# Rampion Offshore Wind Farm

# ES Section 18 – Commercial Fisheries

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**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**

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# 18 COMMERCIAL FISHERIES

## 18.1 Introduction

18.1.1 This section of the Environmental Statement (ES) presents an assessment of the potential impacts on commercial fisheries which might arise from construction, operation and decommissioning of the proposed Rampion Offshore Wind Farm (The Project). This assessment has been made using data gathered from desk-based studies and consultations.

18.1.2 This section addresses the following topics:

- Assessment methodology;
- An overview of the baseline;
- Assessment of the potential impacts on commercial fisheries, together with discussion of appropriate mitigation, and
- A summary of residual impacts in tabular form.

18.1.3 Commercial fishing for the purposes of this assessment is defined as the activity undertaken by licensed fishing vessels for the legitimate capture and sale of finfish and shellfish. The ecological aspects of all fish and shellfish species are covered in Section 8 - Fish and Shellfish. Aspects relating to safety of fishing vessels and their crews are covered in Section 14 - Navigation and Shipping.

18.1.4 This section uses a number of terms to describe fisheries. Key terms are:

- Demersal: fish found on or near the seabed, and/or fisheries that catch them;
- Pelagic: fish found in the water column, and/or fisheries that catch them;
- Gear: the type of equipment used by fisheries (e.g. crab pots, trawl nets).

## 18.2 Legislation and Policy Context

### National Policy Statements

18.2.1 National Policy Statements (NPS) (DECC, 2011) are the principal policy documents for Nationally Significant Infrastructure Projects (NSIP). The following paragraphs provide detail from sections of the NPSs considered relevant to the assessment of impacts on commercial fisheries as a result of the Project.

18.2.2 Paragraphs 2.6.121 to 2.6.136 of EN-3 sets out offshore wind-specific commercial fisheries and fishing policy.

18.2.3 Paragraph 2.6.129 of EN-3 states that:

18.2.4 "The assessment by the applicant should include detailed surveys of the effects on fish stocks of commercial interest and any potential reduction in such stocks, as well as any likely constraints on fishing activity within the project's boundaries. Robust baseline data should have been collected and studies conducted as part of the assessment".

18.2.5 Paragraph 2.6.130 and 2.6.131 of EN-3 state that:

18.2.6 "Where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be included in the assessment on commercial fishing" and

18.2.7 "Where the precise extents of potential safety zones are unknown, a realistic worst case scenario should be assessed. Applicants should consult the Maritime and Coastguard Agency (MCA). Exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment by the applicant should include detailed surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the wind farm development and of any safety zones."

**Other Legislation & Guidance**

18.2.8 The additional legislation and guidance used for the undertaking of this assessment are as follows:

- British Wind Energy Association (BWEA). 2004. BWEA Recommendations for Fisheries Liaison;
- Centre for Environment, Fisheries and Aquaculture Science (Cefas), Marine Consents and Environment Unit (MCEU), Department for Environment, Food and Rural Affairs (Defra) and Department of trade and Industry (DTI) 2004. Offshore Wind Farms – Guidance note for Environmental Impact Assessment in Respect of FEPA and CPA requirements – Version 2;
- Department for Energy & Climate Change (DECC) 2009. UK Offshore Energy – Strategic Environmental Assessment;
- Department for Business Enterprise & Regulatory Reform (BERR). 2008. Recommendations for Fisheries Liaison: FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group);
- UK Oil and Gas 2008. Fisheries Liaison Guidelines – Issue 5;
- International Cable Protection Committee. 2006. Fishing and Submarine Cables – Working Together; and
- Infrastructure Planning Commission (IPC) Scoping responses. 2010.

### Scoping

18.2.9 Initial consultation on the Project was carried out via the Rampion Offshore Wind Farm Scoping Document (E.ON/RSK, September 2010). Responses received are presented in the Infrastructure Planning Commission (IPC) Scoping Opinion report (IPC, October 2010). Further consultation exercises were also undertaken in 2012.

18.2.10 The information, advice and comments received during the scoping process with regard to commercial fisheries are summarised in Table 18.1, together with a list of the locations in the ES where these comments are addressed.

