishing Effort

The annual effort by method is shown in Figure 18.20. A notable feature is the increase in gill netting and potting effort in 2006. This may be associated with the introduction of the 'Registration of Buyers and Sellers of First Sale Fish and Designation Auction Site Scheme' in 2005 and mandatory shellfish landings declarations implemented in January 2006. These measures are recognised as having improved the quality of fisheries data collected for under-10m vessels, as prior to their implementation there was not an established framework for collecting data on this class of vessel. As a significant proportion of gill netting and potting is by under-10m vessels, the increase in recorded activity may be largely due to this as opposed to an actual increase in effort after 2006.

Mechanised dredging shows a progressive increase in effort, peaking in 2008, after which there was a small decline. Beam and pair trawling effort over the ten years has remained stable, despite a number of modest peaks and troughs, whereas otter trawling shows a progressive decline in effort since 2001. The recorded drift net effort has also shown a significant decline from a peak in 2004. Although moderately lower than its 2007 peak, over the past three years effort involving traps has remained relatively stable.

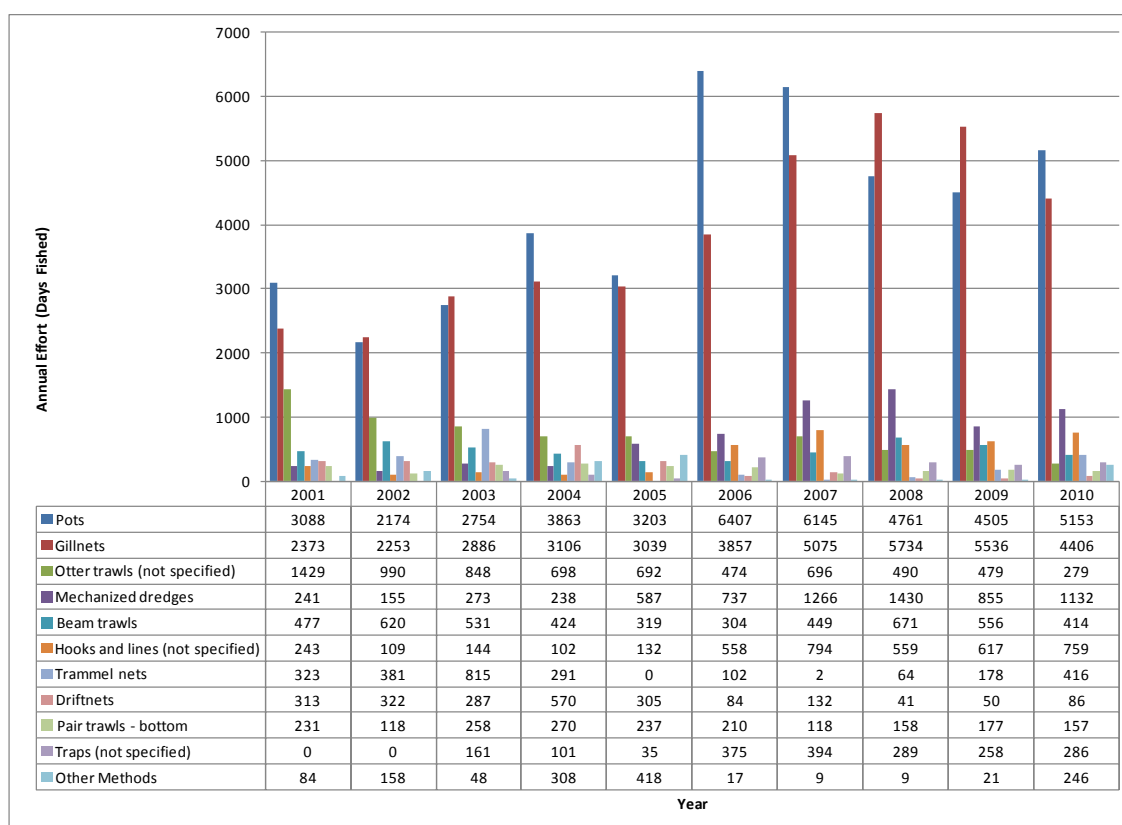


Figure 18.20 Annual Effort (Days Fished) by Fishing Method (all vessel length categories) in ICES Rectangle 30E9 (Source: MMO, 2011)

18.5.3 Seasonality of Effort

The averaged monthly effort recorded in rectangle 30E9 is given in Figure 18.21. Whilst potting occurs throughout the year, the highest levels of activity have been recorded in the spring and summer months. A similar pattern occurs with gill netting, otter trawling and

hooks and lines, although the higher levels of activity continue into the autumn. A high proportion of mechanised dredging effort is recorded during the autumn and winter months from October to March. The higher beam trawling effort occurs in the autumn, as does trammel and drift netting activity.

Pair trawling and trap fishing is shown to be highly seasonal almost entirely confined to April, May and June, reflecting the seasonality of the local black bream and cuttlefish fisheries.

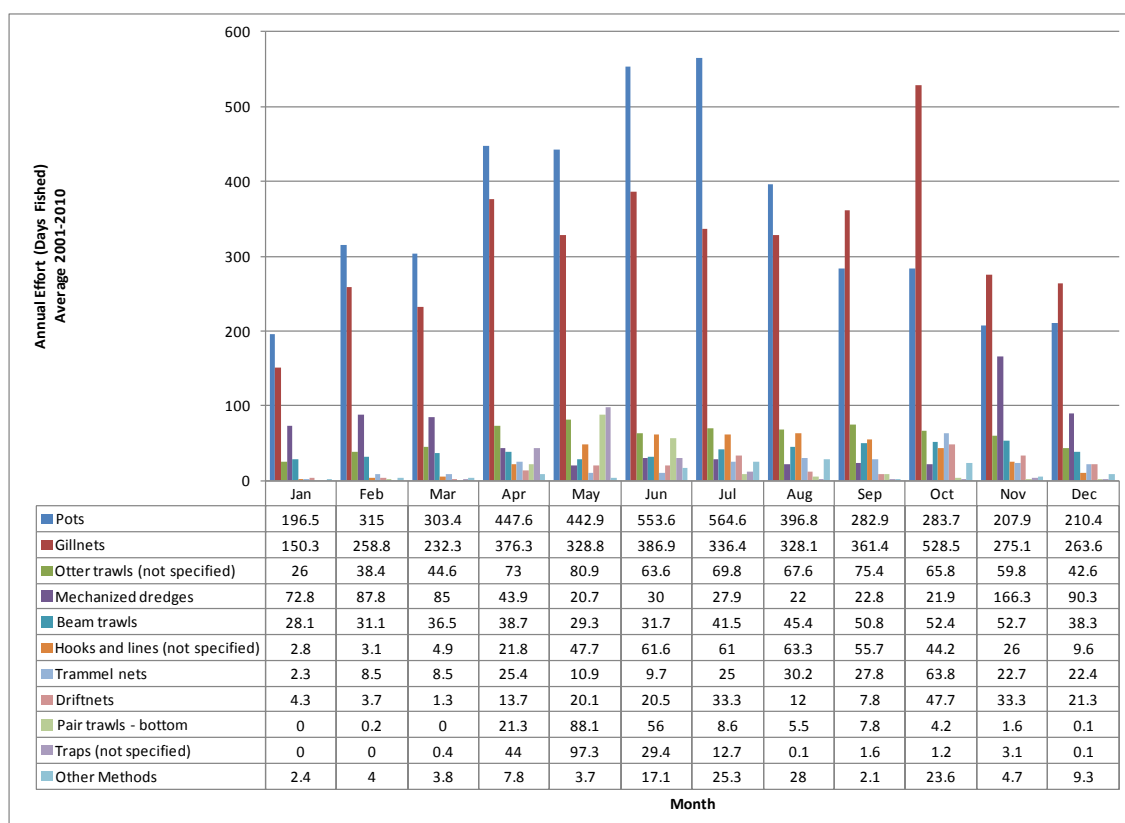


Figure 18.21 Seasonality of Effort (Days Fished) by Method (Average 2001-2010) in ICES Rectangle 30E9 (Source: MMO, 2011)

18.5.4 Fishing Grounds

The following description of fishing grounds is based upon; recorded VMS fishing vessel position plots of over-15m vessels, MMO fisheries surveillance sightings, charts published by Sussex IFCA, face to face consultation undertaken with 52 skippers and vessel owners, CFWG meetings and information provided during meetings with Mr Robert Clark of SIFCA.

With regards to VMS, between 2010 and 2011, the MMO has changed its position on the resolution of VMS data it was prepared to release. In 2009, the MMO released data by 1/16th of an ICES rectangle by gear type for UK vessels only. Subsequently, in 2011, due to Data Protection Act concerns, even though vessel identities were not disclosed, the policy was changed. Under the new policy, data is supplied by a grid aligning to 0.05 degrees of longitude and latitude with vessels being described as only utilising either mobile or static gears, with no disclosure of specific fishing method. The subsequent data is speed filtered,

with the aim of identifying only vessels actually fishing as opposed to steaming. The data is however cross referenced with landing values to illustrate value densities. It should also be recognised that that only vessels of over-15.0m in length are monitored by VMS, and as discussed above, the majority of the fishing activity within the vicinity of the project site is by vessels of under-15.0m in length.

Vanstaen et al (2010) demonstrated that the distance travelled to fishing grounds from home ports within the SIFCA's jurisdiction is greater for mobile gears in comparison to static gear types. As illustrated in Figure 18.22, taken directly for the report, vessels undertaking beam trawling roam furthest from their home ports, whilst those operating drift nets, static nets and longlines utilise closer fishing grounds.

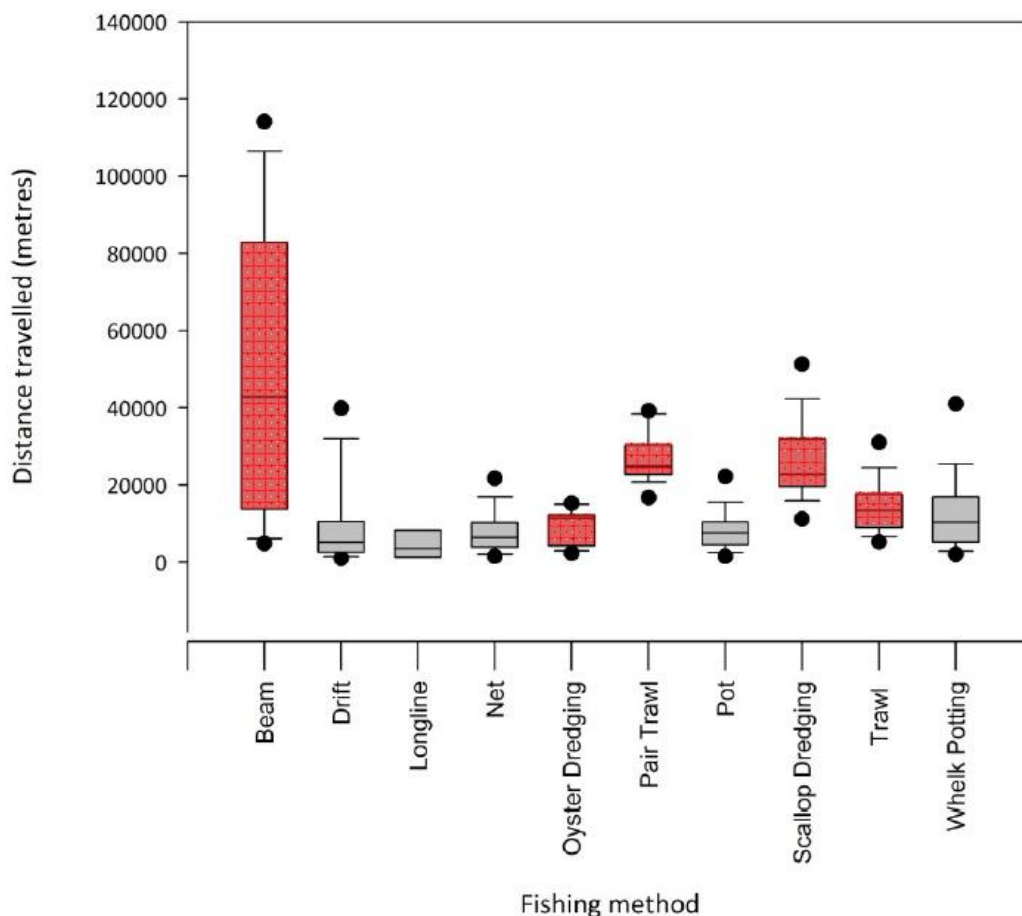


Figure 18.22 Box Plot of Distance travelled (Metres) from Home Ports by Sectors (Red represents Mobile Gear, Grey represents Static Gear)(Source: Vanstaen et al. 2010)

18.5.4.1 Potting

Figure 18.23 illustrates the locations of potting activity targeting crabs and lobsters and Figure 18.24 for whelks, as recorded by SIFCA patrol vessels. As is apparent, the majority of the observed crab and lobster potting occurs to the west and east of the both the ROWF site and the export cable corridor, with the highest concentration between Selsey and Littlehampton.

Whilst all of the activity was observed within the 6 nm limit and from consultation it is understood that the majority of crab and lobster potting occurs within 6 nm from the shore,

the jurisdiction of the Sussex IFCA extends to the 6 nm limit and as such may underestimate total potting activity. As shown by Figure 18.24, the potting areas for whelks are more extensive, some of which fall within the area in which the export cable is to be installed.

The crab and lobster potting areas as defined by the skippers interviewed (Appendix 1) are shown in Figure 18.25 and occur both within the export cable corridor and into part of the ROWF site. Similarly the whelk fishing grounds as described by the skippers consulted (Figure 18.26) are considerably more extensive than those observed by the SIFCA patrols and include all of the ROWF site and the export cable corridor.

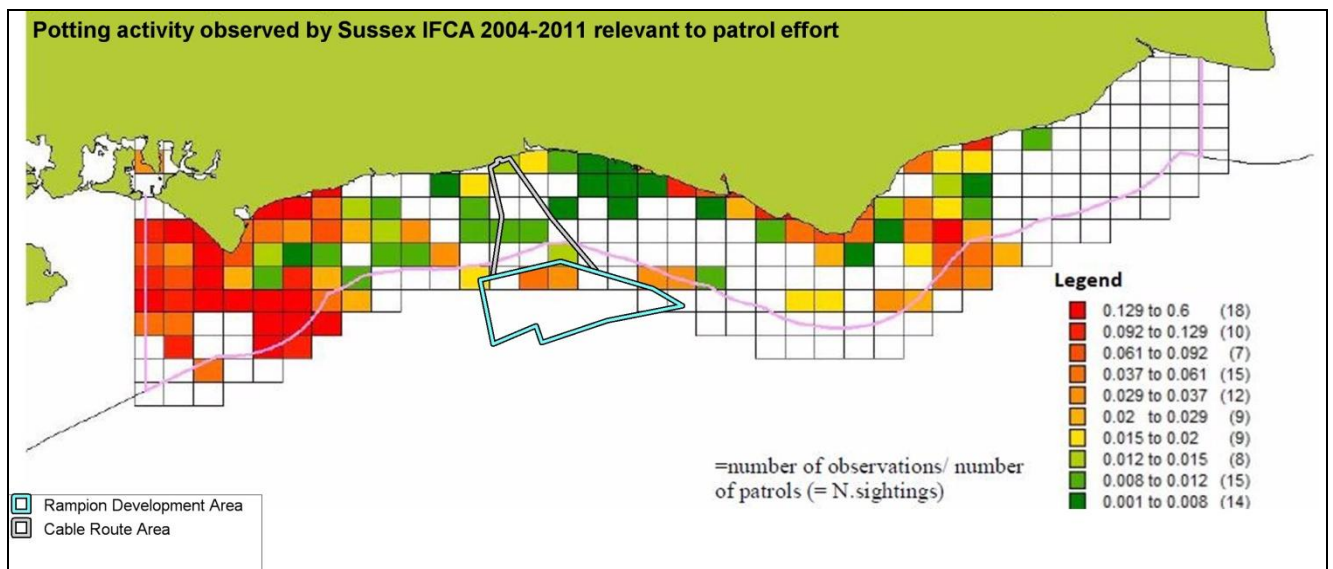


Figure 18.23 Potting Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)

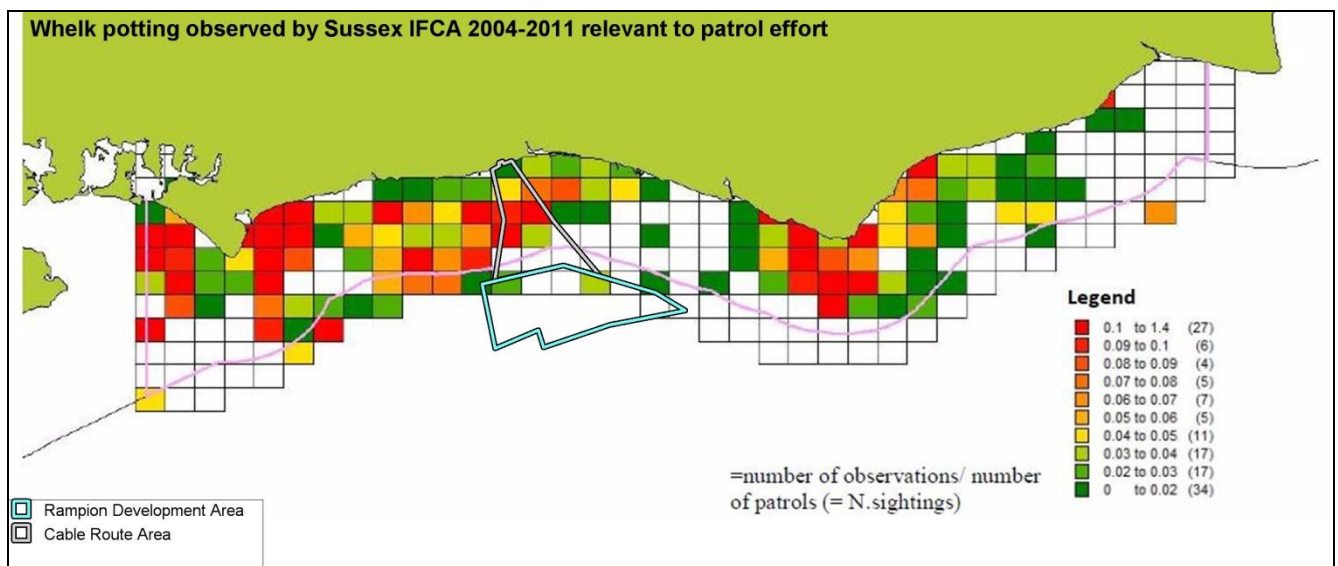


Figure 18.24 Whelk Potting Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)

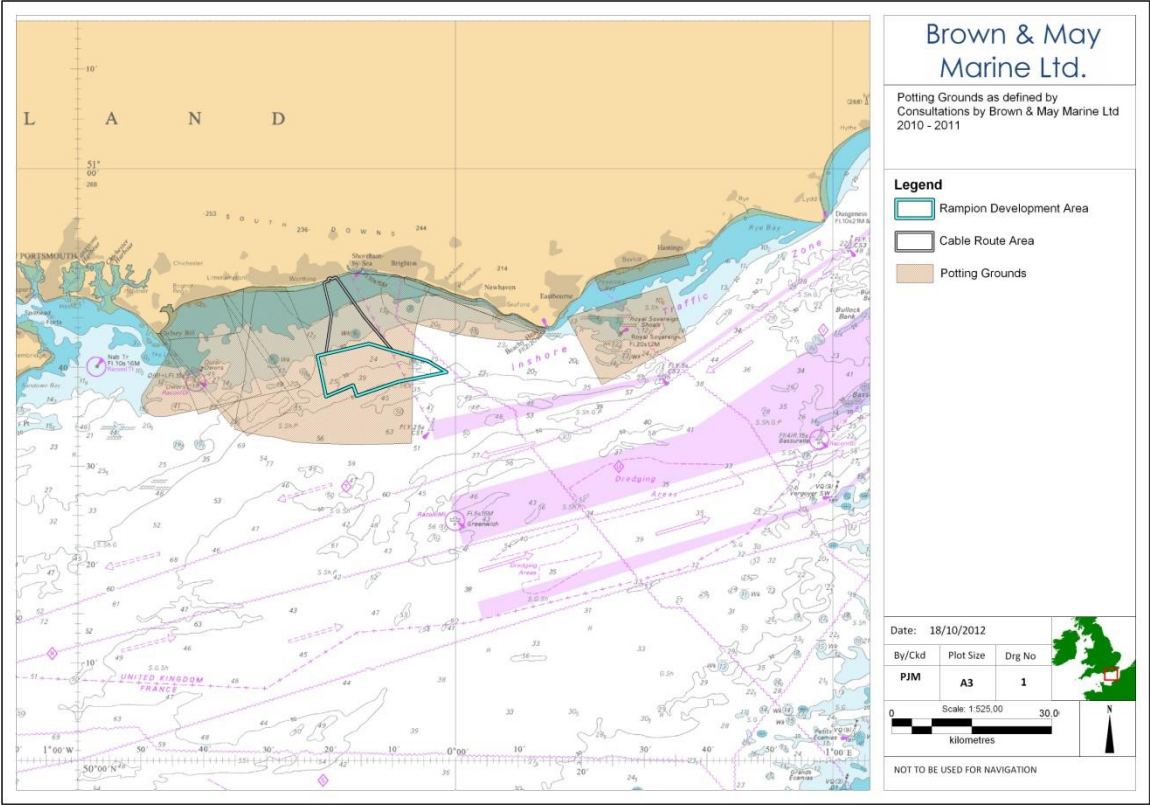


Figure 18.25 Crab and Lobster Potting Grounds as Defined from Consultation 2010-2011 (Source: BMM)

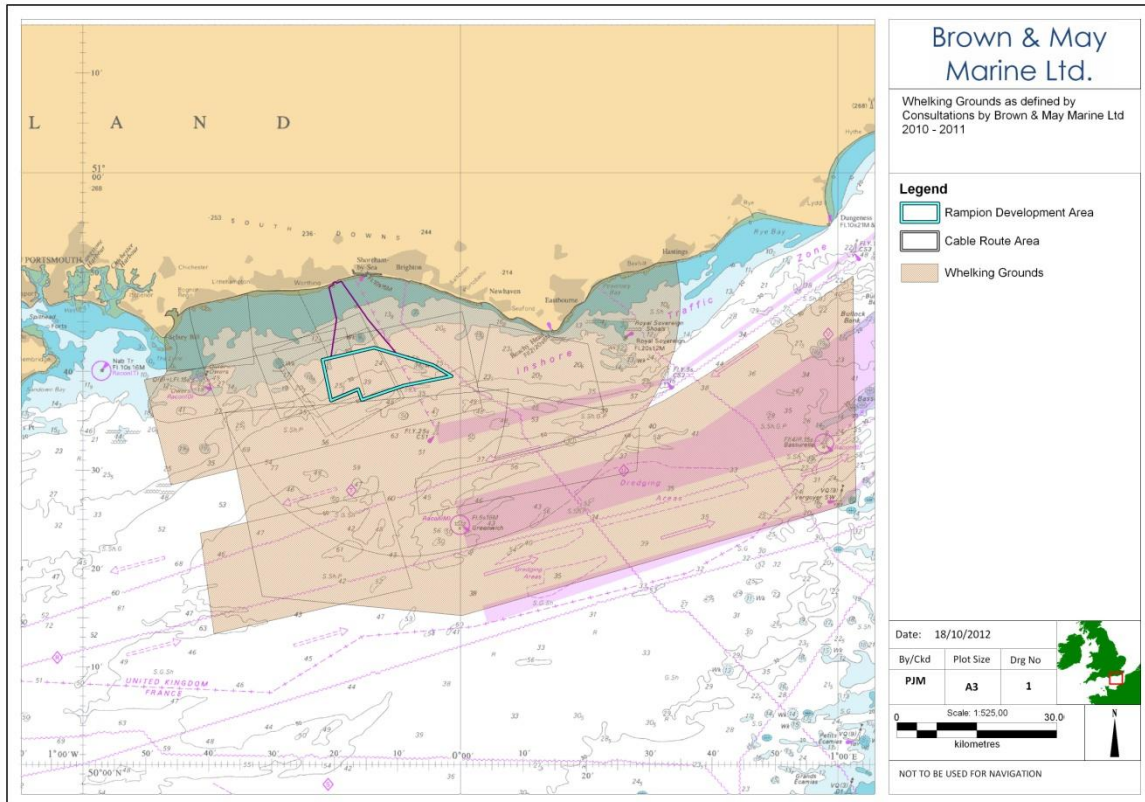


Figure 18.26 Whelk Fishing Grounds as Defined from Consultation 2010-2011 (Source: BMM)

18.5.4.2 Netting

The locations of fixed and drift net fishing observed by SIFCA are shown in Figure 18.27 and Figure 18.28 respectively. As shown, the fixed net fishery extends along the entire Sussex coast and appears to be within the 6 nm limit. Drift netting however was observed by SIFCA to be confined to isolated areas along the coast, within the 3 nm limit, some of which is shown to occur in inshore sections of the export cable corridor.

By comparison, the charts drawn by skippers are shown in Figure 18.29 and Figure 18.30 and show fixed netting over a very large area, extending well beyond the 12 nm limit almost to mid-Channel and including both the ROWF site and the export cable area corridor. The drift net areas provided by skippers, although significantly smaller than those for fixed netting, are substantially greater than those observed by SIFCA, and again extending well beyond the 12 nm limit encompassing the ROWF site and export cable corridor.

As both French and Belgian trawlers have fishing rights between the 6 and 12 nm limits, the risk of fixed nets being fouled and lost or damaged by trawl gear interactions is substantially reduced within the 6 nm limit (i.e. an incentive for nets to be set inside the 6 nm limit).

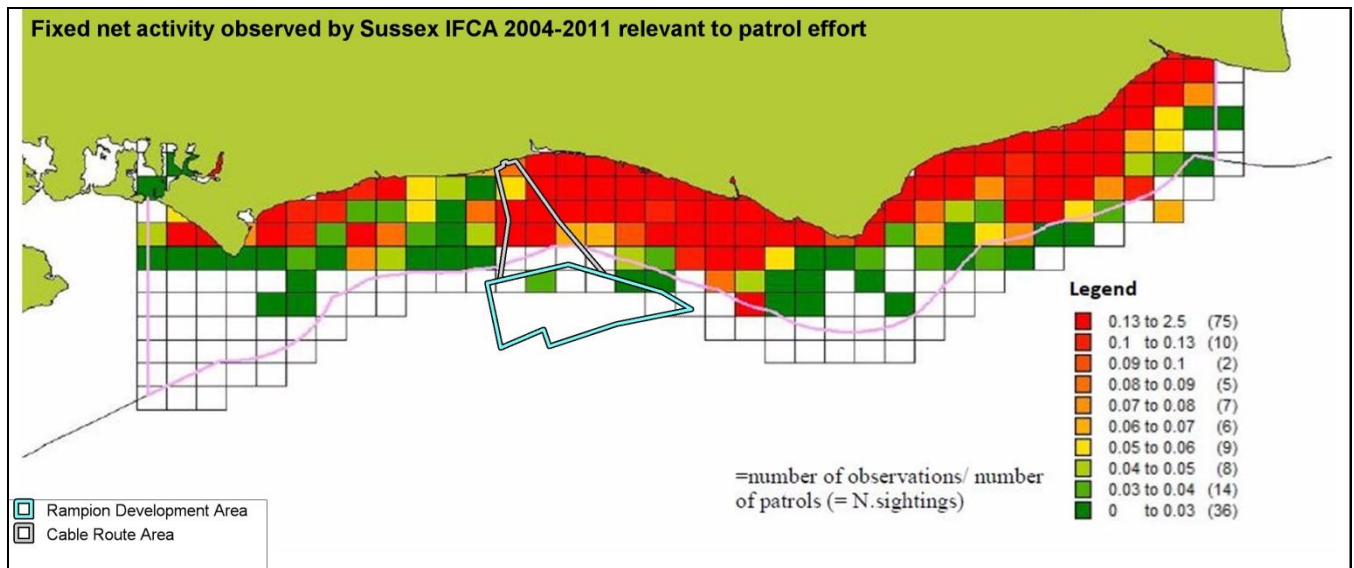


Figure 18.27 Fixed Netting Activity Observed by SIFCA between 2004 and 2011
(Source: SIFCA, 2012)

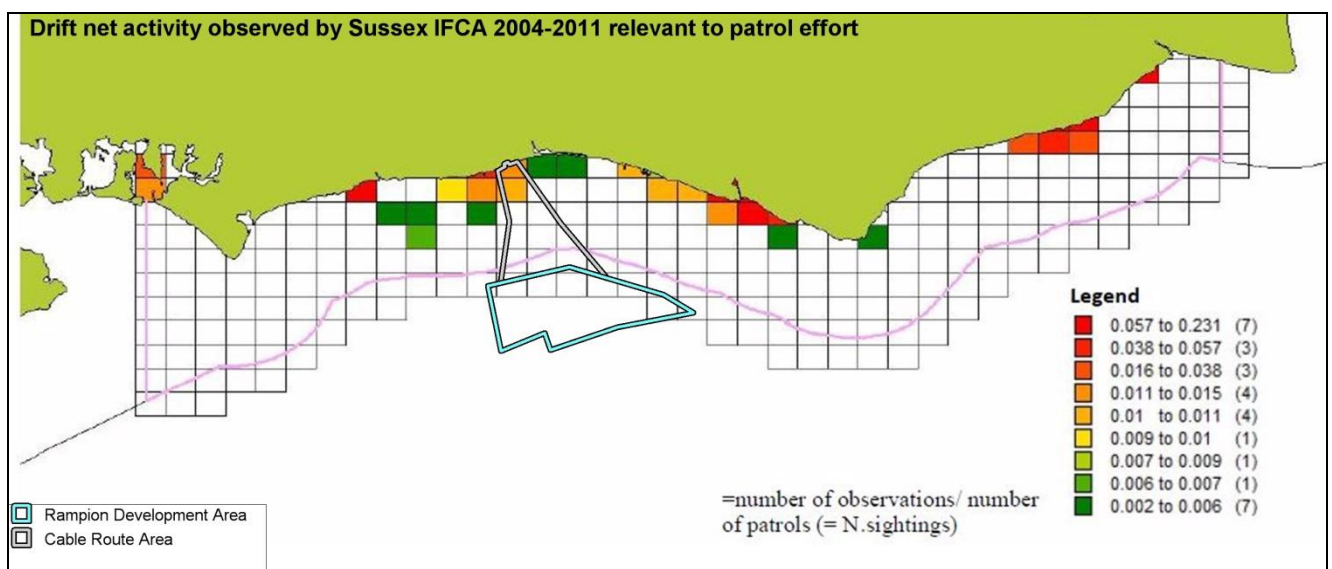


Figure 18.28 Drift Netting Activity Observed by SIFCA between 2004 and 2011
(Source: SIFCA, 2012)

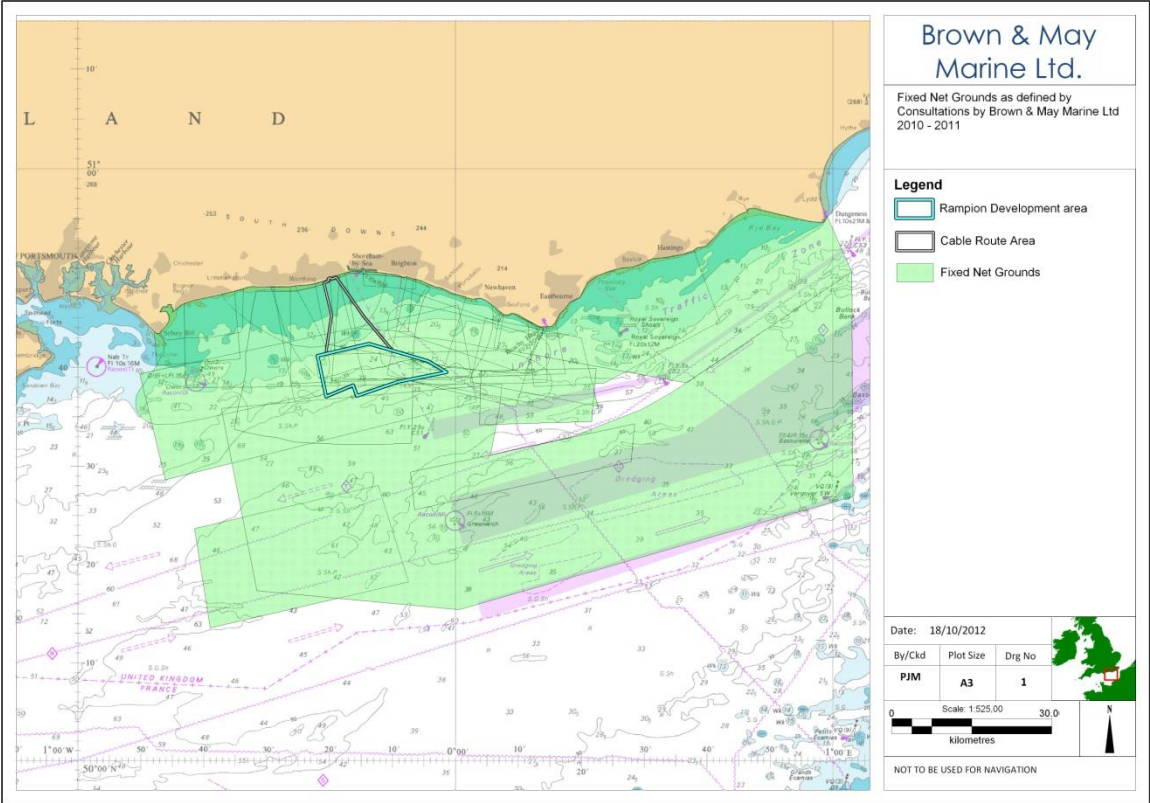


Figure 18.29 Principal Fixed Net Grounds as defined through Consultation 2010-2011 (Source: BMM)

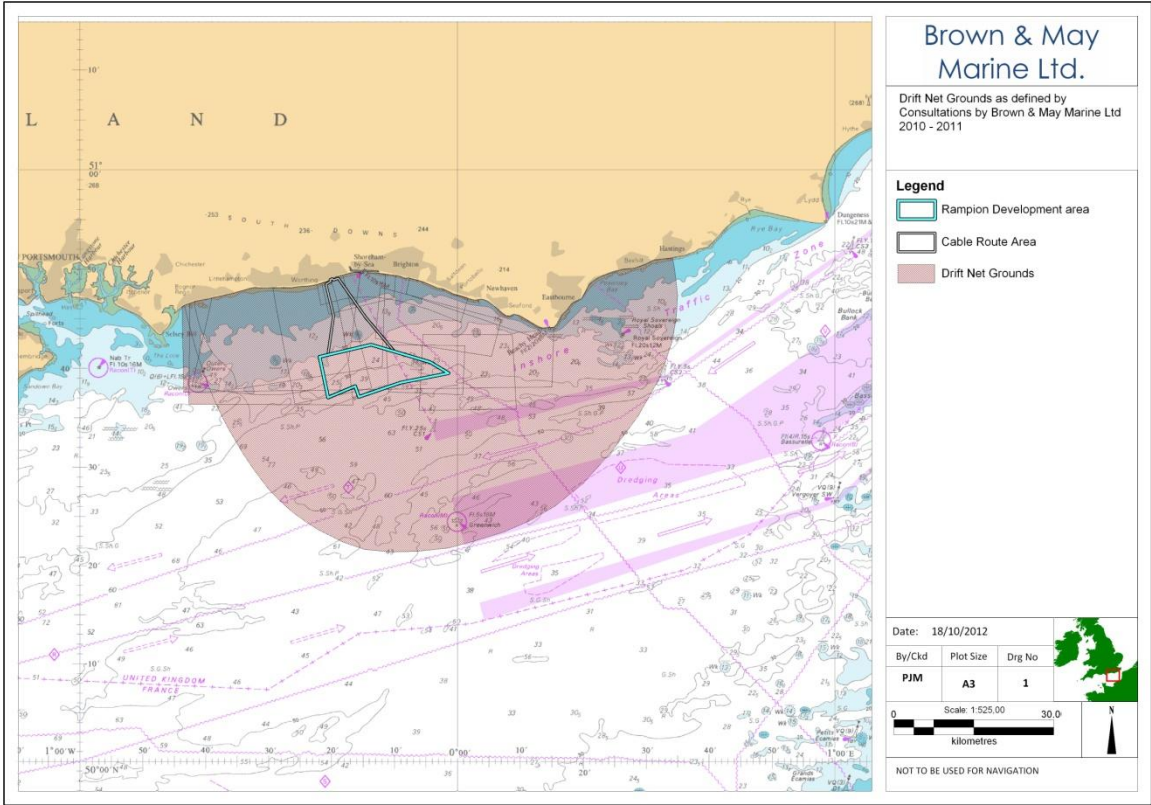
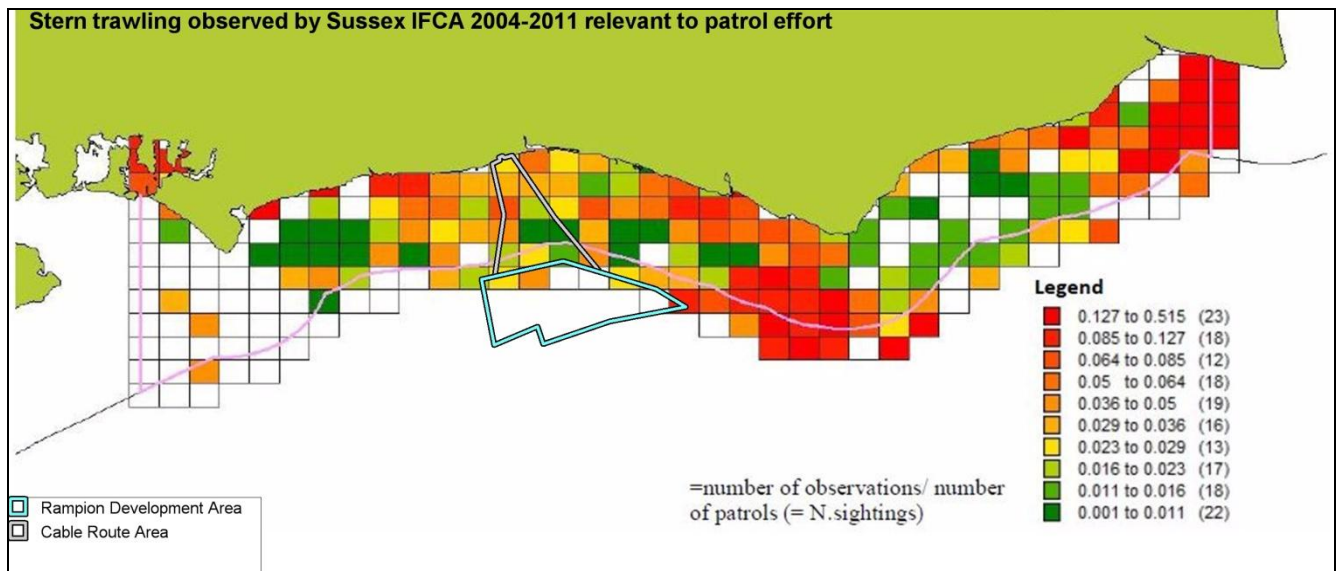


Figure 18.30 Principal Drift Net Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)

18.5.4.3 Otter Trawling

Both the SIFCA observations (Figure 18.31) and the charts produced by skippers (Figure 18.32) show a similar pattern of otter trawling activity extending along the coast from Beachy Head to Selsey and occurring over most of the area in which the export cable is to be laid. The charts provided by skippers also show otter trawling grounds occurring in the majority of the ROWF site. Under a SIFCA byelaw, between May and October, trawling is prohibited between the shore and out to a quarter of a nautical mile.



**Figure 18.31 Otter Trawling Activity Observed by SIFCA between 2004 and 2011
(Source: SIFCA, 2012)**

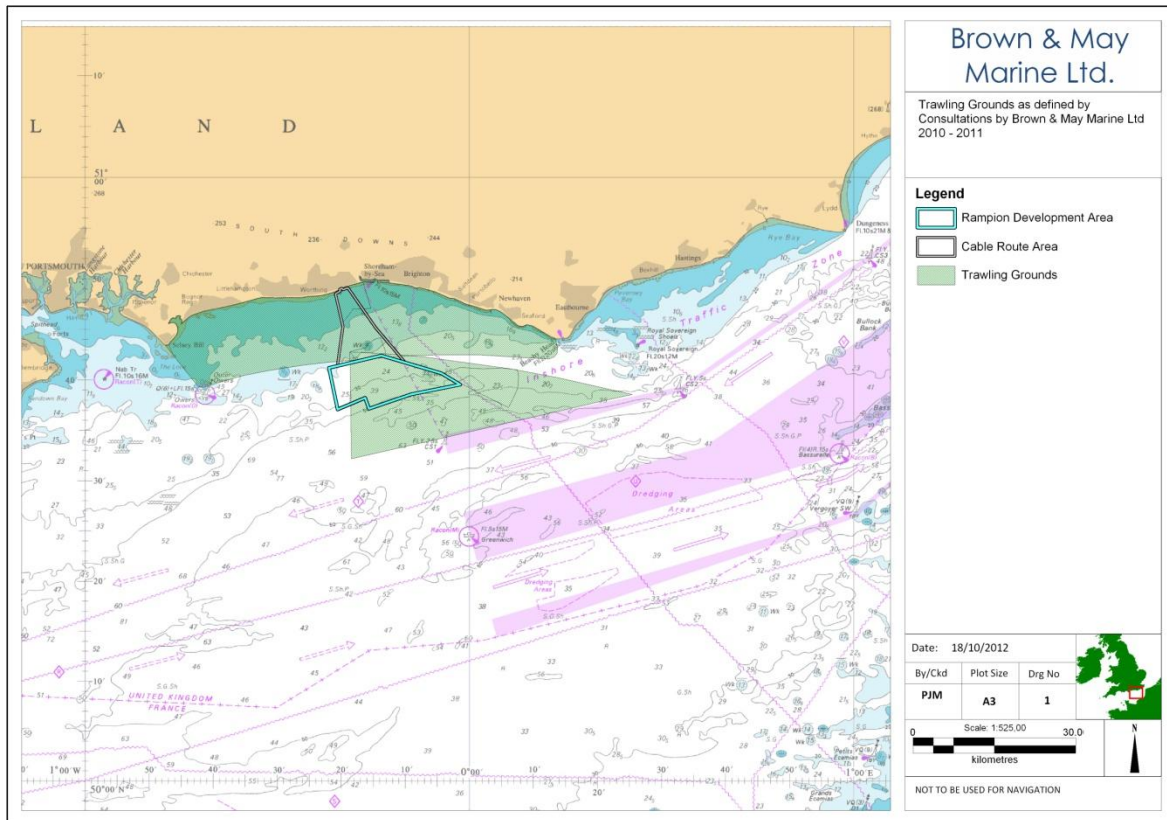


Figure 18.32 Otter Trawling Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)

18.5.4.4 Scallop Dredging

The scalloping areas shown in Figure 18.33 have to be taken in the context of the range of the SIFCA patrols, which in view of the areas fished by scallop dredgers, understate the full extent of local scalloping in the area.

Figure 18.34 shows the extent of the local scallop grounds obtained from consultation with local skippers based at Shoreham which encompass both the ROWF and the area in which the export cable is to be laid. The skippers and owners consulted stated that one ground, known as the “9 Miler”, was of particular importance to local scalloping vessels. The location of this ground is shown in Figure 18.35, which has been produced from observation of the GPS plotter of the Shoreham based trawler/scallop “Lauren Anne” with the kind assistance of her skipper Andrew Hill. As can be seen, a relatively small part of the “9 Miler” ground falls within the ROWF site.

Under SIFCA byelaws, vessels of over-14.0m cannot fish within the 3nm limit. With one exception, the local vessels which engage in scalloping are below 14 metres in length whereas, the majority of the larger nomadic scallopers from other ports which visit the general area are over-14.0m. A further SIFCA byelaw prohibits scallop dredging within the 6nm limit between June and October and vessels engaged in trawling within the 6nm limit are only permitted to land 200 scallops per day.

In addition to local vessels, the general area of the development is fished by larger nomadic scallop dredgers which fish water off the UK west, south and north east coasts, as illustrated by Figure 18.36. The activity of these vessel tends to vary annually, whereby areas are heavily fished, after which there is little or no fishing for a number of years until the stocks have recovered. Following the introduction of the Scallop Fishing (England) Order 2012 on 1st October, vessels with more than 8 dredges per side can only operate beyond the 12nm limit.