**Table 18.1: Scoping and consultation responses**

| Date | Consultee | Summary of issues | Sections where addressed |
|---|---|---|---|
| October 2010 | Infrastructure Planning Commission (IPC) | Confirmation is needed of consultation undertaken with appropriate UK and non-UK commercial fisheries | Detailed consultation has been undertaken with local and regional UK fishermen and those from Belgium, France and the Netherlands. Details are presented in Appendix 18.1. |
| | | Detailed and helpful advice from the Marine Management Organisation (MMO) regarding additional data sources should be noted. | MMO data sources were used to inform the commercial fisheries baseline. Extensive consultation with the fishing industry, MMO local offices and Sussex Inshore Fisheries and Conservation Authority (IFCA) has also taken place. |
| | | All stages of the proposal should be assessed - construction, operation and decommissioning. Appropriate mitigation measures should be identified. | All stages of the proposal have been assessed and discussed within this ES. Mitigation options have been suggested within the ES, which will require agreement via the Rampion commercial fisheries working group. |
| | | IPC does not agree that the assessment of the impact of the potential development on marine aggregate extraction can be scoped out of the ES | Confirmation of the status of the proposed dredging area within the Offshore Project Area is addressed in Chapter 2a - Offshore Project Description. |
| 11/10/10 | Natural England | Sussex Sea Fisheries District Committee (SSFC) (and partners) should be consulted for information. | E.ON & RSK met with SSFC in February 2011. |

| Date | Consultee | Summary of issues | Sections where addressed |
|---|---|---|---|
| 12/10/10 | Marine Management Organisation (MMO) | Strongly advise early consultation with fishing industry, MMO local offices and local sea fisheries committees. | Early and extensive consultation has occurred with local UK fishermen, their representatives, non-UK vessels and the Sussex IFCA. Information gathered has been used to compile the commercial fisheries baseline. |
| | | Locations of crab, lobster and whelk fisheries are not known | Charts of crab, lobster and whelk fishing grounds have been produced following consultation with the local UK fishing industry. Sussex IFCA data on gear type observations (2004 to 2007) have also be used. These charts are included in the commercial fisheries baseline. |
| 11/10/10 | East Sussex County Council | SSFC should be consulted and their data sources utilised. | Consultation with the Sussex IFCA has been undertaken and their survey and annual report data have been utilised within the commercial fisheries baseline. |
| | | Little mention of displacement of activity | Displacement of fishing activity is assessed as part of the loss of fishing grounds in this assessment. |
| | | Data from Marine Conservation Zones (MCZ) / Balanced Seas should be used. | This has been requested from committee members and included within the commercial fisheries baseline. The MCZs have also been included in determining the cumulative impacts of the offshore Project. |

18.2.11 The scope of the assessment was modified accordingly to take account of the above consultee responses and the opinions of the IPC, the findings of which were reported in the Draft ES and subject to stakeholder consultation.

18.2.12 Key consultees provided responses to the Draft ES on commercial fisheries. These responses, and the modifications subsequently made to the final ES, are summarised in Table 18.2.

**Table 18.2: Draft ES responses**

| Date | Consultee | Summary of Issues | Action taken to address the Issue |
|---|---|---|---|
| 30/07/2012 | Ifremer | Updated information given on the levels of French fishing activity in 2008-2009 near the Rampion zone | Ifremer data have been assessed and included in the baseline. However the data relate to the original zone 6 outline, and due to recent changes in the Offshore Project boundary, an updated assessment has been requested from Comite National des Peche Maritimes et des Elevages Marins (CNPMEM). |
| 01/08/2012 | Monteum Limited | The Rampion zone is an area of high density / high value scallop dredging and beam trawling. During construction and operation large areas will be unfishable. What mitigation measures are being considered? | It is currently planned that during the construction phase there will be rolling exclusion zones around construction activities. Through the established fisheries working group appropriate and feasible mitigation measures are to be discussed and agreed for the construction and operational phases with fishermen's representatives. |
| 07/08/2012 | Sussex IFCA | There is more up to date IFCA sightings data which should be used. Mitigation measures need to be developed further for the residual effects associated with construction and operation. | The IFCA sightings data (2004-2011) have been used in this ES chapter. Mitigation measures will be developed with fishermen's representatives through the fisheries working group. |
| | | Would like to see costed commercial fisheries impact scenarios for noise avoidance, using Vanstaen *et al*. (2010) | Vanstaen *et al*. (2010) has been assessed and used during the assessment. The Commercial Fisheries Baseline includes the method specific SIFCA observations and VMS data as well as consultation charts which highlight the range, location, and fishing intensity of key grounds in relation to the wind farm and the cable route. |

| | | | |
|---|---|---|---|
| | | Need to address the cumulative impact of the loss of fishing associated with appropriate MCZ implementation scenarios. | The report lists Defra's current position on the MCZs. It is impossible to state which sites will be implemented, delayed or rejected in 2013. The management measures of fishing methods within the MCZs have not yet been formulated and cannot be assessed. |
| 07/08/2012 | French National Committee of Fisheries and Sea Farming (CNPMEM) | Lack of consultation with Haute Normandie Fishermen. | Brown and May Marine (BMM) consulted with fishermen and local fishing organisations from Haute-Normandie including the president of the Comite Regional des Peches Maritimes et des Elevages Marins (CRPMEM), regional Producer Organisations (POs) and fishermen from Dieppe at a meeting held on 19th November 2011 in Boulogne-sur-Mer. |

## 18.3 Assessment Methodology

### Establishment of Baseline Environment

18.3.1 The baseline has been compiled from both desk-based studies and consultation. However, commercial fishing is a diverse and constantly evolving industry, with fishing activity, target species, operating costs, market forces, legislation and regulation frequently changing. It should be noted, however, that this assessment can only be based on the current data available.