Figure 18.37 gives the VMS sightings in 2009 for over-15.0m UK scallop dredgers, the year when the MMO released data which identified the method of fishing. As shown, the ROWF site is within an area which recorded medium levels of scallop dredging activity with higher levels occurring to the south-east and south-west.

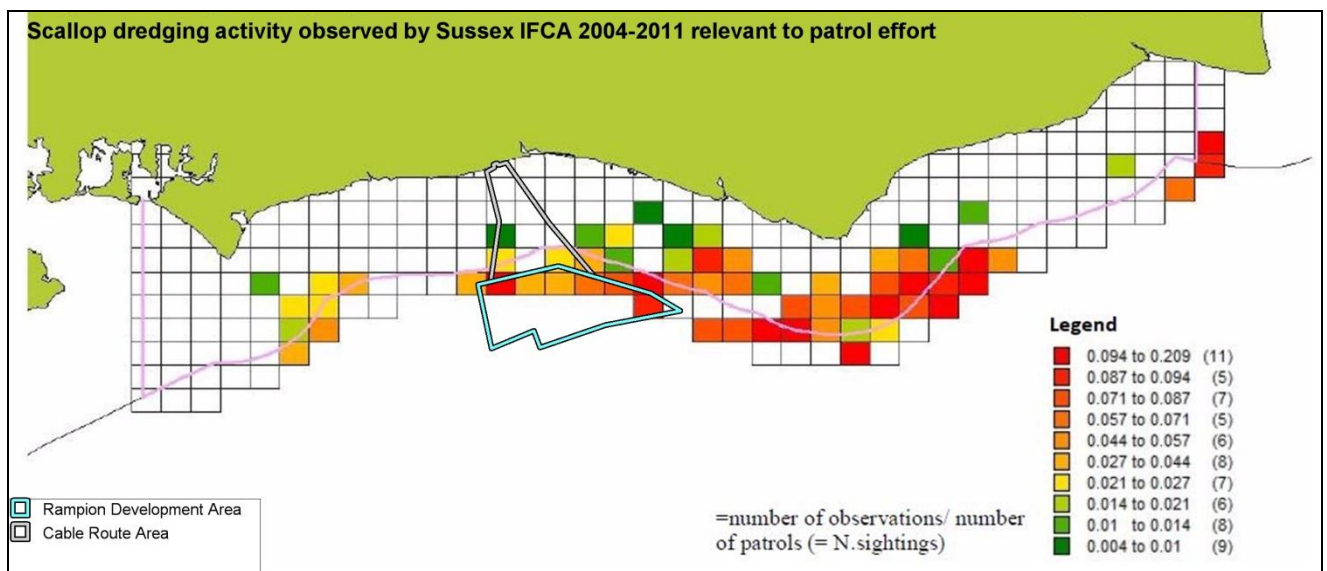


Figure 18.33 Scallop Dredging Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)

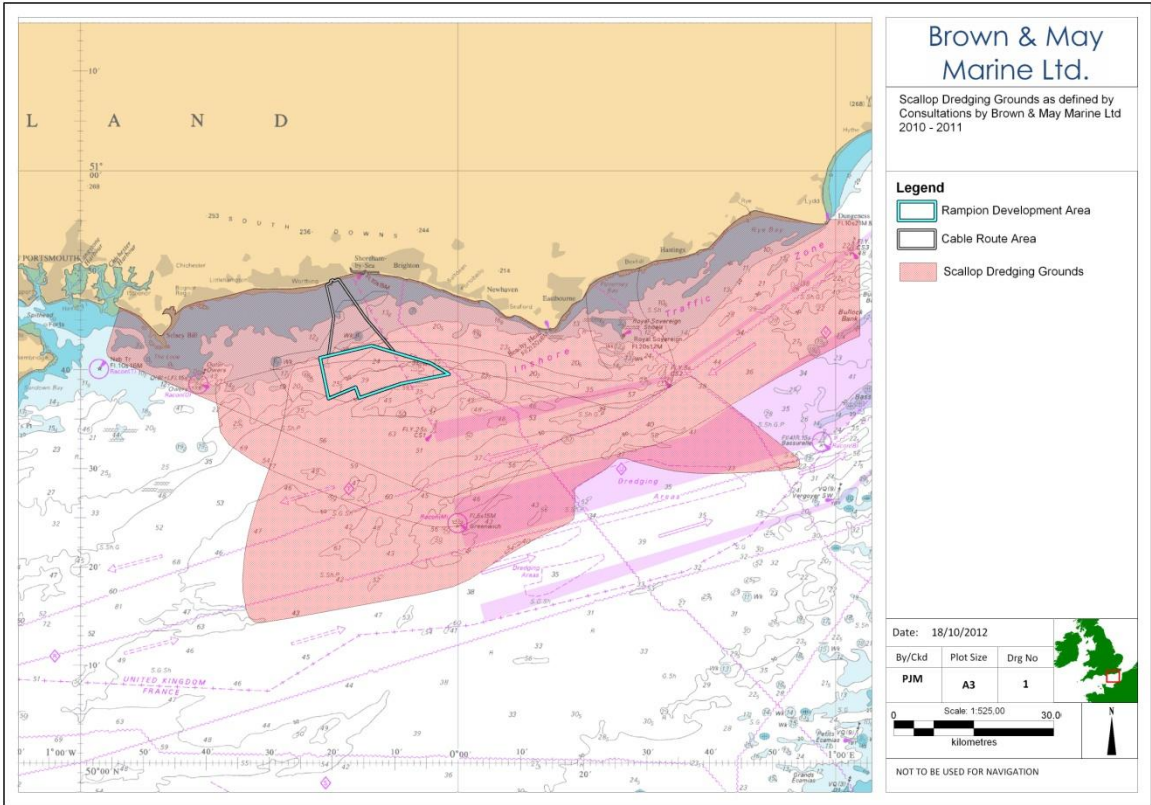


Figure 18.34 Local Scallop Dredging Grounds as Defined through Consultation 2010-2011
(Source: BMM)

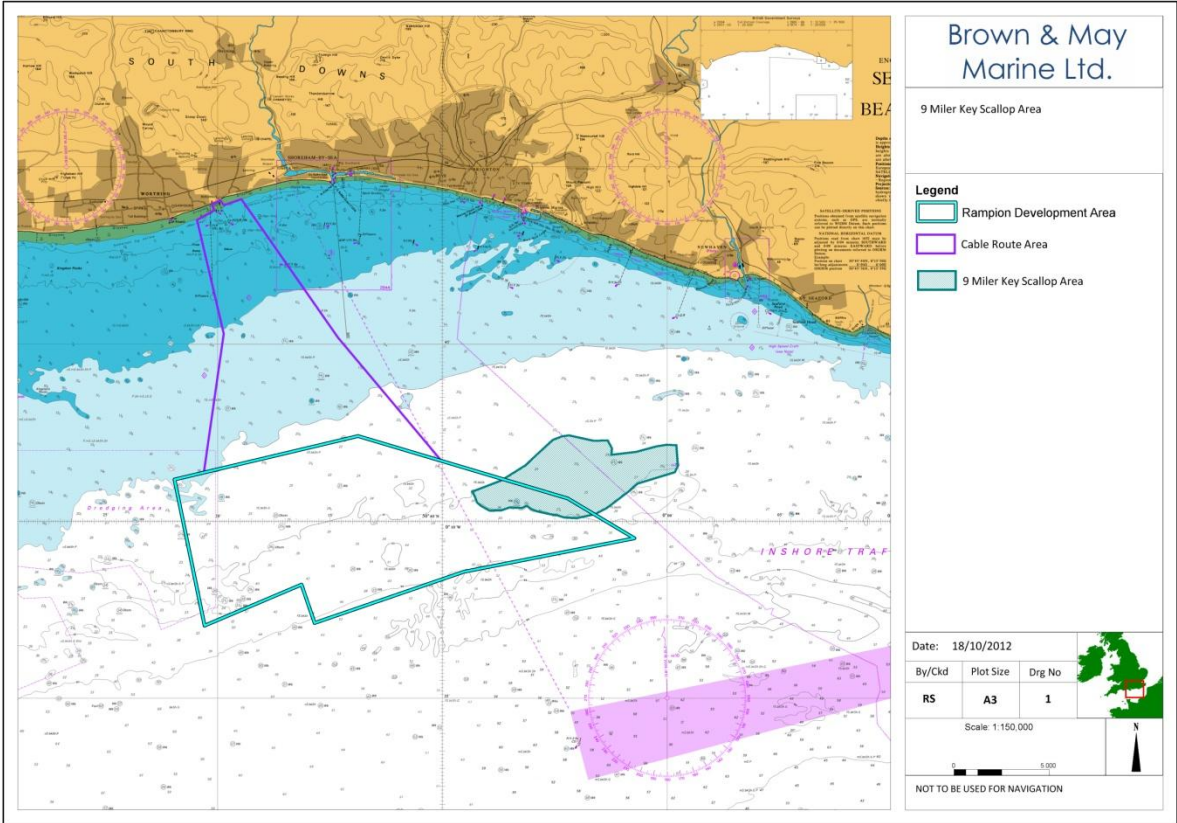


Figure 18.35 Location of the “9-Miler” Scallop Dredging Ground (Source: Leech Fishing Ltd, 2012)

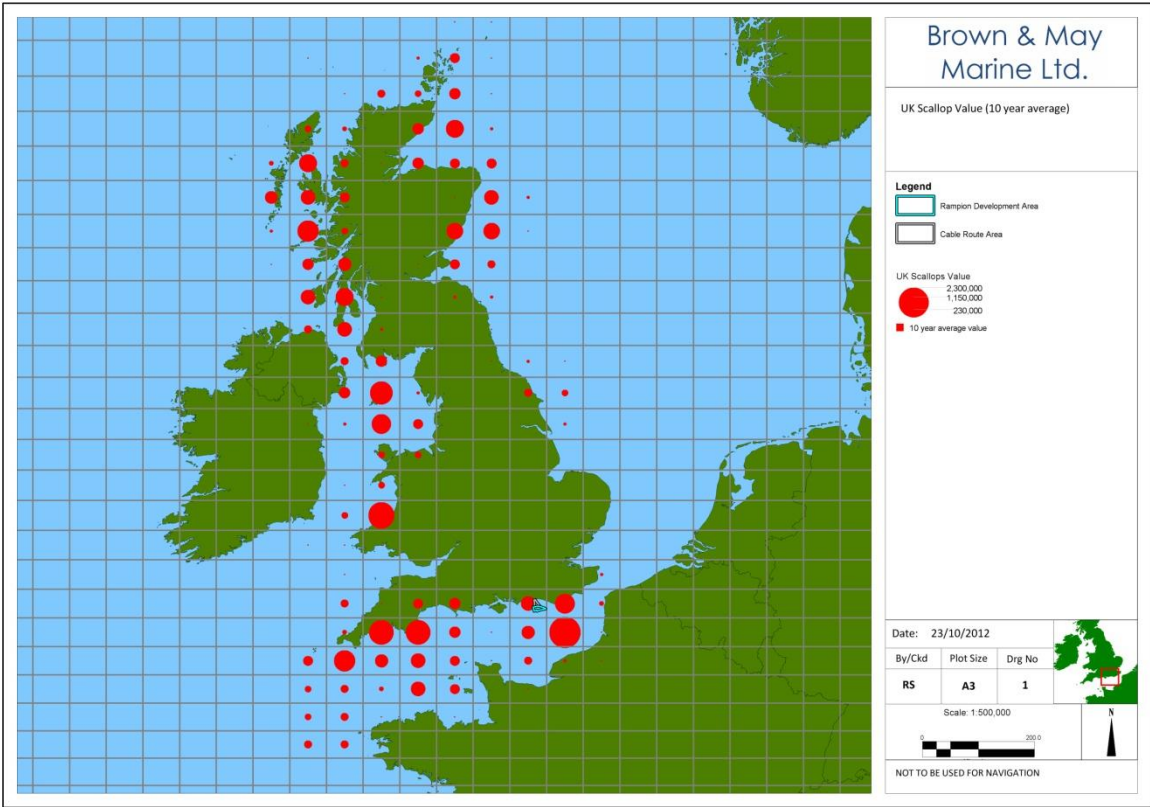


Figure 18.36 National Scallop Dredging Values -10 yr average (MMO 2012)

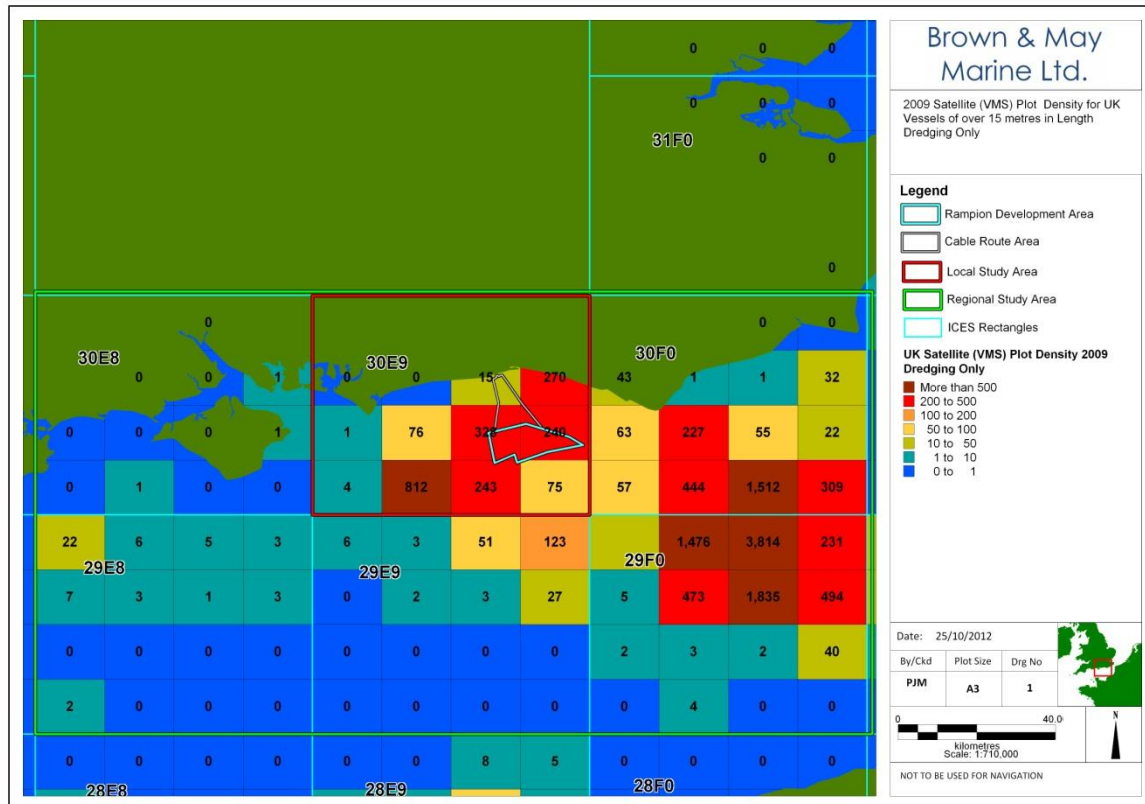


Figure 18.37 VMS Position Plot Densities of UK Over-15m Scallop Dredgers in 2009 in the Regional Study Area (Source: MMO, 2011)

18.5.4.5 Beam Trawling

Under EU regulations, beam trawlers of over-24m in length, with main engines greater than 300hp (221kw) using beam trawls with combined widths in excess of nine metres are prohibited from fishing within any member states 12 nm limits (Defra, 2002). Smaller beam trawlers, known as “Rule Beaters” or “Euro-Cutters”, are entitled to fish inside the 12 nm limit, up to the 6 nm limit, provided they are either UK registered vessels or non-UK vessels with historic access rights, which as discussed above, within the region under consideration are Belgian or French vessels.

Figure 18.38 shows the SIFCA observations of beam trawlers within its jurisdiction. As previously discussed however, as the extent of the SIFCA extends out to only 6 nm, this chart cannot be considered to represent the true distribution of local beam trawling activity across the region. It does however, indicate that some beam trawling activity occurs within the 6 nm limit within the export cable corridor. Figure 18.39 shows the extent of the local beam trawling grounds obtained from consultation with local skippers.

Figure 18.40 illustrates the distribution of VMS position plots for over-15.0m UK beam trawlers beam trawlers during 2009, the year when the MMO was willing to provide gear specific data. As shown, the data appears to show that part of the ROWF site sustains medium to high levels of UK beam trawling effort by over-15.0m vessels, with the highest in the region occurring just to the southwest of the site.

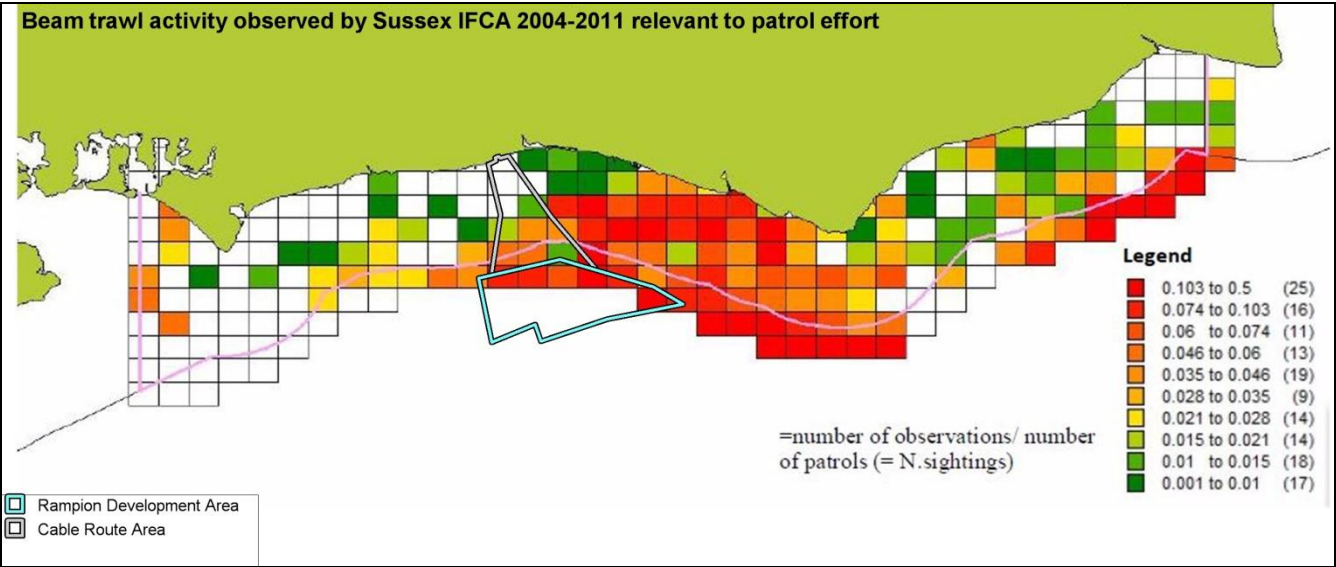


Figure 18.38 Beam Trawl Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)

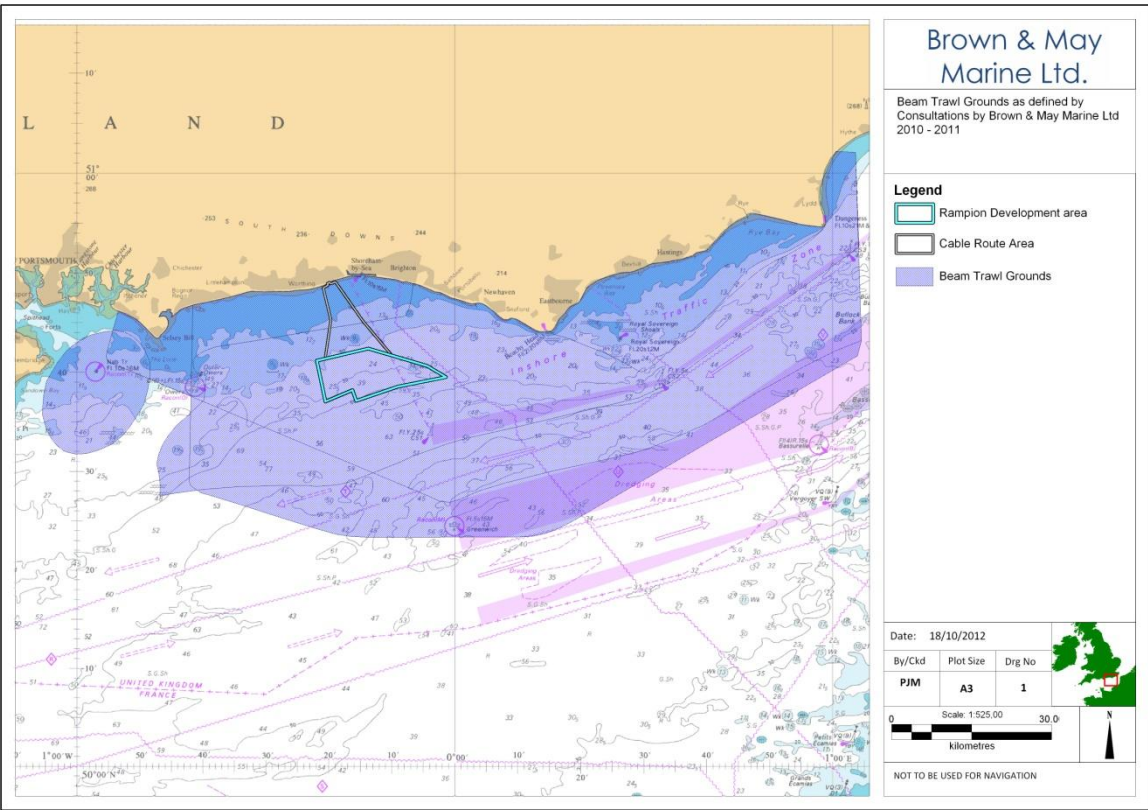


Figure 18.39 Beam Trawl Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)

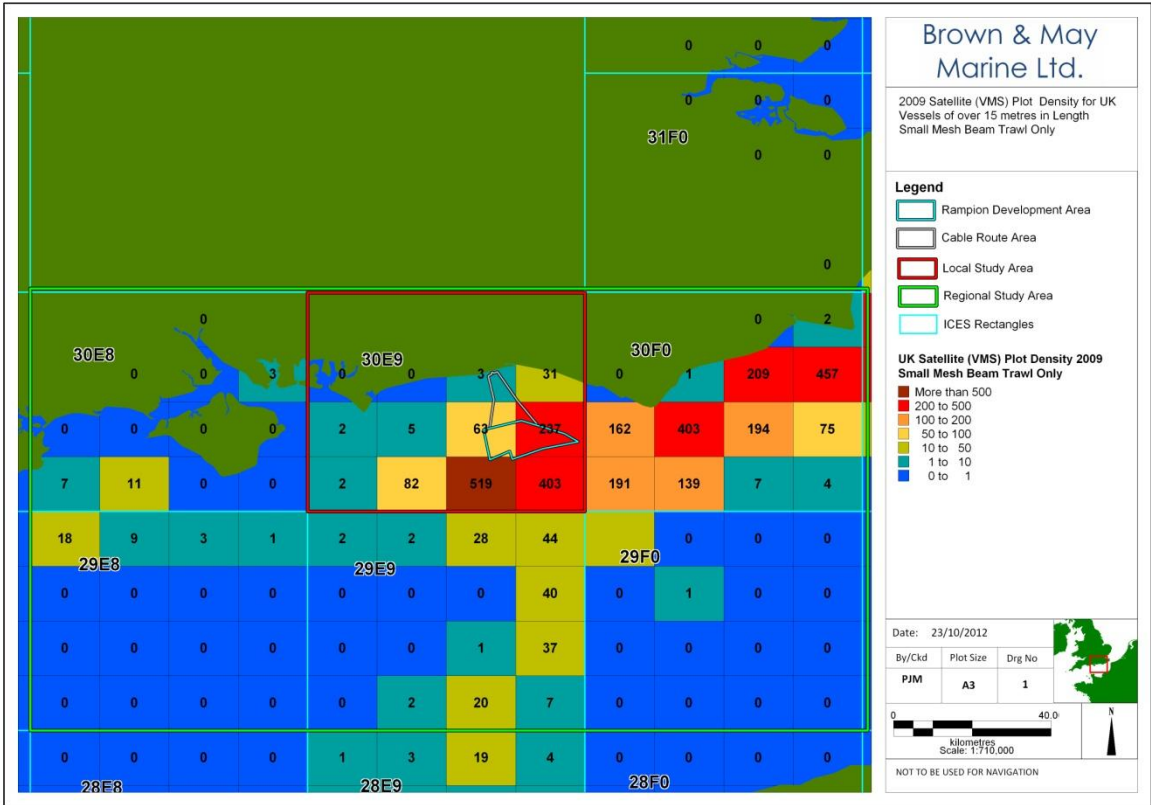


Figure 18.40 Satellite Densities of UK Over-15m Beam Trawlers in 2009 in the Regional Study Area (Source: MMO, 2010)

18.5.4.6 Pair Trawling

From Figure 18.41, it would appear that the main pair trawling grounds, the principal target species of which are black bream and bass, as observed by SIFCA are to the west of the export cable corridor and inshore of the ROWF site. The grounds derived from consultation with fishermen (Figure 18.42), broadly reflect the SIFCA observations within the 6 nm limit, but also shown are pair trawling grounds in the south of the ROWF site.

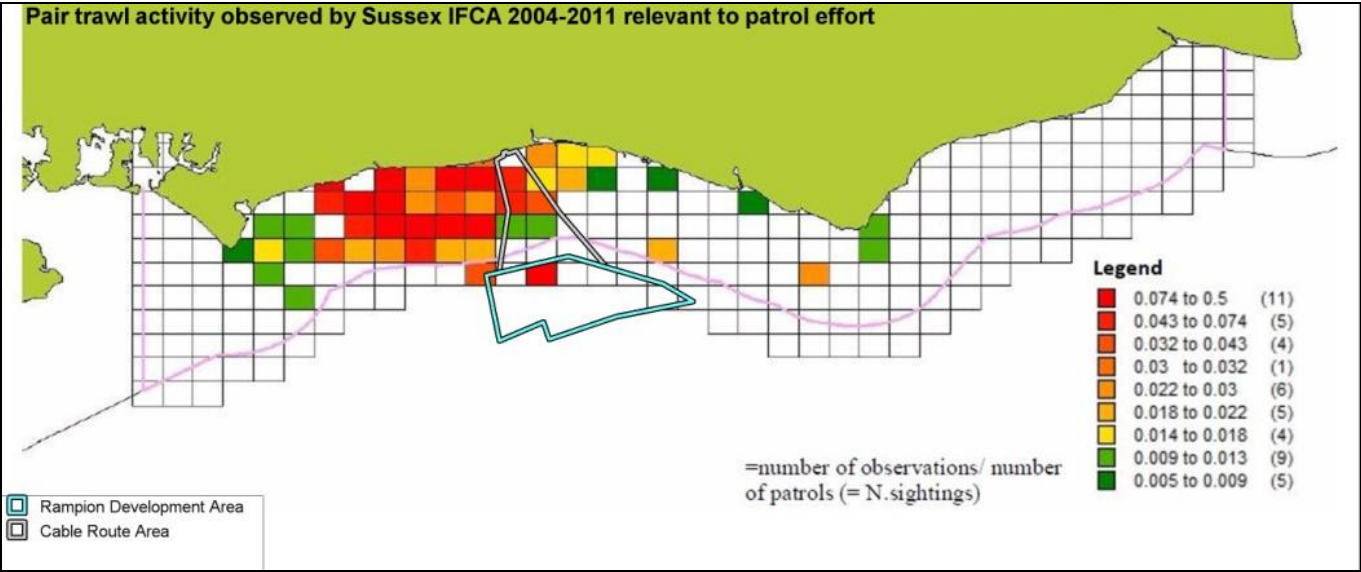


Figure 18.41 Pair Trawling Activity Observed by SIFCA between 2004 and 2011 relative to Patrol Effort (Source: SIFCA, 2012)

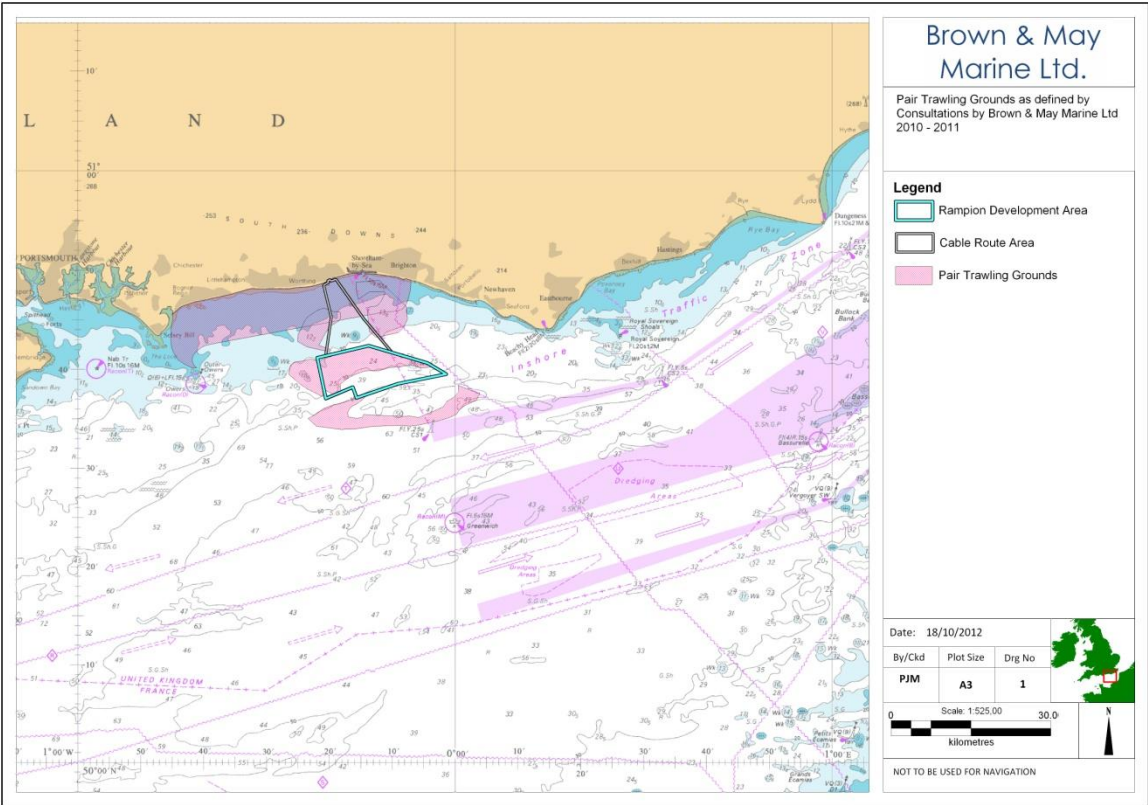


Figure 18.42 Pair Trawling Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)

18.5.4.7 Fish Traps

The grounds where fish traps are deployed, which are for the capture of cuttlefish, as observed by SIFCA (Figure 18.43) and as derived from consultation with fishermen (Figure

18.44) are extremely similar. As shown by both charts, traps are not deployed within the ROWF site and only across a short inshore section of the export cable corridor.

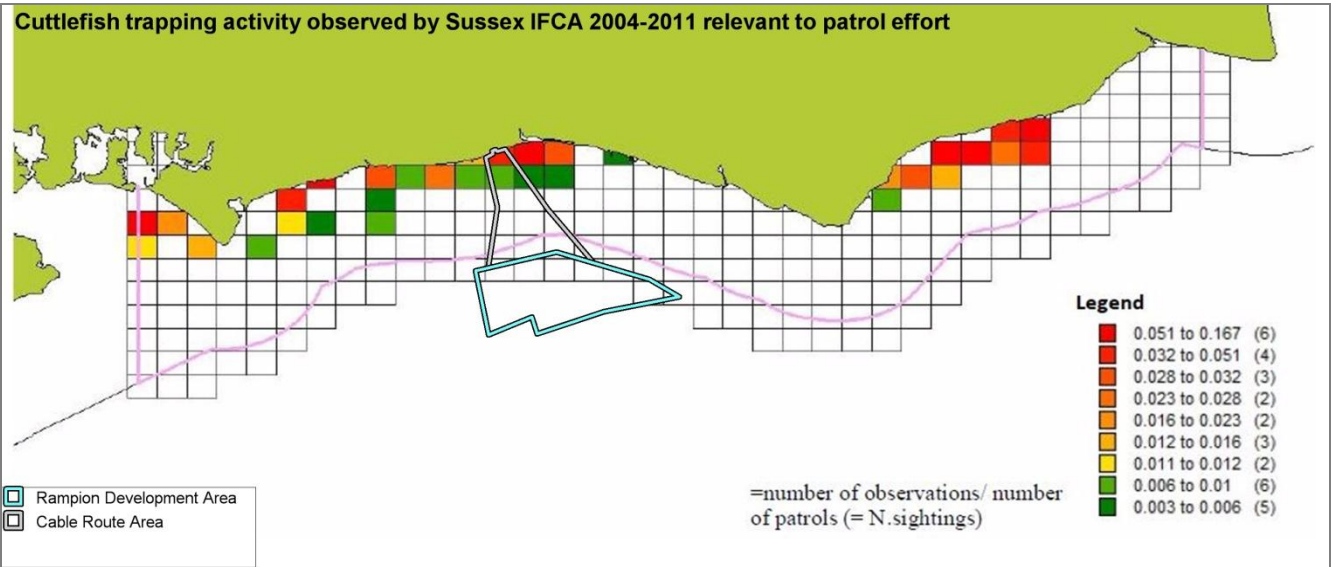


Figure 18.43 Cuttlefish Trapping Activity Observed by SIFCA between 2004 and 2011 relative to Patrol Effort (Source: SIFCA, 2012)

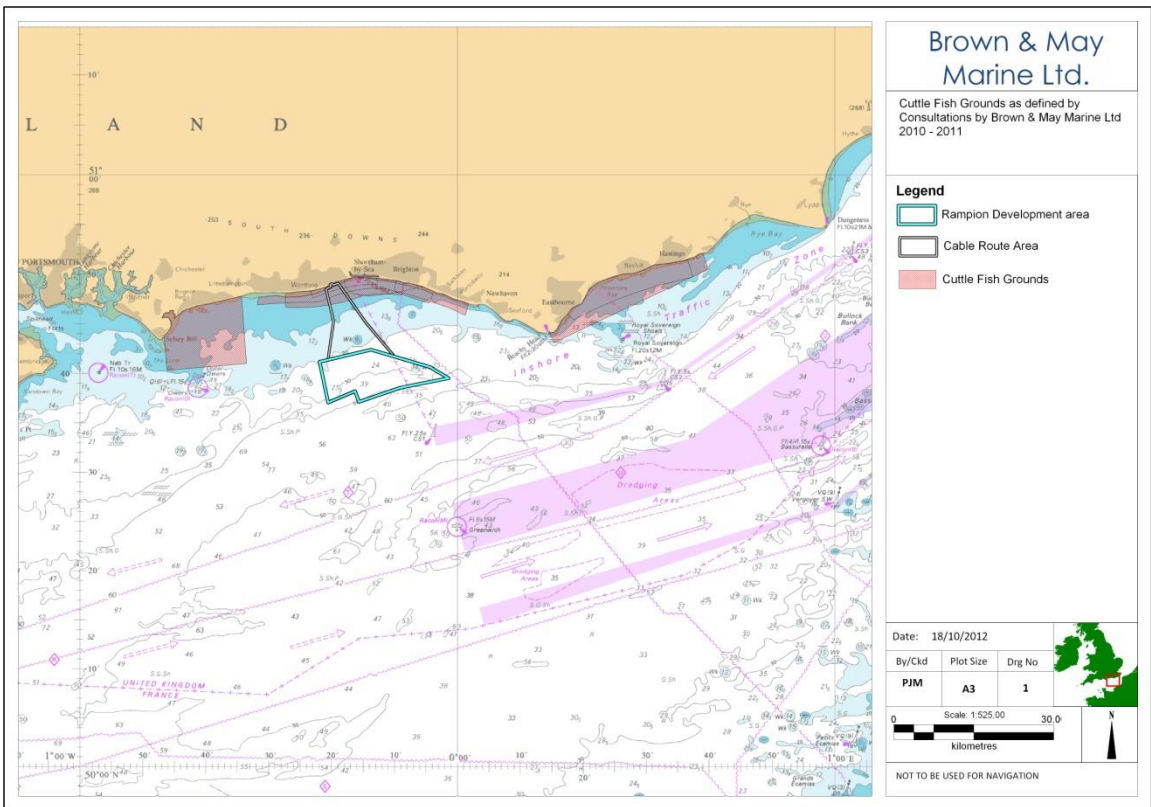


Figure 18.44 Principal Cuttlefish Trapping Grounds as defined through Consultation 2010-2011 (Source: BMM)

18.6 Vessels, Gears and Operating Patterns

As discussed above, the area of ICES rectangle 30E9 is large in comparison to the project site and therefore the landings by port data from 30E9 includes ports whose vessels fish the rectangle but not the areas of ROWF or the export cable corridor.

From consultation with local skippers, vessel owners, landing agents and SIFCA, it would appear that the ROWF site and export cable corridor are fished, to varying degrees, by vessels whose base ports are:

- Shoreham
- Newhaven
- Brighton
- Worthing
- Selsey
- Littlehampton
- Portsmouth
- Brixham

Table 18.3 and Table 18.4 give the numbers of vessels by home port derived from the MMO monthly vessel lists cross referenced with the Europa fleet register for under and over-10m vessels. Table 18.5 gives the latest published vessel numbers for towed and static gears, again for over and under-10m vessels produced by the SIFCA, for the ports within their jurisdiction.

As shown, the MMO records higher numbers of vessels than the SIFCA. This is possibly a consequence of the MMO recording all registered vessels, regardless of whether they are currently active.

A vessel's home port of registry may not necessarily be its landing port or its base of operation. For example the over-10m vessels registered as having their home port as Hastings, actually operate from, and land their catches into Shoreham. Similarly, whilst the SIFCA data (Table 18.5) suggests that there are less than 30 under-10m vessels with Shoreham as their home port, according to the principal landing and sales agent in the port (Brighton & Newhaven Fish Sales Ltd, 2012), on average, 40 to 45 under-10m vessels land their catches into Shoreham.

A feature of the fishery in the region in which ROWF is located is the versatility of the local vessels, a significant proportion of which are multipurpose, utilising a number of fishing gear types and targeting a range of species. For example under-10m vessels deploy traps for cuttlefish, pots for crabs, lobsters and whelks, fixed or drift nets for fish species such as sole, as well as hook and lining for bass. Similarly, local trawlers operate dredges for scallops, beam trawls for flatfish species, otter trawls for round fish species, as well as pair trawling for bass and black bream.

Details of vessels, gears and operating patterns were obtained from consultation with skippers and owners using a standard questionnaire to record the information provided.

Those who were consulted are listed in Appendix 1.0 and the information obtained summarised in Appendix 2.0.

Table 18.3 Local Under 10m Vessels by Registered Home Port and Principal Gear Type (Source: MMO Vessel List May 2012 and Europa Fleet Register)

Home Port	Pots and Traps	Set Gillnets - Anchored	Trammel Nets	Handlines and Pole Lines	Mechanised Dredges including Suction Dredges	Bottom Otter Gear	Drift Nets	Bottom Otter Trawls	Beach Seines	Beam Trawls	Boat Dredges	Set Longlines	Unknown Gear	Total
Portsmouth	14	5	1	7	18	1	0	2	0	0	1	0	0	49
Shoreham	14	12	11	3	0	0	1	0	0	1	0	0	0	42
Newhaven	9	5	8	3	0	4	3	0	0	0	0	1	0	33
Brighton	8	9	9	3	0	1	0	0	0	0	0	0	1	31
Selsey	17	4	0	2	1	0	0	0	1	0	0	0	0	25
Worthing	3	9	0	1	0	0	0	0	1	0	0	0	0	14
Littlehampton	6	2	4	1	0	0	0	0	0	0	0	0	0	13
Total	71	46	33	20	19	6	4	2	2	1	1	1	1	207

Table 18.4 Local Over 10m Vessels by Registered Home Port and Principle Gear Type (Source: MMO Vessel List May 2012 and Europa Fleet Register)

Home Port	Beam Trawls	Mechanised Dredges including Suction Dredges	Pots and Traps	Bottom Otter Trawls	Otter Twin Trawls	Handlines and Pole lines	Midwater Otter Trawls	Midwater Pair Trawls	Total
Brixham	16	12	8	6	2	0	1	0	45
Portsmouth	0	6	5	0	0	1	0	0	12
Selsey	0	0	6	0	0	0	0	0	6
Hastings	3	2	0	0	0	0	0	0	5
Shoreham	2	2	0	0	0	0	0	1	5
Newhaven	3	0	0	1	0	0	0	0	4
Total	24	22	19	7	2	1	1	1	77

Table 18.5 Vessels by Method and Port (Source: SSFDC, 2007; SSFDC, 2008)

Ports		Chichester	Selsey	Bognor	Littlehampton	Worthing	Shoreham	Brighton	Newhaven	Eastbourne	Hastings	Rye	Dungeness	Total
Total Home Port Vessels	2007	11	29	3	16	10	36	26	55	28	43	28	7	292
	2008	14	35	4	13	10	33	19	26	26	71	26	9	286
	Difference	3	6	1	-3	0	-3	-7	-29	-2	28	-2	2	-6
Home Port Vessels over 10m	2007	0	5	0	0	0	7	0	4	2	3	2	0	23
	2008	0	6	0	0	0	5	0	3	2	3	2	0	21
	Difference	0	1	0	0	0	-2	0	-1	0	0	0	0	-2
Home Port Vessels under 10m	2007	11	24	3	16	10	29	26	51	26	40	26	7	269
	2008	14	29	4	13	10	28	19	23	24	68	24	9	265
	Difference	3	5	1	-3	0	-1	-7	-28	-2	28	-2	2	-4
No. of Home Port Vessels using Static Gear only	2007	4	22	3	15	9	25	26	48	27	27	11	3	220
	2008	6	28	3	11	10	25	18	22	23	41	11	6	204
	Difference	2	6	0	-4	1	0	-8	-26	-4	14	0	3	-16
No. of Home Port Vessels using Towed Gear only	2007	1	1	0	0	0	6	0	4	0	3	5	0	20
	2008	1	2	0	0	0	5	0	3	0	4	1	0	16
	Difference	0	1	0	0	0	-1	0	-1	0	1	-4	0	-4
No. of home Port Vessels using both Static and Towed Gear	2007	6	6	0	1	1	5	0	2	1	13	13	4	52
	2008	7	5	1	2	0	3	1	1	3	26	14	3	66
	Difference	1	-1	1	1	-1	-2	1	-1	2	13	1	-1	14

18.6.1 Potting and Trapping

Parlour pots (Figure 18.45) and to a lesser extent inkwell pots, are used for the capture of lobsters and crabs. According to the skippers consulted, pots are rigged in fleets of normally between 10 to 50 pots per fleet, depending upon vessel size and area fished. Lengths of fleets generally range from 100 to 500 metres, anchored at each end with either Fisherman type anchors or chain clump weights. A variety of surface markers are used, including flagged dhans, buoys and cans. Soak times, the time between emptying and re-baiting the pots, varies from approximately 12 hours to two days, but can be longer during periods of adverse weather.



Figure 18.45 Parlour Pots (Source: BMM)

For the capture of whelks, modified, weighted 25 litre plastic drum purpose designed pots are used. The number of whelk pots per fleet tends to be higher than for crab and lobster potting, being up to 80 per fleet. Fleets are generally of similar lengths to those used for crab and lobster potting but can occasionally be longer, with fleet lengths of up to 0.5nm being stated during consultation with fishermen.

18.6.2 Cuttlefish Traps

The cuttlefish traps used in the area under consideration are essentially cylindrical steel frames of approximately 0.8 to 1.0 metres in diameter, enclosed in netting. As with potting, traps are shot in fleets of 500 to 600 metres in length, rigged 20 to 25 traps per fleet. Traps are baited with either live female cuttlefish or lures to attract breeding males. Cuttlefish are primarily targeted in late spring to early summer when they congregate close inshore to spawn.

The vessels engaging in potting and trapping are generally under-10m in length (Figure 18.46), with crew numbers varying from one to three. As previously stated the majority of the vessels are multi- purpose and therefore are not solely engaged in potting throughout the year.



Figure 18.46 Shoreham Based under-10 metre Vessel engaged in Trapping for Cuttlefish (source: BMM)

18.6.3 Netting

As with potting, netting is, for the most part undertaken by under-10m vessels (Figure 18.47) and can either take the form of fixed (static) or drift netting with a prevalence of the effort targeting demersal species such as sole, although netting is also used for the capture of cuttlefish. Trammel nets are comprised of three panels of nets, the outer nets are rigged one each side of the inner smaller mesh panel and are more frequently deployed in shallower inshore waters during slack tides.