18.3.2 A detailed baseline study of commercial fisheries in the Project area was commissioned by E.ON, and is presented as Appendix 18.1. This section of the ES summarises the main findings of that detailed report. The local study area is based on data from one International Council for the Exploration of the Sea (ICES) reporting rectangle. ICES rectangles are blocks of sea of approximately 900nm$^2$, and are a standard method of reporting fisheries landings. The Offshore Project and the export cable corridor fall entirely within ICES statistical rectangle 30E9 (Figure 18.1).

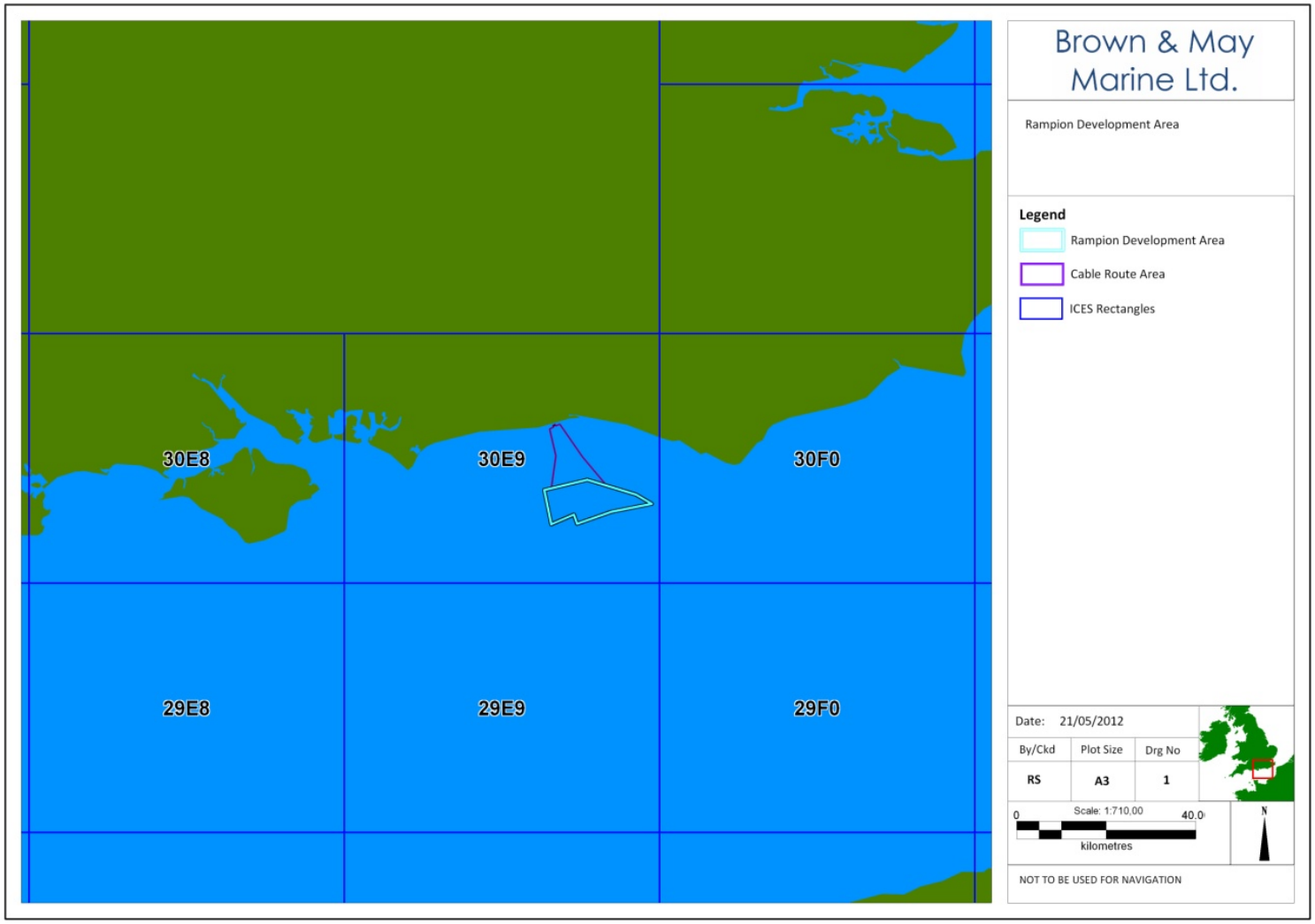


**Figure 18.1: The offshore project site in relation to ICES statistical rectangles**

18.3.3 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. 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. Data on landings, values, effort, surveillance and fishery types were collected from a number of sources (see Appendix 18.1 for details) and include but are not limited to the following:

- Marine Management Organisation (MMO);
- Data from Belgium, including the Institute for Agricultural and Fisheries Research (ILVO) and Rederscentrale – Ostende;
- Data from France, including Direction Départementale des Affaires Maritimes (France);
- Centre for Environment, Fisheries, and Aquaculture Science (Cefas);
- Sussex IFCA; and
- Consultation undertaken with Fisheries Officers, Fishermen's representative organisations, skippers, vessel owners and landing agents in the UK, Belgium and France.

Uncertainty and Technical difficulties encountered

18.3.4 It should be noted that there are limitations to some of the baseline data presented. For example, satellite tracking data relating to the density of fishing vessel activity is currently only available for vessels over 15m. In the case of the MMO fisheries statistics, for fishing vessels under-10m in length there is no requirement for the completion and submission of EU daily log book declarations on landings. Furthermore, as a consequence of its interpretation of the Data Protection Act, the fisheries statistics which the MMO is prepared to release for years since 2010 are incompatible with those of previous years and classify the majority of the data as confidential. MMO fisheries data for 2011 have therefore not been used. Surveillance data (e.g. by boat-based fisheries patrols, or aerial overflights) are also subject to limitations in their spatial and temporal coverage. A detailed description of limitations associated with each data source can be found in Appendix 18.1.

**Identification and Assessment of Impacts and Mitigation Measures**

18.3.5 The potential impacts to be assessed are as detailed in the Guidance Note for Environmental Impact Assessment in respect of FEPA and CPA requirements (Cefas, 2004). These are as follows:

- Complete loss or restricted access to traditional fishing grounds;
- Safety issues for fishing vessels (see Section 14 – Navigation and Shipping);
- Increased steaming times to fishing grounds;
- Interference with fisheries activities;
- Presence of seabed obstacles post construction; and
- Adverse impacts on commercially exploited species (see Section 8 – Fish and Shellfish Ecology). This includes consideration of the potential effect of underwater noise from piling during construction on commercially exploited species. Details of the methodology and impact assessment for noise are presented in Section 8 – Fish and Shellfish Ecology.

18.3.6 The potential impacts listed above are separately assessed for the construction, operational and decommissioning phases of the development. In the absence of detailed decommissioning plans, the impacts of decommissioning upon fishing activities are considered as no greater than those incurred during the construction phase.

18.3.7 To assess the potential impacts on commercial fisheries, consideration has been given to the following factors: importance and sensitivity of the receptor, magnitude of the impact; and the temporal nature of the impact.

18.3.8 The main characteristics used for defining the sensitivity of each of the receptor groups in terms of adaptability, tolerance, recoverability and value (dependence) are summarised in Table 18.3.

**Table 18.3: Sensitivity of commercial fishery receptors**

| Receptor sensitivity | Example |
|---|---|
| High | • Low adaptability due to limited range and ability to deploy only one gear type<br>• Limited spatial tolerance due to dependence upon a single fishing ground<br>• Low recoverability due to inability to mitigate loss of fishing area by operating in alternative areas or using alternative methods |
| Medium | • Some spatial adaptability due to extent of operational range and/or ability to deploy an alternative gear type<br>• Moderate spatial tolerance due to dependence upon a limited number of fishing grounds<br>• Limited recoverability with some ability to mitigate loss of fishing area by operating in alternative areas |
| Low | • High spatial adaptability due to extensive operational range and / or ability to deploy a number of gear types<br>• High spatial tolerance due to ability to fish a moderate |

| Receptor sensitivity | Example |
|---|---|
| | number of fishing grounds<br>• High recoverability due to ability to mitigate loss of fishing area by operating in range of alternative areas |

**Table 18.4: Magnitude of impact**

| Magnitude | Definitions |
|---|---|
| Large | A high proportion of traditional fishing grounds occupied by the infrastructure or construction activities |
| Medium | A moderate proportion of traditional fishing grounds occupied by the infrastructure or construction activities |
| Small | A small proportion of traditional fishing grounds occupied by the infrastructure or construction activities |
| Negligible | A negligible proportion of traditional fishing grounds occupied by the infrastructure or construction activities |
| Beneficial | Change is likely to benefit the integrity/value of the receptor |

18.3.9 Assessments have also taken into account the temporal nature of effects, with duration categorised as:

- Long term - Greater than 5 years;
- Medium term - 3 to 5 years; and
- Short term – less than 3 years

**Significance of Residual Impacts**

18.3.10 The overall significance of residual impacts (those impacts remaining after the implementation of mitigation measures) has been determined by combining sensitivity of the receptor (Table 18.3) and the magnitude of the impact (Table 18.4), as presented in Table 18.5.