**Figure 18.47 Static and Drift Netter Operating out of Shoreham and Brighton Marina
(Source: BMM)**

Gillnets (also known as tangle nets) are rigged in a similar manner to trammel nets but with only a single panel of netting. Both static gill and trammel nets are usually anchored at each end and surface marked with dhan buoys.

The local fishermen consulted stated that lengths of the fleets of bottom set fixed nets used in the area under consideration vary in length, depending on the vessel and the species, from between 200 to 1000 metres, the most common fleet lengths being 500 metres.

The most common soak times for fixed nets were stated to be 24 hours but on occasions they could be as long as 72 hours. Drift net soak times are significantly shorter, usually of between one to two hours. To avoid conflicts with trawlers, nets are frequently deployed in close proximity to wrecks or other features avoided by trawlers.

18.6.4 Trawling

As stated above, local vessels utilising towed gears, which (with one exception at 18 metres in length), are between 10 and 13.9 metres in length operate single net demersal otter trawls, beam trawls and pair trawls (Figure 18.48). Being less than 14.0 metres in length, these vessels are permitted to fish within the 3 nm limit.



Figure 18.48 Shoreham Based Multi-Purpose Trawler

The otter trawling undertaken in the vicinity of the ROWF site and the export cable corridor is understood to be single net trawling with effective gear widths (i.e. the distance between the trawl doors), quoted as varying from between 25 metres for the smaller trawlers up to 65 metres for the larger vessels.

Otter trawling towing speeds over the ground are generally between 2.5 and 3.5 knots, depending on the area of seabed, state of tide and the weather.

As a consequence of the restrictions on beam trawlers engine powers, lengths and combined gear widths within the 12 nm limit, the beam trawlers operating within the ROWF site and the export cable corridor are the smaller to medium class of vessels ranging from 12 to 18 metres in overall length. These vessels tow beam trawls of 4.0 to 4.5 metres in length, each weighing, fully rigged, up to three tonnes. Towing speeds are generally at between three to four knots for durations of normally two to three hours.

The effective gear width of the class of beam trawlers which fish between the 6 and 12 nm limit is in the order of 28 to 36 metres.

18.6.5 Scallop Dredging

The scallop dredges currently used in the area under consideration are the “Newhaven”, also known as “Springer” type of dredges. Attached to the leading edges of these dredges are hinged, spring retained “tooth bars”, the purpose of which is to rake the scallops off the seabed and into the dredge bag (Figure 18.49).



Figure 18.49 A Springer dredge illustrating the Spring Retained Tooth Bars

Dredges are attached to steel cylindrical beams supported by rubber wheels. With the local vessels fishing the area under consideration, five to eight dredges are typically towed each side of the vessel, giving an effective gear width estimated to be up to 34 metres.

In addition to local vessels, the general area sustains scallop dredging by larger vessels (Figure 18.50) from other ports such as Portsmouth, Plymouth and the nomadic Scottish scalloping fleet, which as discussed above, fish around large parts of the UK coast. These vessels are either purpose built, or in the case of the vessel shown in Figure 18.50, are converted Dutch beam trawlers. Up to 20 dredges are towed each side of the vessels, with the effective gear widths estimated to be up to 65 metres. Under the Scallop Fishing (England) Order 2012, vessels with more than 8 dredges per side can only operate beyond the 12nm limit and therefore outside of the ROWF.



Figure 18.50 Larger Class of Scallop Dredger (Source: BMM,)

The typical towing speeds of scallop dredgers was reported to be 3.5 knots with tow durations varying from 1 to 3.5 hours depending upon the grounds fished and catch rates.

18.6.6 Pair Trawling

The pair trawling conducted by local vessels in the area under consideration is primarily for the capture of faster swimming round fish species, notably bass and black bream. As a single net is towed between two vessels, the distance between which maintains the lateral opening of the net, trawl doors, also known as otter boards are not used. The nets deployed have higher headlines than conventional demersal otter trawls and beam trawls. The local skippers and owners consulted stated that when fishing the area of the ROWF, the distance between the vessels varies from 65 to 200 metres, with towing speeds being 3 to 5 knots.

18.6.7 Hook and Line

In addition to the methods described above, as shown by the MMO data, hook and line activity occurs in the area. From consultation, it is understood that this is rod and line fishing, often undertaken by netting fishermen in-between shooting and hauling their nets. The principal target species was stated to be bass and due to the quality of the fish caught by this method, catches attract a price premium.

18.7 Belgian Fishing Activity

18.7.1 Overview

As discussed above, Belgium has historic fishing rights between the UK's 6 and 12nm territorial fishing limits but under EU regulations however, only beam trawlers with main engines of less than 300hp are permitted to fish within the 12nm limit. Within the Belgian fleet there are a number of smaller beam trawlers with main engines of between 250 to 300hp, specifically designed to fish within 12nm limits.

It was also stated during consultation with Belgian skippers that certain larger Belgian beam trawlers with engines above 300hp convert to otter trawling to enable them to fish between the 6 and 12nm limit. Also within the Belgian fleet there are a small number of otter trawlers which are also eligible to fish between the 6 and 12 nm limits.

The Belgian beam trawlers, which represent the majority of Belgian activity in the ROWF (Figure 18.51), are understood to be over-15.0m in length and are therefore monitored by VMS. Given below in Figure 8.2 are VMS charts as provided by ILVO (Institute for Agricultural and Fisheries Research-Belgium). ILVO provided effort (days fished/year) by the vessel length ranges 18 to 24 metres and 24 to 40 metres. As shown by Figure 18.50, the proportion of activity recorded for vessels of under-24m in length is smaller than that of the over-24m.

As previously discussed, under EU regulations, vessels of over-24m in length cannot fish within member states 12 mile limits. As such, it is only the smaller proportion of the activity recorded for Belgian beam trawlers which can legally take place within the ROWF site and in the export cable corridor.

As shown in Figure 18.53, the fishing areas of Belgian beam trawlers are shown to be extensive, with activity being recorded as occurring in the Central and Southern North Sea, the English Channel, Western Approaches, Celtic Sea and Eastern Irish Sea.

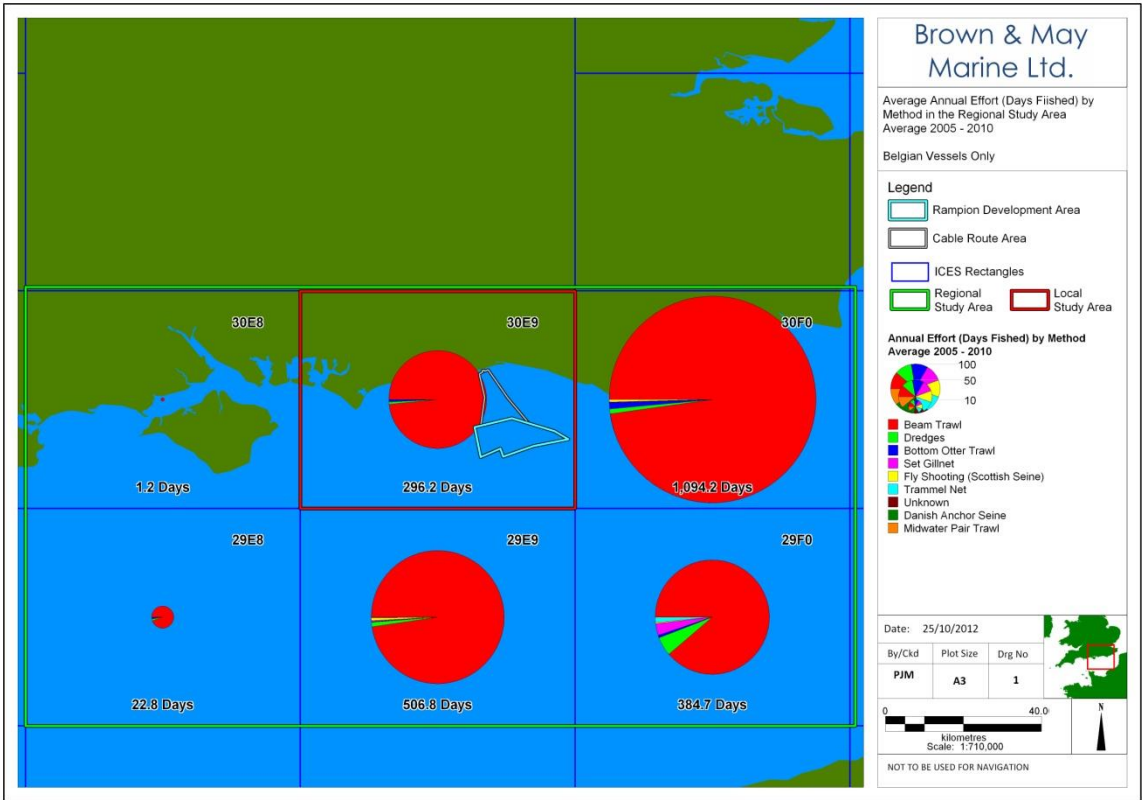


Figure 18.51 Average Annual Effort (Days Fished) by Fishing Methods (2005-2009) in the Regional Area (Source: ILVO, 2010)

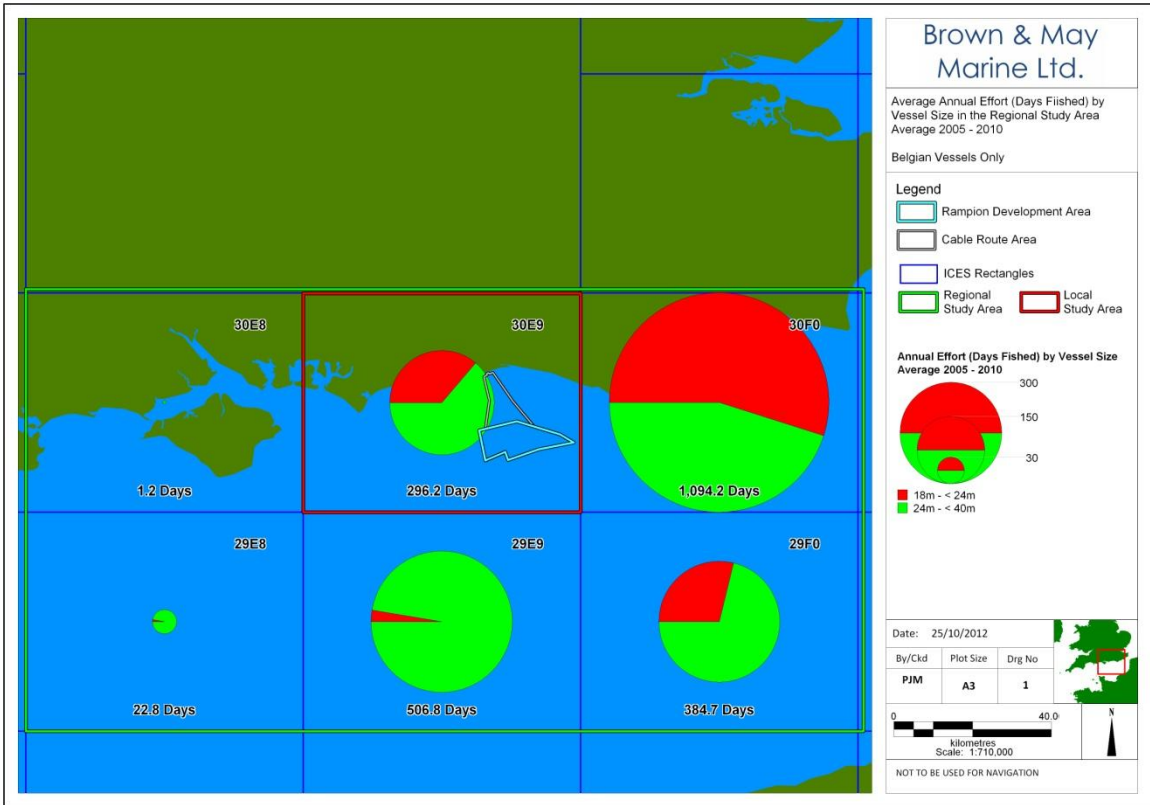


Figure 18.52 Average Annual Effort (Days Fished) by Vessel Length Category (2005-2009) in the Regional Area (Source ILVO 2010)

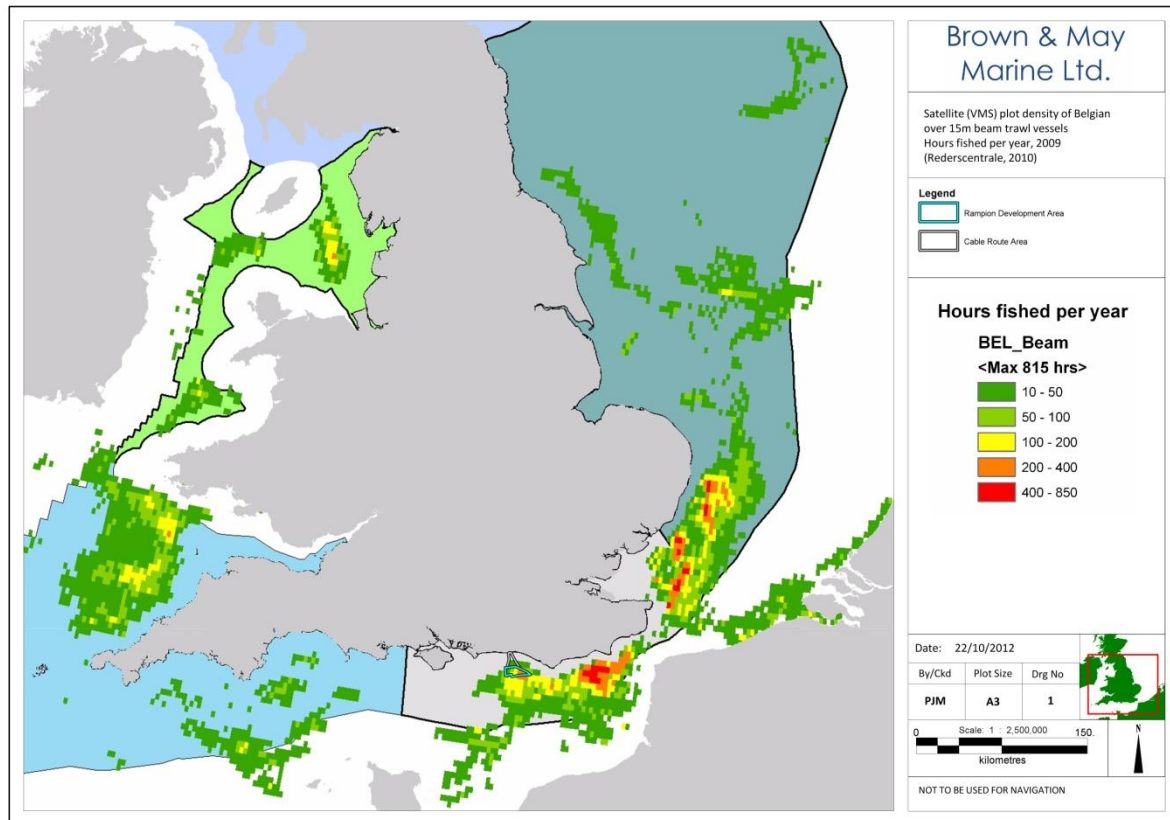


Figure 18.53 Belgian Beam Trawl VMS Data (2009) around the English Coast (Source: ILVO, 2010)

18.7.2 Fishing Methods and Species Targeted

Figure 18.54 illustrates the average annual landings weights by species for the region in which ROWF and the export cable corridor is located. As shown, the overall weights landed from rectangle 30E9 are moderate in comparison to the landings in adjacent rectangles to the south and east (30F0, 29F0 and 29E9). Sole, plaice, king scallops, bib, cuttlefish and lesser spotted dogfish comprise a significant proportion of the landings in rectangle 30E9.

As shown by Figure 18.55, virtually all of the landings values in the rectangle in which the ROWF and export cable corridor are located are ascribed to beam trawling, with negligible values recorded for other methods. Of note is that beam trawling records an average value of €95,078 for scallops but only €3,785 for scallops caught by dredges in 30E9.

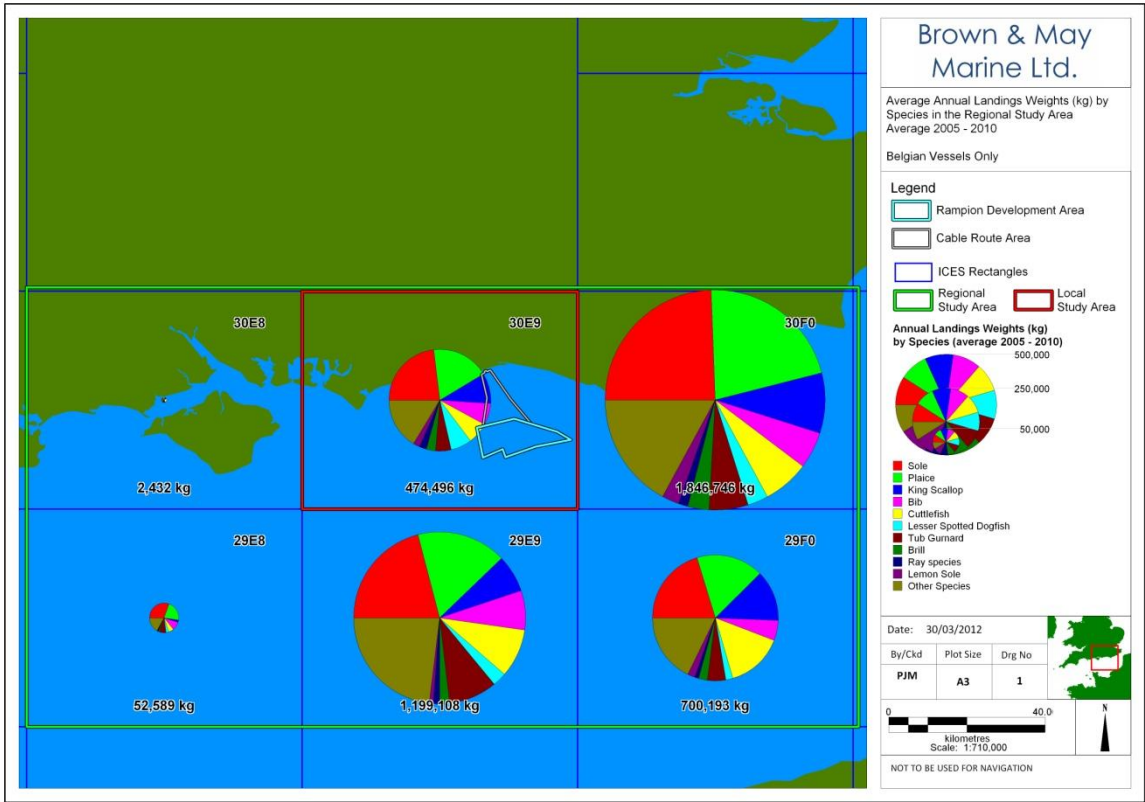


Figure 18.54 Annual Landings Weights (kg) (Average 2005-2010) for by Species in the Regional Area (Source: ILVO, 2011)

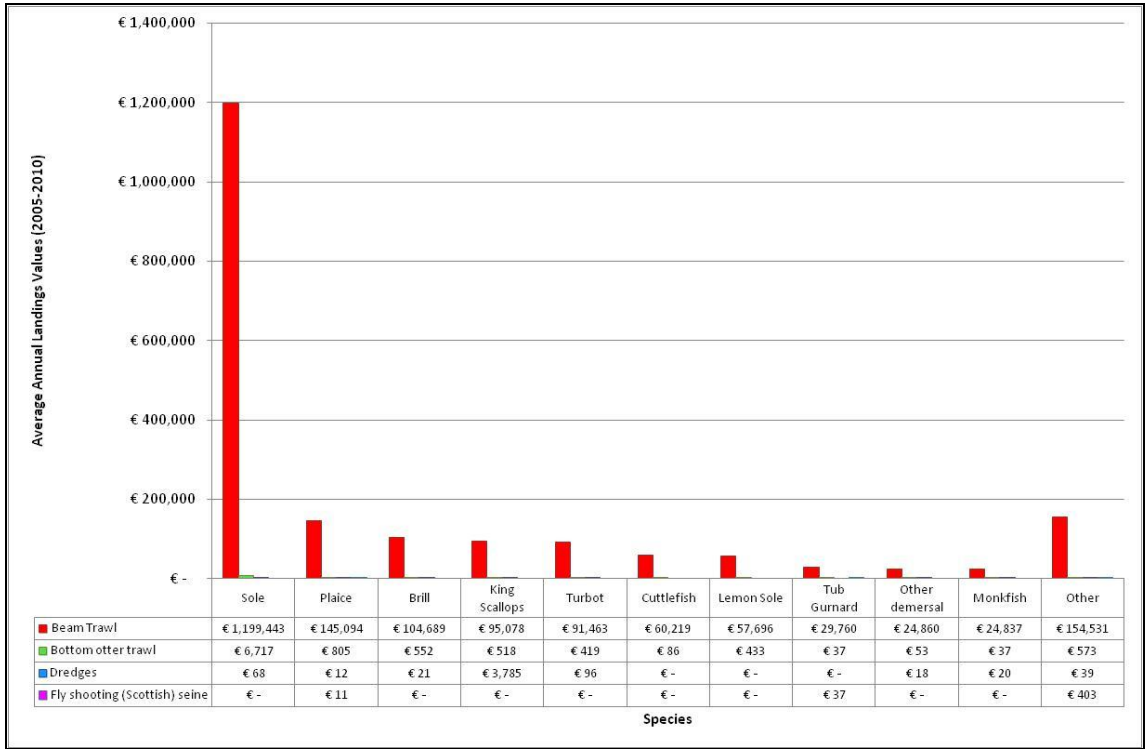


Figure 18.55 Average Annual Belgian Landings Values (2005-2010) by Method, by Species from Rectangle 30E9 (Source: ILVO, 2011)

18.7.3 Annual Trends in Fishing Effort

Figure 18.56 gives the annual effort (days fished) for Belgian vessels by method for the years 2005 to 2010 in rectangle 30E9. As shown, recorded effort peaked in 2006 followed by three years of reducing activity followed by a small increase in 2010. The data further confirms that virtually all Belgian activity within 30E9 is by beam trawlers, with negligible effort by otter trawlers and only 13 days of activity recorded by dredgers between 2008 and 2009 and none in 2010.

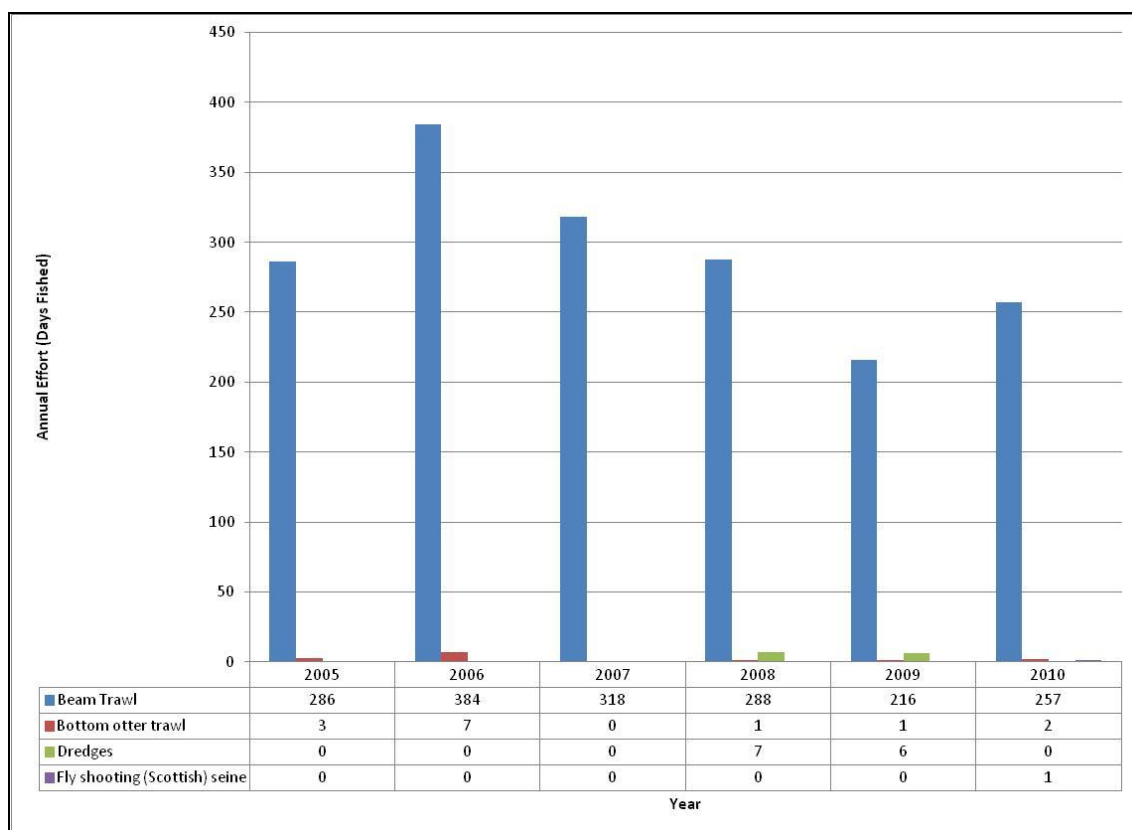


Figure 18.56 Annual Belgian Effort -Days Fished by Fishing Method (all vessel length categories) in ICES Rectangle 30E9 (Source: ILVO 2011)

18.7.4 Seasonality of Effort

From Figure 18.57, it is apparent that a high proportion of Belgian beam trawling effort within 30E9 occurs between November and March, with December recording the highest activity levels. The very low level of otter trawling occurs mostly in the late autumn and winter months and dredging only in February and April.

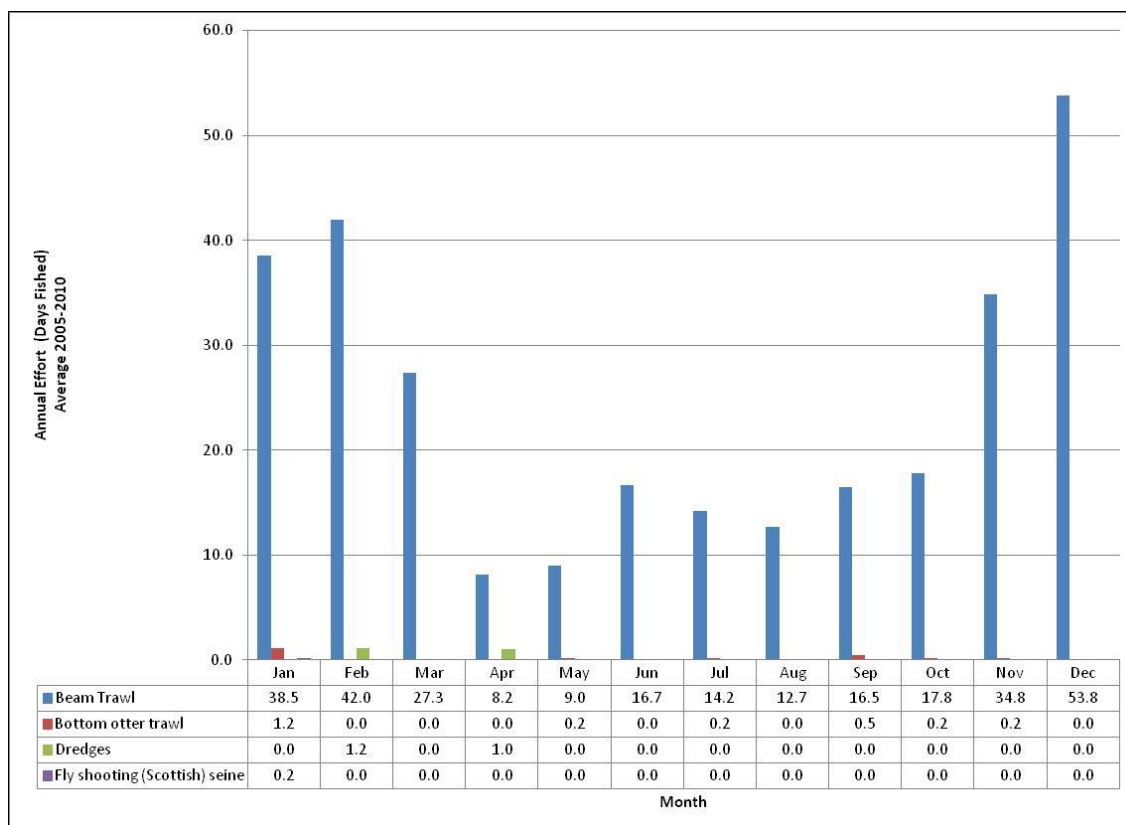


Figure 18.57 Seasonality of Belgian Effort -Days Fished by Method (Average 2001-2010) in ICES Rectangle 30E9 (Source: ILVO, 2011)

18.7.5 Fishing Grounds

Figure 18.58 which illustrates MMO surveillance sightings of Belgian vessels in the region shows the ROWF site to be on the western edge of an extended area of Belgian fishing vessel activity. Whilst vessels have been observed within the site, the area of the export cable corridor is shown to sustain negligible effort as a consequence of being within the 6 nm limit.

The VMS sightings data provided by ILVO (Figure 18.59) show a similar pattern of the ROWF site being on the western extremity of an extended area of activity, with the highest levels of effort occurring to the east of the site. The distribution of VMS sightings within the ROWF site also show a similar pattern to the surveillance sightings, with the greater density of activity appearing to be in the east of the site.

As stated above, since 2006, the MMO has not been willing to release detailed VMS data on non UK vessels. Figure 18.60 shows the last annual VMS sightings on Belgian vessels that could be obtained. The data is of higher resolution than released by ILVO and shows that within the ROWF, the highest concentration of Belgian activity was along the southern boundary of the site.

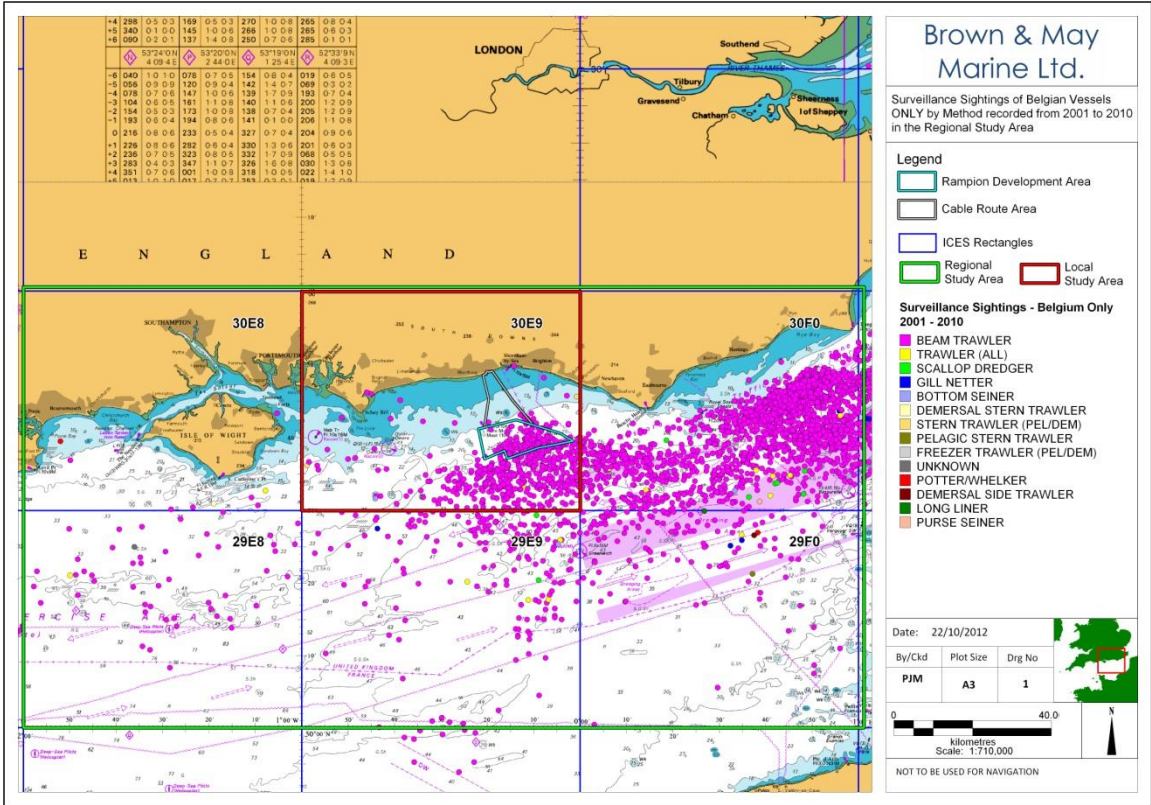


Figure 18.58 Surveillance Sightings of Belgian Vessels by Method (2001-2010) in the Regional Area (Source: MMO, 2011)

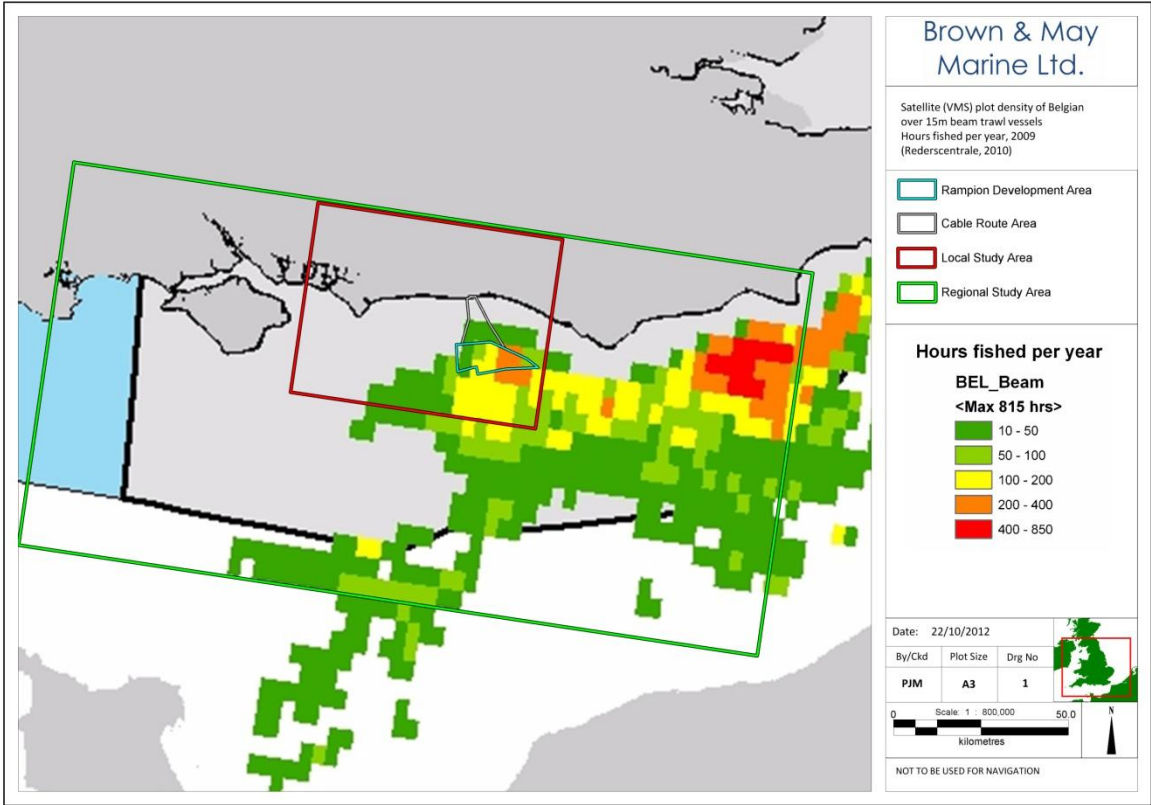


Figure 18.59 Belgian Beam Trawl VMS Data (2009) (Source: ILVO)

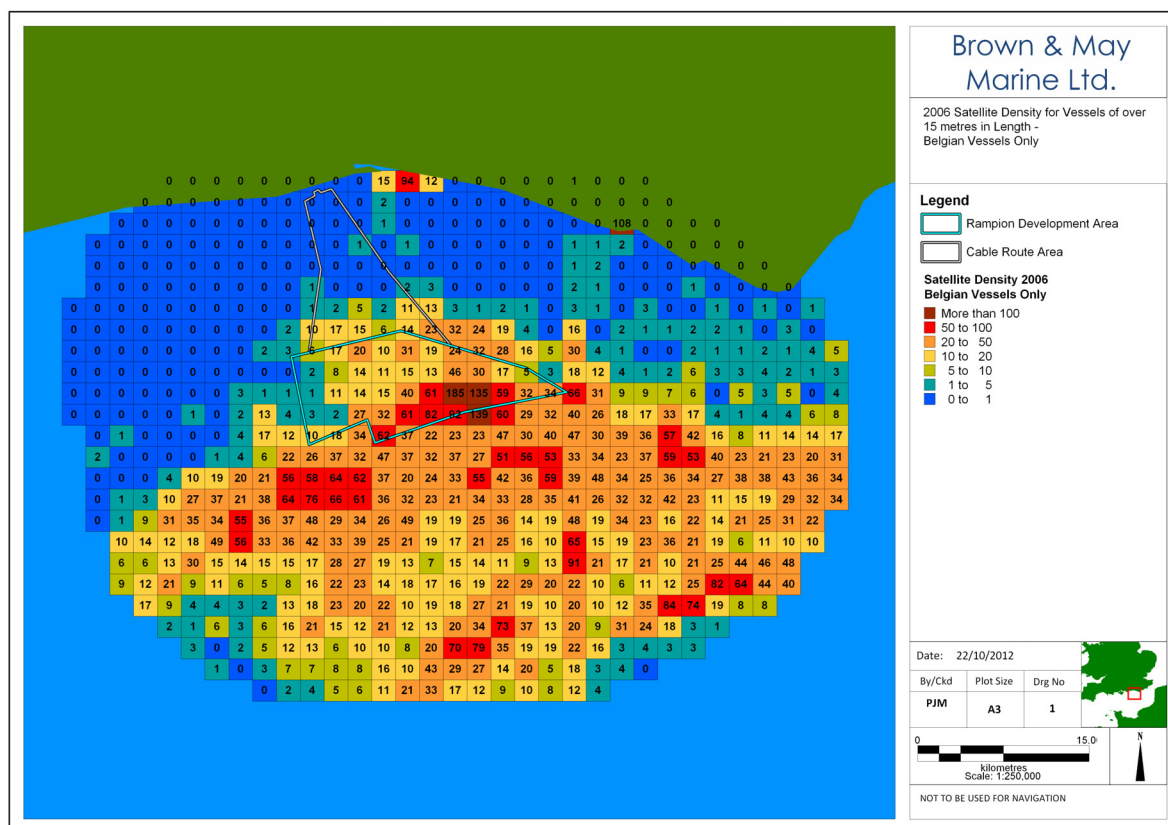


Figure 18.60 VMS Position Plot Densities of Belgian Over-15m Vessels in 2006 (Source: MMO, 2006)

During consultation with Belgian skippers, it was confirmed that a proportion of the Belgian fleet fishes the area under consideration and grounds between the 6 and 12 nm limits. Local skippers reported that the larger class of beamers, which are prohibited from fishing within the 12 nm limit, are frequently seen south of the ROWF southern boundary in an area known locally as the “Knuckle”.

18.7.6 Vessels, Gears and Operating Patterns

The Belgian fishing fleet is currently comprised of 96 vessels, 84 of which are beam trawlers. Within the beam trawler fleet, 44 vessels are under-24m in length and 40 vessels are between 24m and 38m. Main engine powers range from 250hp to 1599hp. The majority of the vessels are registered at one of the two principal Belgian landing ports of Oostende (27) or Zeebrugge (47).

As discussed above, as a consequence of EU legislation, only the smaller class of under-24m beam trawlers, with engine of less than 300hp (Figure 18.61) can fish between the 6 and 12 nm limits and therefore within the area in which the ROWF site is located.

In addition to beam trawlers, within the Belgian fleet there are a limited number of otter trawlers and scallop dredgers. During consultation with Belgian skippers it was stated that out-rigging otter trawling (two demersal otter trawls towed from each of the derricks, each with a set of trawl doors) is an alternative method used by the larger class of Belgian beam

trawlers to circumvent the regulation preventing them from beam trawling between 6 and 12 nm limits.

The estimated maximum effective gear widths of Belgian beam trawlers which could operate in the ROWF are estimated to range from 28 to 36 metres. During consultation it was stated that towing speeds are generally between 3.5 and 5.0 knots, frequently following the contours of sandbanks.



Figure 18.61 Belgian Euro-Cutter Type Beam Trawler (Source BMM, 2011)

Due to continuing concerns over fuel costs, there have been two recent innovations in beam trawling, the development of the “Sum Wing” and “Pulse Wing”. Pulse wings, which are currently used by a number of Dutch vessels, involve the use of electric pulses to shock fish off the seabed, thereby alleviating the need for heavy “tickler” chains and chain mats (

Figure 18.62), which in turn results in significant fuel savings, claimed to be up to 50%, due to the significant reduction in gear drag. At present, Belgian legislation prevents Belgian

beam trawlers using Pulse Wings, although it is understood that representations have been, and are continuing to be, made to allow their use. A variant of the Pulse Wing is the Sum Wing, which is effectively a hydrofoil of the same width as traditional beam trawls, onto which the net and chains are attached.



Figure 18.62 Belgian Beam Trawl as used in the ROWF are with Chain Mat Fitted (Source: BMM, 2011).

Sum Wings do not involve the use of electric pulses and as such Belgian vessels are permitted to use them (Figure 18.63). As, unlike conventional beam trawls, Sum Wings make only occasional contact with the sea bed, it was stated during consultation that the reduction in drag results in savings in fuel costs of approximately 20%. It is understood that up to 50% of the Belgian beam trawler fleet use Sum Wings.



Figure 18.63 Sum Wing Photographed in Ostende Harbour (Source: BMM, 2011)

18.8 French Fishing Activity

Despite a number of requests to the relevant authorities, it has not been possible to obtain the detailed fisheries statistics or VMS data for French registered fishing vessels. The following description of activity by French vessels is therefore based on; MMO surveillance and 2006 VMS data, available published information and from consultation with French vessel owners and skippers.

As previously noted, the French have local historic fishing rights to grounds within the 6 to 12nm limits, including the project site.

18.8.1 Locations and Density of Activity

From Figure 18.64, it appears that the ROWF site is to the north of the main fishing grounds within the general region, with only a low number of surveillance sightings actually being recorded within the wind farm boundaries, and negligible sightings within the export cable corridor, which is primarily within the 6nm limit.

A similar pattern is shown in the only available MMO VMS data on French vessels Figure 18.65, with the highest proportion of French fishing vessel activity being recorded to the south and east of the ROWF site.