**Table 18.5: Significance of impact**

| Magnitude | Sensitivity | | |
|---|---|---|---|
| | High | Medium | Low |
| Large | Major | Major/Moderate | Moderate |
| Medium | Major/ Moderate | Moderate | Minor |
| Small | Moderate | Minor | Minor |
| Negligible | Minor | Negligible | Negligible |

18.3.11 It should be noted that significance criteria cannot be applied in respect of the health and safety risks to fishing vessels and crews. In such instances, risks are assessed to be within or outside of acceptable limits. Further details can be found in Section 14 - Navigation and Shipping.

## 18.4 Environmental Baseline

Nationality of Activity

18.4.1 Data from fisheries patrol aircraft, and satellite tracking, provide an indication of the nationality of vessels fishing in the project area. Within the export cable route corridor (all of which is inside the 6Nm boundary and therefore only legally fished by UK vessels), only UK vessels are recorded. However within the wind farm site, UK vessels and those from France and Belgium have been recorded (Figure 18.2). Belgian and French registered vessels are legally entitled to fish between the 6 and 12Nm limits, between which the Offshore Project is located (Figure 18.3).

Fishing methods and species targeted

18.4.2 The area in which the offshore 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 (Figure 18.4).

18.4.3 Figure 18.5 illustrates the relative importance of target species within the regional area. As is apparent, in rectangle 30E9, covering the immediate offshore project site, sole, whelks, scallops, bass, lobsters and cuttlefish are the principal target species.

18.4.4 A feature of the fishery in the region in which the offshore project area 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, local 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.

Landings value by vessel size

18.4.5 Figure 18.6 shows the relative landings values and fishing effort for the regional area. Within 30E9, the highest proportions of values were recorded by under 10m vessels.

18.4.6 For under-10m vessels the highest values from potting are for whelks, lobsters, cuttlefish and crabs. Sole and bass account for the majority of netting landings. The landings values for traps are confined almost exclusively to cuttlefish. Otter trawling by under-10m vessels is generally of lower value than the other main methods with most of the value being derived from bass and sole. These vessels also undertake hook and line fishing for bass.

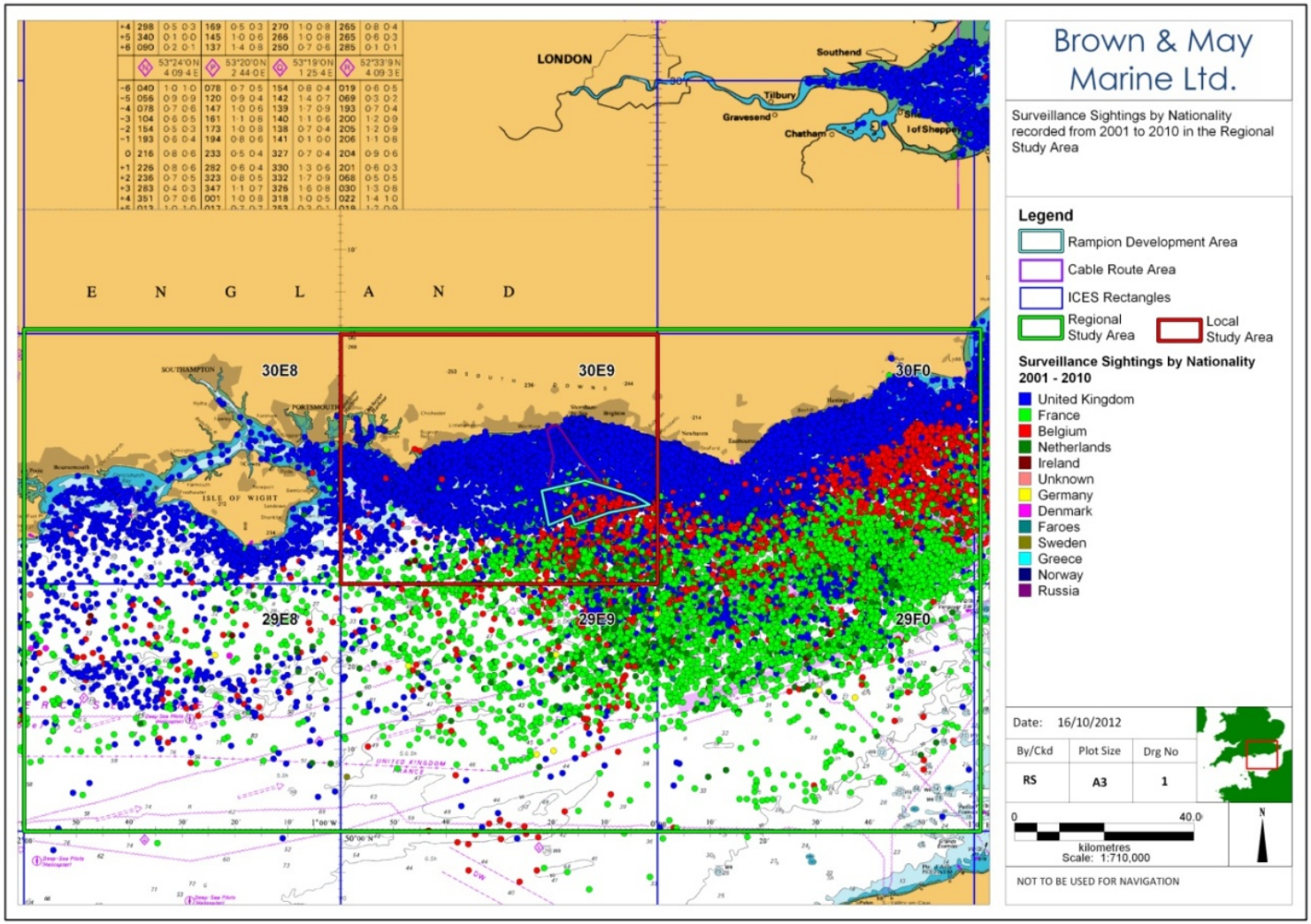


**Figure 18.2: Surveillance sightings of all fishing vessels (2001-2010) by nationality in the study area (Source: MMO, 2011)**