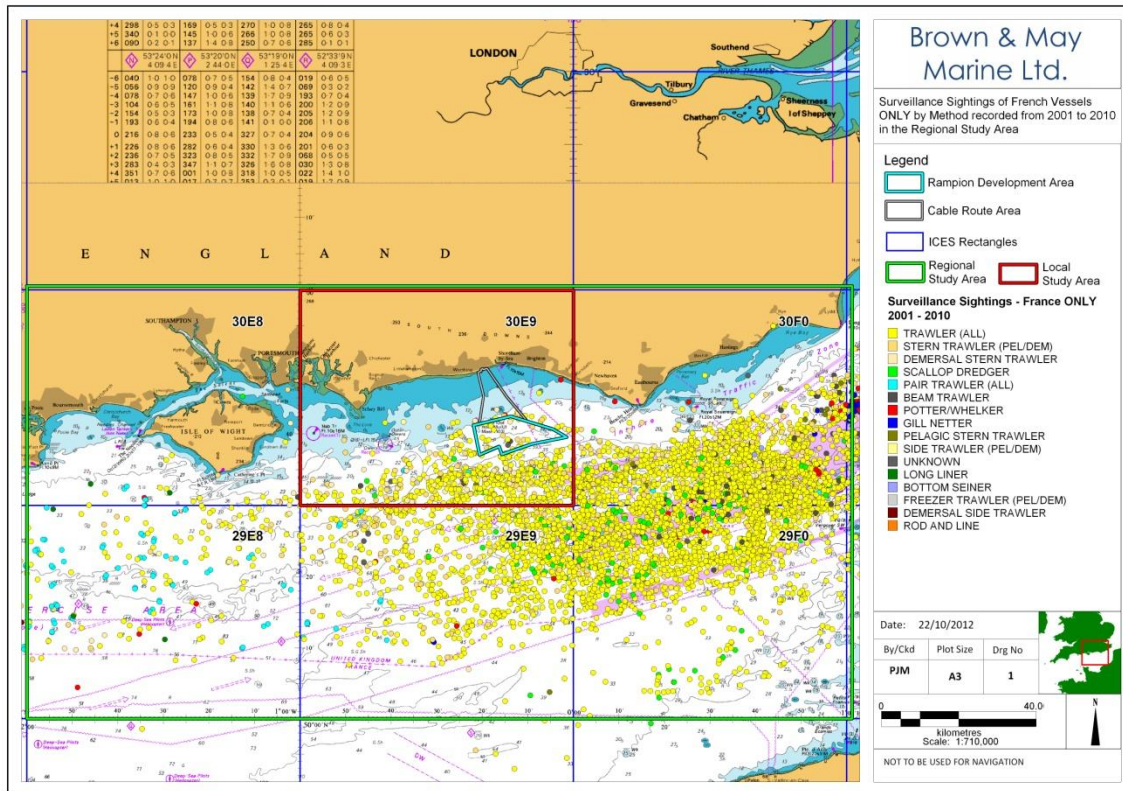


Figure 18.64 Surveillance Sightings of French Vessels by Method (2001-2010) in the Regional Area (Source: MMO, 2011)

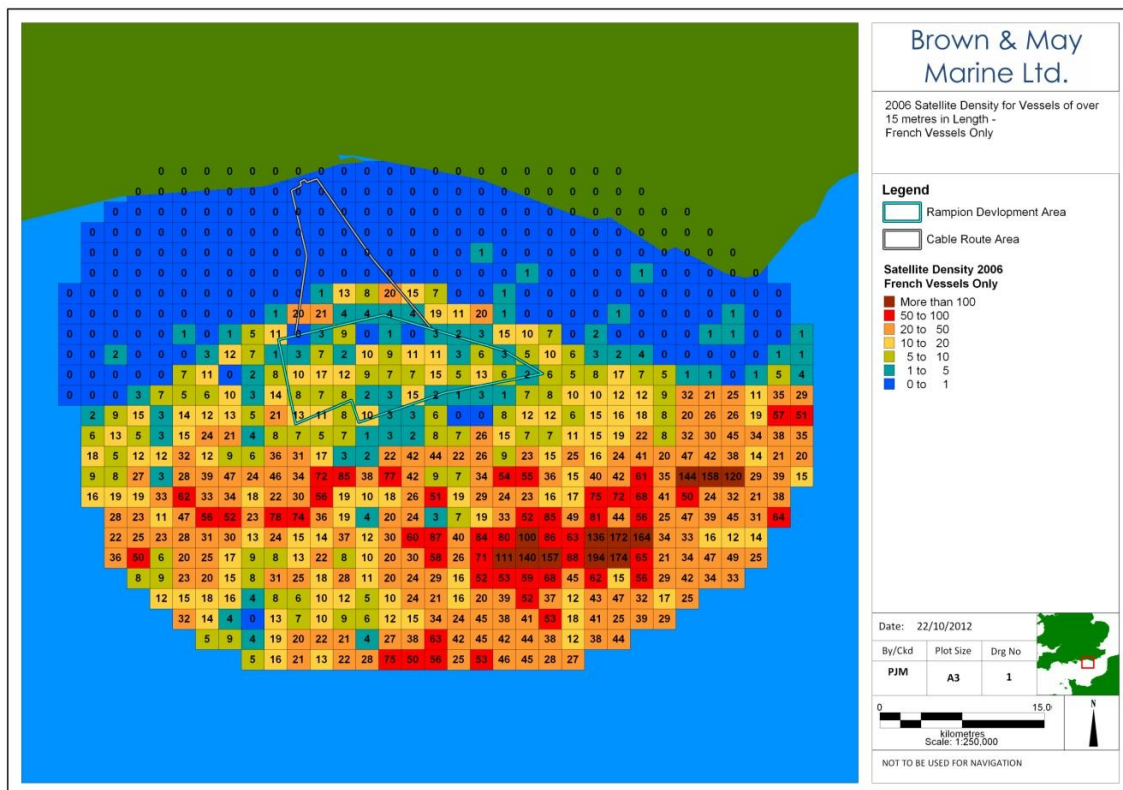


Figure 18.65 VMS Position Plot Densities of French Over-15m Vessels in 2006 (Source: MMO, 2006)

In response to initial consultation, presumed to be by The Crown Estate, and the publication of the Round 3 Zones locations and boundaries, the National Comité, CNPMM, in association with IFREMER, produced a report; “French Answer to the Consultation on Round 3 UK Windfarms Proposal 2009”.

The stated objective of the CNPMM (2009) study was to assess the socio-economic impact of the Round 3 developments on French fishing. The report provides only a series of charts showing the relative spatial distribution of effort, values and vessels numbers within each of the Round 3 zones. The results and charts produced were based on speed filtered VMS data and sales registered at French fish auctions. The data used was however not presented, nor are details given of the modelling used, although a reference is made to the use of algorithms.

Figure 18.66, reproduced from the CNPMM (2009) report, gives the distribution of French trawler effort (hr/yr – 2008) based on IFREMER’s interpretation of VMS data and broadly reflects the patterns shown in Figure 18.64 and Figure 18.65 showing the ROWF site being on the edge of areas of moderate intensity and north of grounds sustaining the higher levels of fishing activity.

Further information from CNPMM report “Components on activity of French fishing vessels in 2008-2009 near the Rampion offshore wind farm project zone” (2012) estimates numbers of vessels, fishing time and turnover in the Rampion area. Figure 18.67 and Figure 18.68 illustrate effort (hours) and sales (Euros) in 2009, which compared to 2008 shows a decrease in effort but an increase in turnover.

It should be noted however, that it is unclear how the values within both reports were calculated and the exact nature of the data used. Furthermore the area of ROWF to be constructed is significantly smaller than the area used in the CNPMM report.

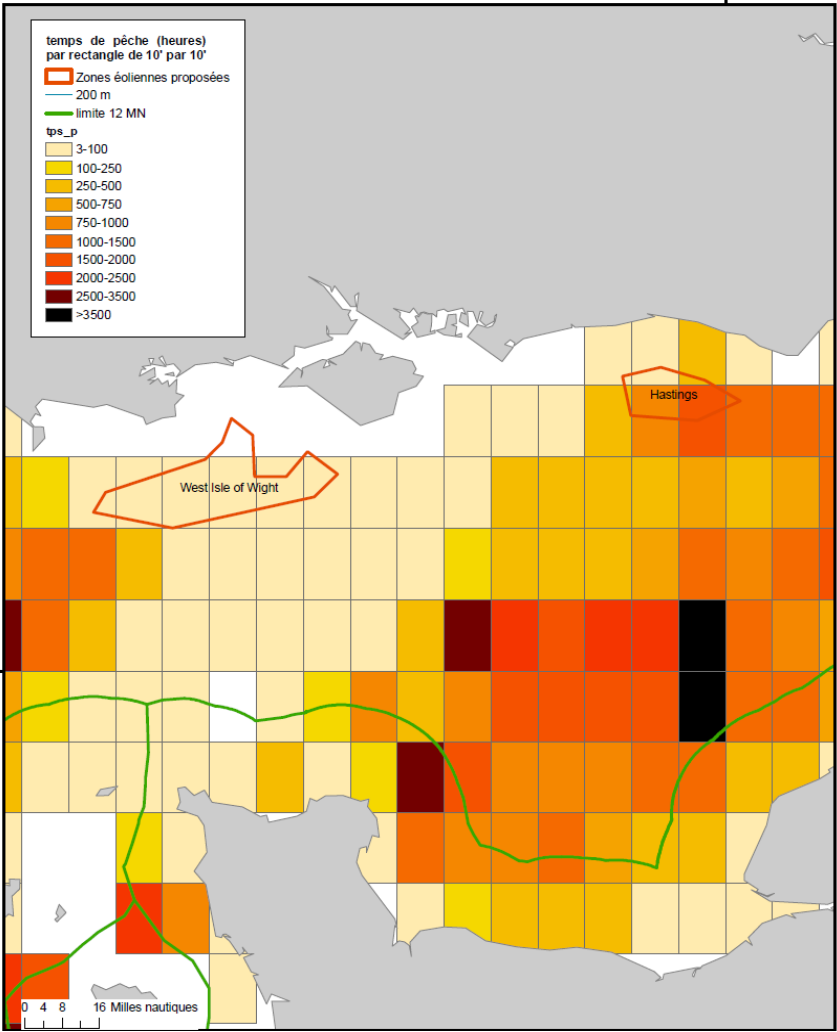


Figure 18.66 Distribution of Bottom Trawlers' Effort (Hours) around the ROWF (Hastings) in 2008 (Source: CNPMM, 2009)

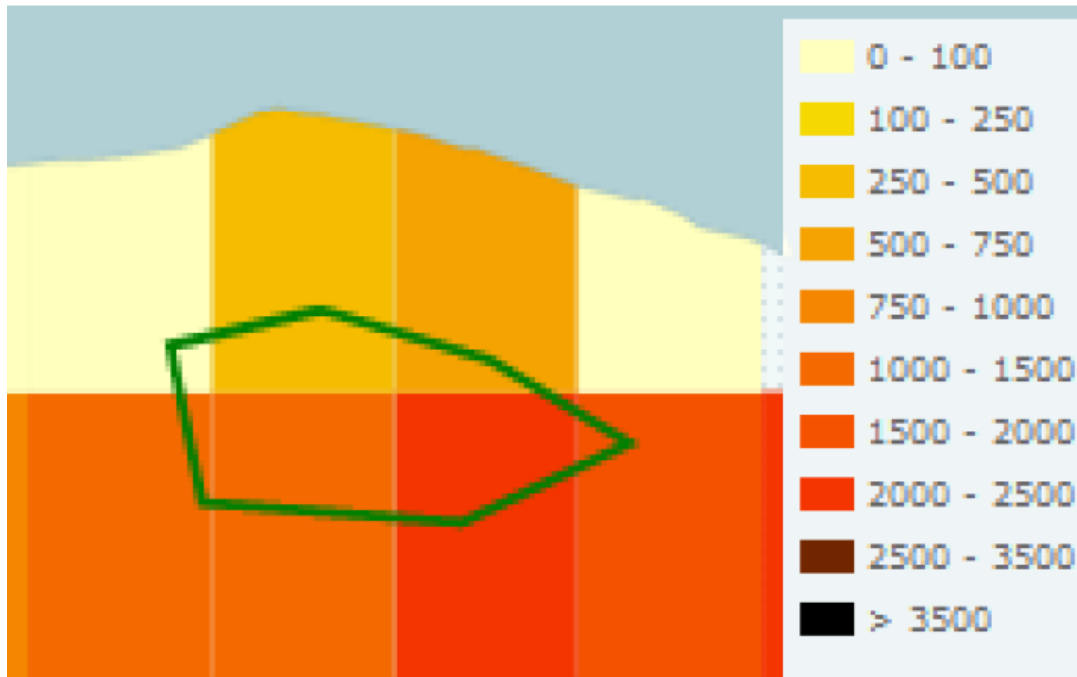


Figure 18.67 Estimation of Total Fishing Time (Hours) of French Fishing Vessels (2009) (Source: IFREMER, 2012)

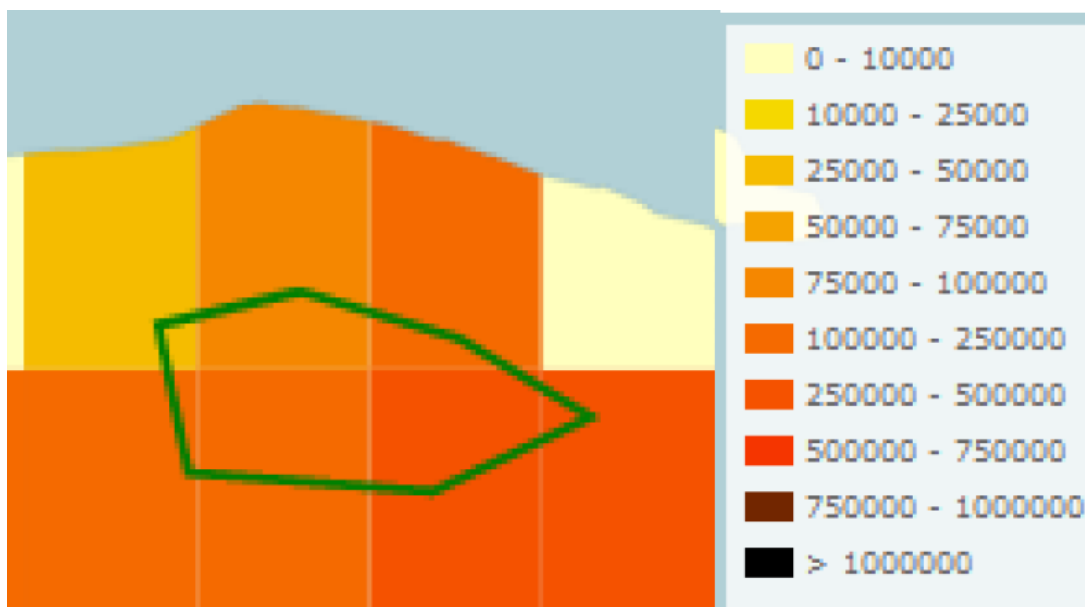


Figure 18.68 Estimation of the Total Sale (Euros) of French Fishing Vessels (2009) (Source: IFREMER, 2012)

18.8.2 Vessels and Fishing Effort

The French fishing fleet targeting grounds in the English Channel and North Sea consists of 52 vessels over-24m in length, 337 vessels between 12m and 24m and 1094 vessels less than 12m in length (IFREMER, 2010). Vessels with the potential to fish the area under consideration operate from ports in the Regions of Nord Pas de Calais, Haute Normandie, Basse Normandie and Nord Bretagne.

The majority of French trawlers fishing are between 18 and 24 metres in length with main engines of between 300hp and 800hp (Figure 18.69) operating either single or twin rigged trawls, which in the case of twin rigged trawls would give an estimated gear spread of up to 120 metres or pelagic trawls with potentially greater gear spreads.

Towing speeds are normally between 3 and 4 knots and occasionally up to 5 knots for average durations of 5 hours, with towing along the 30 metre contour being stated as one of the main factors determining towing directions.

During consultation with CRPMEM (Nord Pas de Calais / Picardie & Haute-Normandie) it was stated that 30 to 50 French vessels of lengths between 12 to 25 metres could fish the general ROWF area, with activity peaking in June to August. It was also stated that fishing trips were usually of 3 -5 days duration, the majority of activity within the southern section of the RAWF Zone. The skippers consulted considered that on average they spent 3 weeks per year fishing within the ROWF area.

Scallops, sole, saithe, herring, monkfish cod, cuttlefish, plaice, rays, red mullet, dogfish and sea bream were stated to be the main species targeted in the general ROWF area.

It was also stated by the skippers present that they fish within existing operational wind farms and that providing the spacing between turbine rows was not less than 300 metres, they would consider fishing within the ROWF.



Figure 18.69 A French Trawler Observed during ROWF Survey (2010) (Source: BMM)

In response to initial consultation, presumed to be by The Crown Estate, and the publication of the Round 3 Zones locations and boundaries, the National Comité, CNPMM, in association with IFREMER, produced "French Answer to the Consultation on Round 3 UK

Windfarms Proposal 2009". Further responses were recorded in a joint CNPMM/ IFREMER document "Components on activity of French fishing vessels in 2008-2009 near the Rampion offshore wind farm project zone"(2012). This is , however, may be an over estimate as the updated Rampion zone is smaller than the one used for the calculations and consequently further analysis has been requested.

Table 18.6 copied from the CNPMM (2009) report, gives the number of French vessels, their effort and assumed area dependence within the Rampion Zone as it was originally published by The Crown Estates and concludes that the "south part" of the Zone is of more importance to French vessels. Taking into account that the southern boundary of ROWF is further to the north than as originally published by the Crown Estates, the values given in Table 18.6 may be overestimate effort and dependence.

The estimate of 27 vessels having the potential to fish the project site is in line with the activity levels stated by industry representatives during consultation (BMM, 2011c).

The report however recognises that its findings are based on the VMS monitoring of only over-15m vessels and considers that due to the proximity of the development to the French coast, up to "40 bottom trawlers and 20 gill-netters from the North of France are possibly involved in the area of Hastings (Rampion)".

Table 18.6 French Fishing Vessel Activity for the Rampion Zone in 2008 (CNPMM 2009)

	Number	Fishing time in the area (h)	Average dependence on the area (%)
Bottom trawlers	12	407	1.05
Pelagic trawlers	1	4	0.2
Pelagic and bottom trawlers (vessel using both gears)	12	259	0.6
Dredgers	2	3	0.05
Total	27	673	

18.9 Appendix 1.0

18.9.1 Appendix 1.0 -List of Consulted Individuals

A list of consulted commercial fishing individuals is provided in Table 18.7 below.

Table 18.7 A Summary of the Home Port and Fishing Method of Consulted Fishing Vessels which operate in and around the Project Site (Source: BMM)

Owner / Skipper	Vessel Name	Registration No.	Home Port	Fishing Method
William Lewis	Natalie	LI199	Bognor Regis	Static Nets and Pots
Alexis Hagnere	Le Precursseur	BL 899829	Boulogne-sur-Mer	Pelagic and Demersal Trawl
-	Saint Jean Baptiste	BL 734689	Boulogne-sur-Mer	Pelagic and Demersal Trawl
Marc Perrault	Sainte Catherine Laboure	BL 925606	Boulogne-sur-Mer	Pelagic and Demersal Trawl
Alan Diplock	My Girl Kerry	New vessel	Brighton Marina	Static Nets
Christopher Leach	Last Chance	SM701	Brighton Marina	Static/Drift Nets
Neil Tester	Lilybel	PE1111	Brighton Marina	Static/Drift Nets
Olly Man	Aquarian	SM244	Brighton Marina	Static/Drift Nets and Pots
Brian Bennett	Isobel Kate	SM685	Brighton Marina	Static/Drift Nets and Pots
Steven Eaton	Libby Lou	SM11	Brighton Marina and Shoreham	Static/Drift Nets
Steve Rodgers	Haringuliet	BM218	Brixham	Beam Trawl and Scallop Dredge
Jean Roult	Ludovic Geoffray II	DP 912376	Dieppe	Pelagic and Demersal Trawl
Jean Louis Sagot	Sainte Marie de la Mer	DP 735100	Dieppe	Pelagic and Demersal Trawl
Jean Louis Sagot	Tiger 2	DP 651249	Dieppe	Pelagic and Demersal Trawl
Steve Parker	Our Sarah Jane	NN710	Newhaven	Nets and Pots
P. Brown & G Sutton	Rosie Mae	NN756	Newhaven	Nets and Pots
Martin Fuller	Violet May	NN752	Newhaven	Pots
Peter Pickett	Lionel Thomas	-	Newhaven	Static Gear
David Vaughan	Girl Jolene	SM437	Newhaven	Static/Drift Nets
David Downey	Salua Mea	R2	Newhaven	Static/Drift Nets
Danny Rathbone	Bounty Hunter	RX448	Newhaven	Static/Drift Nets and Pots
Neil Witney	Two Brothers	RX433	Newhaven	Trawl
Johan Hennaert	Den Hope	O231	Ostende	Beam Trawl
Chris Redmond	Progress	FE69	Ramsgate	Nets
Malcolm Gosman	Sarah Ray	R490	Ramsgate	Static/Drift Nets
Tony Delahunty	Robert Louise	FR902	Selsey	-
M. Harvey/ C. Harvey	Predator	LI556	Selsey	Nets and Pots
Keith Birkett	Shearwater II	SU206	Selsey	Pots
Wayne Birkett	Tobyroc	NN404	Selsey	Pots
Geoff Birkett	Zeus	LI135	Selsey	Pots
W. Pledger	Steel Princess	LI176	Selsey	Static Nets, Pots and Cuttle Traps
Greg Gilbert	Jane Elizabeth	SM74	Shoreham	Beam Trawl and Scallop Dredge

Owner / Skipper	Vessel Name	Registration No.	Home Port	Fishing Method
Andrew Hill	Lauren Anne	CK304	Shoreham	Beam Trawl and Scallop Dredge
Chris Hubbard	Sally Jane	SM75	Shoreham	Beam Trawl and Scallop Dredge
Bill Brock	Sara Lena	BM30	Shoreham	Beam Trawl and Scallop Dredge
Colin Knight	Betty G	-	Shoreham	Beam Trawl, Stern Trawl and Scallop Dredge
Bill Brock	Joanna C	BM265	Shoreham	Beam/Pair Trawl and Scallop Dredge
Bill Brock	Lauren Anne	CK304	Shoreham	Beam/Pair Trawl and Scallop Dredge
Roger Saunders	Our Nina	SM423	Shoreham	Longlines and Static/Drift Nets
Brian Davey	Jenna D	SM688	Shoreham	Single Stern/Pair Trawl and Scallop Dredge
G.N Brownrigg	Jennadore	SM188	Shoreham	Static Nets, Pots and Cuttle Traps
Ross Irvine	Emma May	FH416	Shoreham	Static/Drift Nets
Ross Irvine	Two Sisters	SM198	Shoreham	Static/Drift Nets
Michael Thain	Billinis	MT119	Shoreham	Static/Drift Nets and Pots
Phil Remedios	Westward Isle	SY575	Shoreham	Static/Drift Nets and Pots
S. Possnicker	Clarinnis	NN751	Sovereign Harbour	Static Nets, Pots and Cuttle Traps
Graham Doswell	Halcyon	NN114	Sovereign Harbour	Static Nets, Pots and Cuttle Traps
J. Watt	Havana	NN749	Sovereign Harbour	Static Nets, Pots and Cuttle Traps
P. Parker	McRidian	NN	Sovereign Harbour	Static Nets, Pots and Cuttle Traps
John Booker	Lee/Beryl	SM684/SM12	Worthing	Longlines and Nets
Emiel Utterwilphe	Dennis	Z510	Zeebrugge	Beam Trawl
Eddy Cattoor	Francine	Z90	Zeebrugge	Beam Trawl
Steve Savels	Van Eyck	Z53	Zeebrugge	Beam Trawl