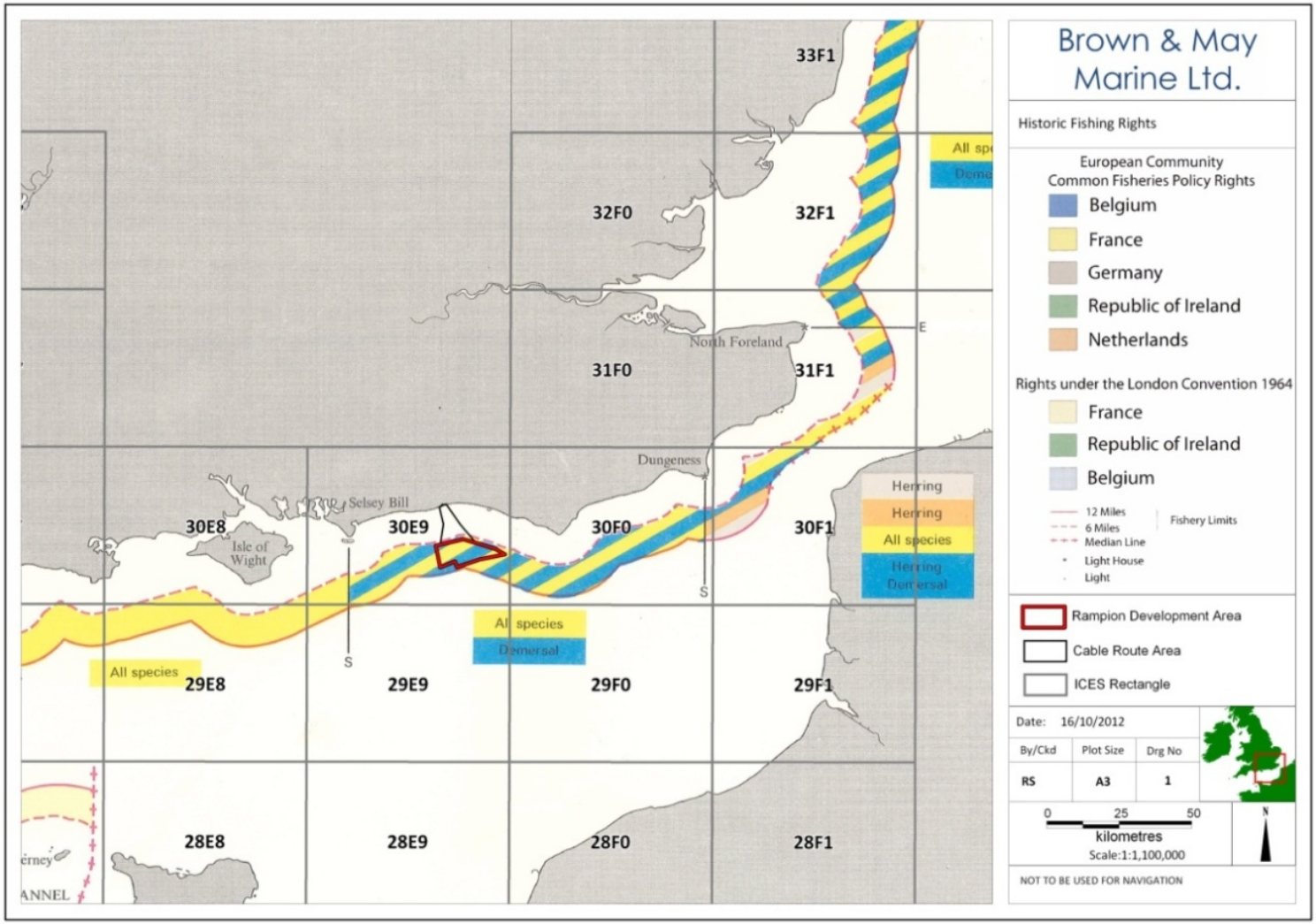


**Figure 18.3: Historic fishing rights of non-UK vessels in the area relevant to the offshore project site (Source: Admiralty Chart Q6385)**