18.9.2 Appendix 2.0 – Summary of Gear Types used by Consulted UK Commercial Fishermen**18.9.2.1 Pots and Creels**

Vessel ID	Pot/Creel type	Dimensions		No. Fleets	Fleet Length (m)	No. Pots/Creels per Fleet	Distance Between Each Pot (m)	Anchor Type	No. Anchors per Fleet	Anchor Weight and Size (kg)	Type of Gear Marker	No. Gear Markers per Fleet	Operating Practices				
		Length (m)	Height (m)										Deployment Method	Typical Depth Fished (m)	Bait Used	Typical Soak Time (days)	Hauling Method
P1	Whelk Pots	Not known	Not known	10	500	50	10	Chain	2	30	Dhan's with flags	2	Across Tide	20-60	Scad, Huss	1	Hydraulic
P2	Parlour, whelk	Not known	Not known	10 of each	300 and 210	30 each	10 and 7	Fishermans	2 each	30 each	Dhan's	2 each	With/Across Tide	Up to 50	Not known	1	Hydraulic
P3	Parlour	1	0.5	3	100	6	15-20	Fishermans	2	20, approx 1m	Buff's	4	With Tide	Up to 20	Anything	2	Hydraulic
P4	Pots	26"	0.5	10	450	80	14	Large ones	2	30	Bufs and Dhans	2	Not known	30	Crab, huss, scad	0.5	Hydraulic
P5	Parlour and Whelk	1.5 and 0.5	0.5	12 strings parlour, 10 whelk	660	35	20	Chain	2	50	buoys and cans	2	Shoot with tide	20-50	Scad, dogfish, dead crab	1	Hydraulic
P6	Parlour and Whelk	1.5 and 0.5	0.5	12 strings parlour, 10 whelk	660	35	20	Chain	2	50	buoys and cans	2	Shoot with tide	20-50	Scad, dogfish, dead crab	1	Hydraulic
P7	Whelk Pots	Not known	Not known	5	Not known	40	12	Sinch (or 5 inch)	2	Not known	Trawl Float	2	Not known	<10	Dogfish, crab	1	Hydraulic
P8	Parlour and Whelk	1.5 and 0.5	0.5	15 strings parlour, 10 whelk	660	35-40	20	Chain	2	50	buoys and cans	2	Shoot with tide	20-50	Scad, dogfish, dead crab	1	Hydraulic
P9	Whelk Pots	Not known	Not known	2-3	180	10-12	18	Fishermans	2	5	Buoy	2	With Tide	10-20	Fish, crab	1	Hydraulic

Vessel ID	Pot/Creel type	Dimensions		No. Fleets	Fleet Length (m)	No. Pots/Creels per Fleet	Distance Between Each Pot (m)	Anchor Type	No. Anchors per Fleet	Anchor Weight and Size (kg)	Type of Gear Marker	No. Gear Markers per Fleet	Operating Practices				
		Length (m)	Height (m)										Deployment Method	Typical Depth Fished (m)	Bait Used	Typical Soak Time (days)	Hauling Method
P10	Parlour	30-36"	0.5	12	500	30	25	Clump of Chain	2	40	Kegs and Buoys	2-4	Not known	Any	Dead Fish	Not known	Hydraulic
P11	Parlour/Inkwell	various	Various	2	50-60	10	5-6	None - heavy pot each end	Not known	Not known	Bufs	2	E-W	10	Fish	1	Hydraulic
P12	Parlour, whelk, traps	Not known	Not known	10, 10, 30	Not known	20, 32, 10	Not known	Not known	2	30	Dhans and bufs	2/4	N-S, Clockwise, With Tide	Not known	Any, Dogs or crab, birds	1	Hydraulic
P13	Whelk	Not known	Not known	10	500	80	Not known	Not known	2	30	Dhan flags	2	Across Tide	Not known	Dogfish, crab	1	Hydraulic
P14	Traps	Not known	Not known	10	250	20	Not known	Not known	2	30	Dhan flags	2	With tide	Not known	Not known	1	Hydraulic
P15	Pots	28"	14"	6	400	50	4-6	Not known	2	20	Buoys	2	Not known	3-6	Mackerel	1	Hydraulic
P16	Gt. Factors traps	26"	26"	300 Traps	800	20	27	Anchor	2	40	Dhan Buoy	2	Across Tide	Up to 40	Varies	1	Hydraulic
P17	Parlour	30"	18"	10	Not known	10	Not known	Grapnal	Not known	Not known	Flags	10	Not known	Not known	Scad, Mackerel	1	Hydraulic

18.9.2.2 Static, trammel and drift netting

Vessel ID	Net Type	Net Material	Net Dimensions (m)	Mesh Size (mm)	No. Fleets	Fleet Length (m)	No. Nets per Fleet	Flotation in Headline	Lead Weights / Lead Line	Anchor Type	No. Anchors per Fleet	Anchor Weight and Size (kg)	Type of Gear Marker	No. Gear Markers per Fleet	Operating Practises				
															Deployment Method	Depth of Net in Water (m)	Typical Depth Fished (m)	Typical Soak Time (Hours)	Hauling Method
N1	Drift	Mono	100	90/270	10/15	500	5/7	Not Known	Lead Line	Fisher mans	2	30	Dahn's with flags	2	Drift Nets across tide, set nets with tide	Drift nets surface, set nets bottom	10-60	24	Hydraulic
	Gill																		
	Tangle																		
	Trammel																		
	Kit 6,000																		
N2	Gill	Mono - Multi/ Mono	Not Known	4", 5.25", 8", 10"	4-8	558	6	some - others 3 floats per net	Lead Line	Admiral Type	2	2'6" on shank, 25lb	Dahn's with flags and reflectors	4	With tidal flow	Bottom - depends on where fishing	15-30	24	Hydraulic
	Trammel																		
	Kit 6,000																		
	Tangle																		
N3	All	Nylon and Mono	Not Known	100-130	10	500	5	Yes	Lead Line	Fisher mans	2	30	Dahn	2	With Tide	Bottom, drift at surface	Up to 50	24	Hydraulic
N4	All	Nylon and Mono	Not Known	55 (drift) - 150	6	400	6	Yes	Lead Line	Fisher mans	2	20	Buff's and Dhans	4	With Tide	5-50	20	24	Hydraulic
N5	Drift	Monofilament	Not Known	Drift 90, Set 4.75	2	400	5	Buoy Line	Lead Line	Noo-mah	2	5	Dahn	2	Parallel to Tide	Bottom	Up to 20	24	Manual
	Trammel																		
N6	Drift	Multi Mono	100	100-250	4-12	600	6-8	6ft Floats	No. 3/4 Headline	Fisher mans	2	15	Dahns and buoys	2	Drift-across tide, with tide anchored	Bottom	10-30	3 Drift, up to 48 anchored	Hydraulic
	Tangle																		
	Gill																		
	Trammel																		
N7	Trammel	Multi Mono and Mono	100	4" to 6"	6	600	6	Yes - Plastic Corks	Leadline 4 and 3	Not Known	Not Known	Not Known	Dahns and Buffs	2	Across Tide	Bottom	20-40	Up to 4	Hydraulic

Vessel ID	Net Type	Net Material	Net Dimensions (m)	Mesh Size (mm)	No. Fleets	Fleet Length (m)	No. Nets per Fleet	Flotation in Headline	Lead Weights / Lead Line	Anchor Type	No. Anchors per Fleet	Anchor Weight and Size (kg)	Type of Gear Marker	No. Gear Markers per Fleet	Operating Practises				
															Deployment Method	Depth of Net in Water (m)	Typical Depth Fished (m)	Typical Soak Time (Hours)	Hauling Method
N8	All	Nylon Mono	90 and 110	Not Known	10	500	5	Yes	Lead Line	Normal	2	35	Dahns and Buffs	2	Not Known	Not Known	Not Known	Not Known	Not Known
N9	All	Mono and Nylon	Not Known	4" to 10.5"	8	500	5	Floats	Lead Line	Fishing Anchor	2	20	Dahn	2	With Tide	Drift surface, Set bottom	Up to 40	24	Hydraulic
N10	All	Mono	max. 100x 6DP	12" to 21"	1-3	Up to 500	3-6	Floats or float line	Number 1 to Number 4	Fisher mans	2	5-8	Dhan with flag	2	With/Across Tide	Surface/ Bed to 6m	1-20	1-24	Manual
N11	All	Mono	Not Known	3.5" gill, 5" tangle	Varies on weather	varies	varies	-	Lead line 3	Fisher mans	2	30	Dhan with flag	2	With Tide	<10	6-10	24	Hydraulic
N12	All	Nylon - Mono	90	7"	Not Known	5	Not Known	Not Known	Not Known	Fisher mans	2	8	Dhan	2	Drift - N to S, Set - E to W	Drift - Surface, Set - Bottom	20	24	Hydraulic
N13	Set	Nylon-Mono	50 Yards	up to 6"	10	500	10	6mm Rope	Lead line	Not Known	2	Not Known	Dhan with flag	2	With Tide, E to W	Not Known	5-25	24	Hydraulic
	Drift	Mono	100 Yards	90mm	4	700	7	6mm with cork	Lead line	Not Known	Not Known	Not Known	Not Known	Not Known	Across Tide - N to S	Not Known	10	1-3	
N14	Set	Nylon-Mono	100 Yards	6"	4	400	4	Dhans	Lead Line	Fisher mans	2	5	Dhan with flag	2	Tidal	Bottom	5-25	24	Hydraulic
	Drift	Mono	100 Yards	90mm	2	200	4								Across Tide	Surface	10-15	1.5-2	
N15	All	Mono, Nylon, Multi Mono	Not Known	Varies	Varies	350	4	Not Known	Lead Line	Grapnal	2	16	Dhan markers	2	Not Known	Not Known	Not Known	Not Known	Not Known

Vessel ID	Net Type	Net Material	Net Dimensions (m)	Mesh Size (mm)	No. Fleets	Fleet Length (m)	No. Nets per Fleet	Flotation in Headline	Lead Weights / Lead Line	Anchor Type	No. Anchors per Fleet	Anchor Weight and Size (kg)	Type of Gear Marker	No. Gear Markers per Fleet	Operating Practises				
															Deployment Method	Depth of Net in Water (m)	Typical Depth Fished (m)	Typical Soak Time (Hours)	Hauling Method
N16	All	Nylon Mono	Not Known	90mm, 6", 4.5"	8-10	500	5	3m Floats	Lead Line	Fisher mans	2	8	Dhan	2	With Tide	Drifting-Surface, Set-Bottom	15-20	24	Hydraulic
N17	All	Nylon, Mono	Not Known	90-180 mm	10-12	500	5	Floats	Lead	Standard	2	8	Dhan	2	Drift - N to S, Set - E to W	Drifting-Surface, Set-Bottom	15-20	24	Hydraulic
N18	Trammel	Nylon	18 Yards	90mm/4.7 5"	6 Emma May/4 Two Sisters	Not Known	4	Yes every 10 ft	Leadline 3	Yes	2	6	Dhan with flag	2	E-W on ebb, W-E on Flood	1m high	Not Known	24	Hydraulic
N19	Drift	Nylon	14 ft deep	Not Known	Not Known	Not Known	4	Not Known	Not Known	Not Known	Not Known	Not Known	Not Known	Not Known	Across tide	14ft below surface	Not Known	24	Hydraulic
N20	All	Nylon, Mono	5m/1m by up to 500m	All	Up to 8	Up to 500	5	Yes	Lead Line	Normal	2	30	Dahns	2	Set nets with tide, drift nets across tide	Set - bottom, drift - surface down to 5m	10-30	over night to 2 days	Hydraulic
N21	All	Nylon, Mono	Not Known	90/300	10-12	600	6	Yes	Yes	Fisher mans	2	30	Dhans with flags	2	Drift across tide, tram with tide	drifts surface, tram bottom	Not Known	3 days, 1 day	Hydraulic

Vessel ID	Net Type	Net Material	Net Dimensions (m)	Mesh Size (mm)	No. Fleets	Fleet Length (m)	No. Nets per Fleet	Flotation in Headline	Lead Weights / Lead Line	Anchor Type	No. Anchors per Fleet	Anchor Weight and Size (kg)	Type of Gear Marker	No. Gear Markers per Fleet	Operating Practises				
															Deployment Method	Depth of Net in Water (m)	Typical Depth Fished (m)	Typical Soak Time (Hours)	Hauling Method
N22	All	Nylon, Mono	Not Known	90/300	12	500-1000	10	Yes	Yes	Fisher man	2	30	Dhan with flag	2	with tide and 90° to tide	Drift @ surface, other @ bottom	Not Known	Skate & turbot = 3 days, Other = 1 day	Hydraulic
N23	Trammel and Tangle	Not Known	6ft	4" - 5.25"	10	600	6	Not Known	Lead line	Not Known	2	40-60	Dhans	2	Not Known	Not Known	3-23	24	Hydraulic
N24	Drift, Tangle, Trammel 4,000	Mono	4,000	4.75 and 0.9	10-15	400	4	corks	lead line	Anchor	2	40	Dhan	2	With tide	Bottom and Surface	Up to 260 feet	24	Hydraulic
N25	All	Mono	Not Known	100-150	4	500	4	Not Known	Lead line	Grapnel	2	16	Flag	2	E-W	Not Known	Not Known	24	Manual

18.9.2.3 Trawling and Scallop Dredging

Vessel ID	MAIN METHODS	Trawl Winches									
		Manufacturer	Type	Drive Type	No. Trawl Winches	Length of Warp on Each Drum	Winch Pulling Power			Control System	Braking System
							Empty Drum	Mid Drum	Full Drum		
T1	Beam Trawl and Scallop Dredger	Popp/ North Sea	Not Known	Hydraulic	4	200 Fathoms	4	2	1	Wheelhouse	Band
T2	Beam Trawl and Scallop Dredger	North sea	4 Drum	Hydraulic	1	140 Fathoms	Not known	Not known	Not known	Deck/Manual	Deck/Manual
T3	Beam Trawl and Scallop Dredger	North sea	4 Drum	Hydraulic	1	140 Fathoms	Not known	Not known	Not known	Deck/Manual	Deck/Manual
T4	Beam Trawl and Scallop Dredger	Luyt	4 Drum	Hydraulic	1	220 Fathoms	Not known	Not known	Not known	Pneumatic	Pneumatic
T5	Beam Trawl and Scallop Dredger	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T6	Single Otter Trawl	North Sea	Not known	Hydraulic	1	150 fathoms	Not known	Not known	Not known	Not known	Not known
T7	Single Otter trawl	Not known	Not known	Hydraulic	3	not known	Not known	Not known	Not known	Not known	Not known

		Trawl Winches										Trawl Warps		
		Manufacturer	Type	Drive Type	No. Trawl Winches	Length of Warp on Each Drum	Winch Pulling Power			Control System	Braking System	Wire Type	Warp Diameter (mm)	Length Paid out Relevant to Depth (m)
Vessel ID	MAIN METHODS						Empty Drum	Mid Drum	Full Drum					
T1	Beam Trawl and Scallop Dredger	Popp/ North Sea	Not Known	Hydraulic	4	200 Fathoms	4	2	1	Wheelhouse	Band	6x19 +1	16	6:1
T2	Beam Trawl and Scallop Dredger	North sea	4 Drum	Hydraulic	1	140 Fathoms	Not known	Not known	Not known	Deck/Manual	Deck/Manual	6x19	18	Differs with methods/tides
T3	Beam Trawl and Scallop Dredger	North sea	4 Drum	Hydraulic	1	140 Fathoms	Not known	Not known	Not known	Deck/Manual	Deck/Manual	6x19	18	Differs with methods/tides
T4	Beam Trawl and Scallop Dredger	Luyt	4 Drum	Hydraulic	1	220 Fathoms	Not known	Not known	Not known	Pneumatic	Pneumatic	6x19	22	Differs with methods/tides
T5	Beam Trawl and Scallop Dredger	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T6	Single Otter Trawl	North Sea	Not known	Hydraulic	1	150 fathoms	Not known	Not known	Not known	Not known	Not known	6x7	12	Not known
T7	Single Otter trawl	Not known	Not known	Hydraulic	3	not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known

		Chain Bridles			
		Type	No. Bridles	Chain Length (m)	Chain Link Size (mm)
Vessel ID	MAIN METHODS				
T1	Beam Trawl and Scallop Dredger	Not known	Not known	Not known	Not known
T2	Beam Trawl and Scallop Dredger	Not known	2	3	13
T3	Beam Trawl and Scallop Dredger	Not known	2	3	13
T4	Beam Trawl and Scallop Dredger	Not known	2	3.5	16
T5	Beam Trawl and Scallop Dredger	Not known	Not known	Not known	Not known
T6	Single Otter Trawl	6x19	4	10 fathoms	N/A
T7	Single Otter trawl	Not known	Not known	Not known	N/A

		Beam and Dredgers								
		No. Beams	Beam Length (m)	Beam Diameter (mm)	Beam Weight (tonnes)	Wheel Type	Wheel Diameter (mm)	No. Dredges per Side	Dredge Type/Model	Total Gear Width (m)
Vessel ID	MAIN METHODS									
T1	Beam Trawl and Scallop Dredger	2	4	Not known	1.5	Not known	27"	6	Newhaven	9
T2	Beam Trawl and Scallop Dredger	2	4.5	168	Not known	Rubber	28"	6	Newhaven	9
T3	Beam Trawl and Scallop Dredger	2	4.5	168	Not known	Rubber	28"	6	Newhaven	9
T4	Beam Trawl and Scallop Dredger	2	4.5	168	Not known	Rubber	28"	8	Newhaven	12.5
T5	Beam Trawl and Scallop Dredger	Not known	Not known	Not known	Not known	Not known	Not known	5	Newhaven	Not known
T6	Single Otter Trawl	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
T7	Single Otter trawl	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

		Operating Practices	Groundline
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Vessel ID	MAIN METHODS	Average Towing Speed Over Ground (knots)	Average Tow Duration (hr)	Average Tow Length (n.miles)	Type	Wire Type	Length (m)	Weight (kg/100m)	Disc Diameter (mm)	Disc Spacing (mm)	Minimum Braking Strain (tonnes)
T1	Beam Trawl and Scallop Dredger	Beam - 4, Scallop - 3.5	Beam-2, Scallop-1.5	10	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T2	Beam Trawl and Scallop Dredger	3	1.2	3.6	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T3	Beam Trawl and Scallop Dredger	3	1.2	3.6	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T4	Beam Trawl and Scallop Dredger	3	1.2	3.6	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T5	Beam Trawl and Scallop Dredger	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known
T6	Single Otter Trawl	0.9-3.5	3to 4 hr	Not known	Rock hopper	Not known	38'	Not known	10-12"	2'	Not known
T7	Single Otter trawl	0-9	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known	Not known

Vessel ID	MAIN METHODS	Pair trawling		
		Distance between Two Vessels(m)	Amount of Wire Outlaid	Average Tow Speed
T1	Beam Trawl and Scallop Dredger	Not known	Not known	Not known
T2	Beam Trawl and Scallop Dredger	85-200	60-100 fathoms	3-5knots
T3	Beam Trawl and Scallop Dredger	Not known	Not known	Not known
T4	Beam Trawl and Scallop Dredger	Not known	Not known	Not known
T5	Beam Trawl and Scallop Dredger	Not known	Not known	Not known
T6	Single Otter Trawl	Not known	Not known	Not known
T7	Single Otter trawl	Not known	Not known	Not known

18.10 References

Balanced Seas (2011) Balanced Seas October 2011 Newsletter (www.balancedseas.org/page/news/63.html)

Brown & May Marine (2010a) Consultation with Belgian Fishermen.

Brown & May Marine (2010b) Consultation with UK Regional Fishermen.

Brown & May Marine (2011a) Consultation with Shoreham fishermen.

Brown & May Marine (2011b) Consultation with Belgian Fishermen and Industry representatives.

Brown & May Marine (2011c) Consultation with French Fishermen and Industry representatives.

Clark, R.W. (2008) Sussex inshore fisheries. Part 1: the inshore fisheries off the Sussex coast: a description of the methods and spatial extents, 2004-2007. Sussex Sea Fisheries Committee Report. Shoreham-by-Sea, Sussex.

CNPMEM (2009) French answer to the consultation on Round 3 UK wind farms proposal – 2009- Comite National Des Peches CNPMEM.

CNPMEM (2012) Components on activity of French fishing vessels in 2008-2009 near the Rampion offshore wind farm project zone.- 2012- Comite National Des Peches CNPMEM.

Defra (2002) Closed Areas. General Fisheries Technical Conservation Rules.

Defra (2011) Consultation on the evidence base for a proposed new English Scallop Order
<http://www.defra.gov.uk/consult/files/110826-scallops-condoc.pdf>

Dutchfish.nl (2011) Facts and Figures on the Dutch Fishing sector 2010. <http://www.dutchfish.nl/uk/figures.asp>

European Union (2011) New Common Fisheries Policy
http://ec.europa.eu/fisheries/news_and_events/speeches/20110713_en.pdf

European Commission- Fisheries (www.europa.eu/fisheries)

Galbraith, R.D. and Rice, A. (2004) An Introduction to Commercial Fishing Gear and Methods used in Scotland. Fisheries Research Services. Aberdeen.

HMSO (2012) The Scallop Fishing (England) Order 2012

IFREMER (2010) Systeme d'Informations Halieutiques. Synthese des flottilles de peche 2008. Flotte de la facade Mer du Nord- Manche- Atlantique.

Peter J.S. Jones (2012) Marine protected areas in the UK: challenges in combining top-down and bottom-up approaches to governance. Environmental Conservation, 39, pp248-258.

Marine Management organisation (2011) Days at Sea Scheme 2011-12 Cod Recovery Zone scheme rules.
http://marinemanagement.org.uk/fisheries/management/documents/days_cod_rules.pdf

Phelippe.D, Duares. F and Le Gallic, B. (2011) Panaroma des caracteristiques d'exploitation des ressources halieutiques par la flotte de Peche Francaise en Marche. Les Publications Amure – series rapport, No. R-19-2011. IFREMER.

Scallop Association (2011) Notes of a meeting held in Manchester, which BMM attended.

Sussex Sea Fisheries District Committee (2007) Annual Report 2007.

Sussex Sea Fisheries District Committee (2008) Annual Report 2008

Vanstaen, K., Clark, R., Ware, S., Eggleton, J., James, J.C.W., Cotteril, C., Rance, J., Manco, F. and Woolmer, A. (2010) Assessment of the distribution and intensity of fishing activities in the vicinity of aggregate extraction site. MALSF-MEPF Project 08/P73. Cefas, Lowestoft.

Vause,B.J and Clark, R.W.E.(2011) Baseline Fisheries information October 2011 . Sussex Inshore Fisheries and Conservation Authority. Shoreham-by-Sea, West Sussex.