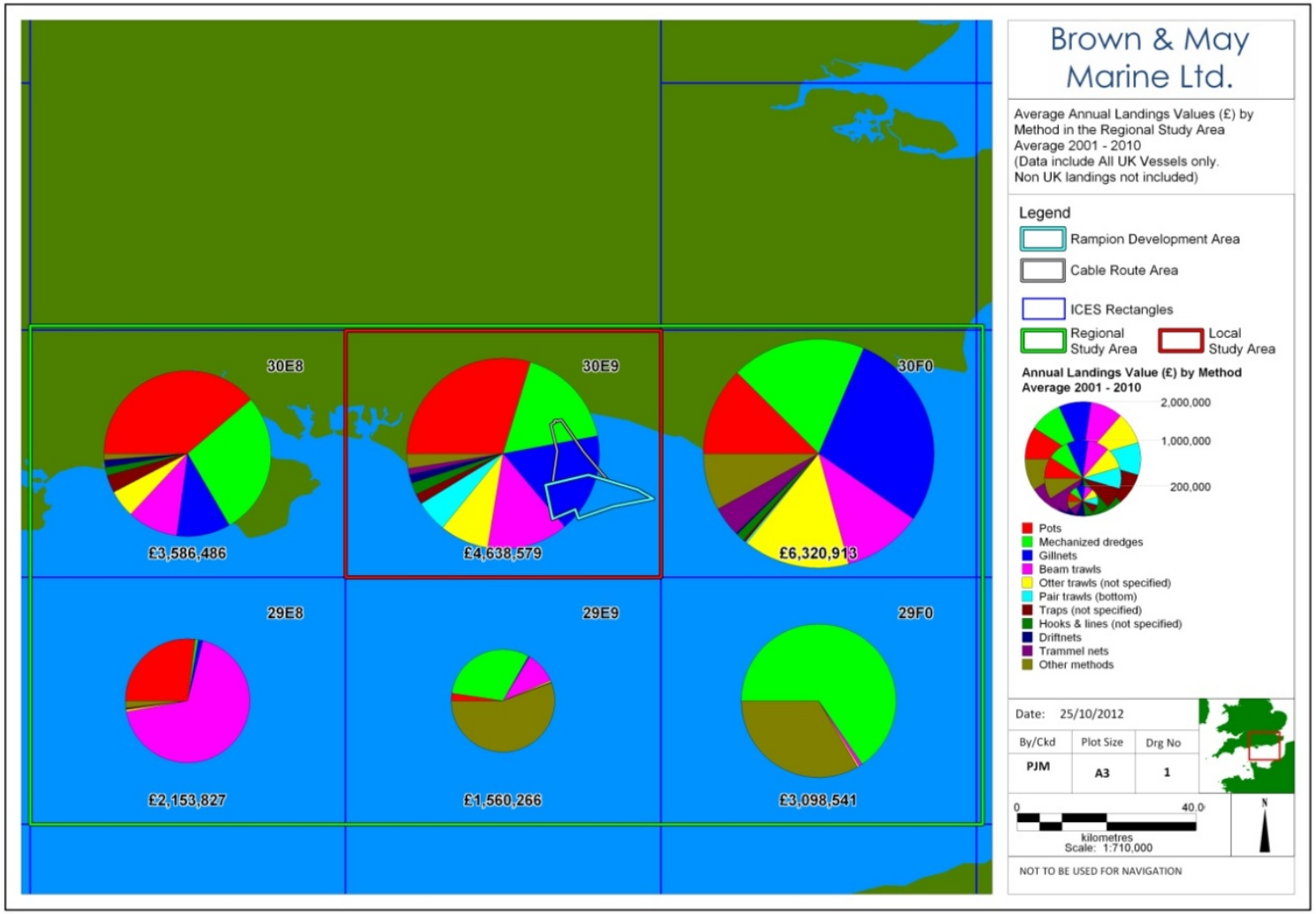


**Figure 18.4: Annual landings values (average 2001-2010) by method in the study area (Source: MMO, 2011**

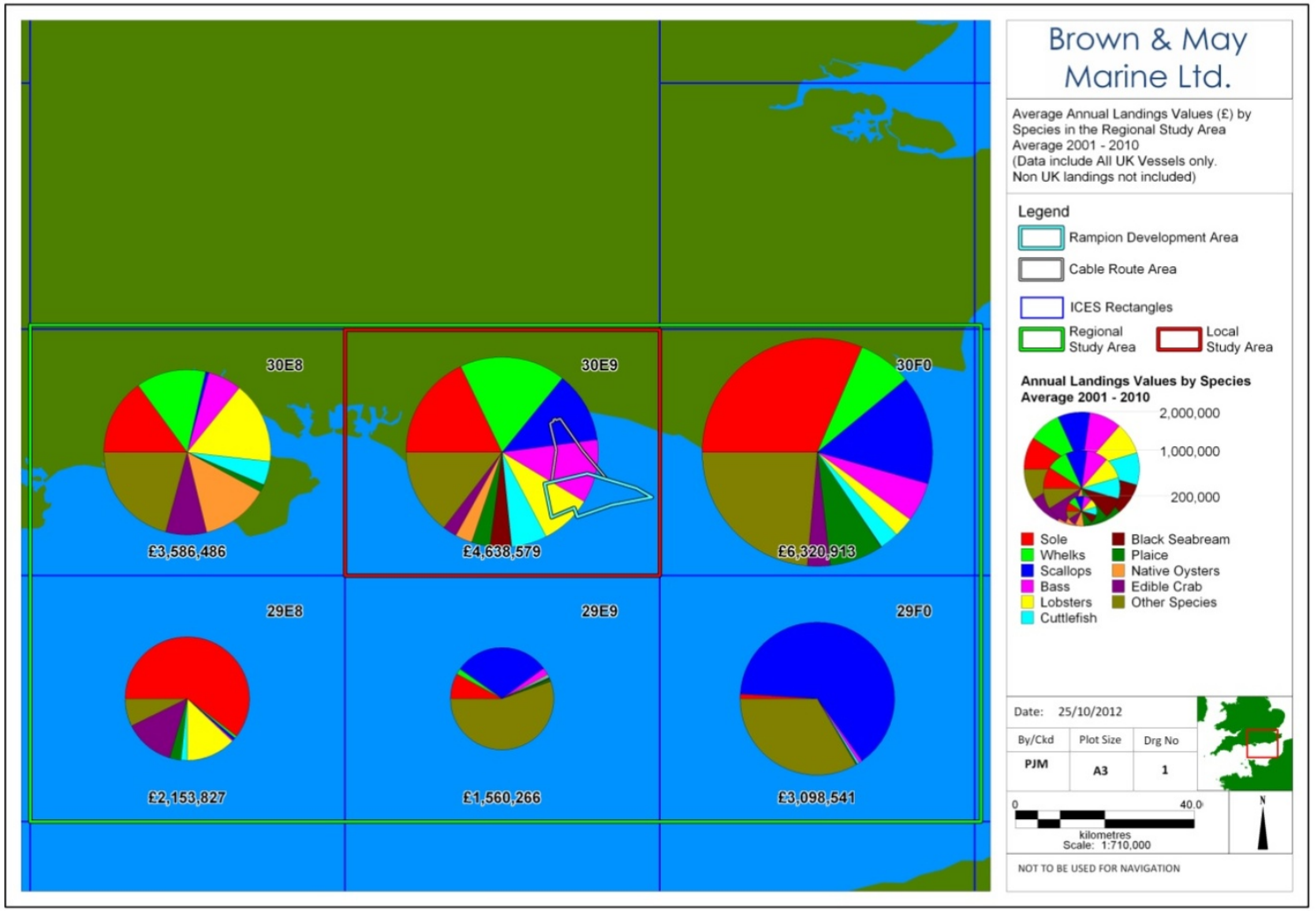


**Figure 18.5: Annual landings values (average 2001-2010) by species in the regional area (Source: MMO, 2011)**

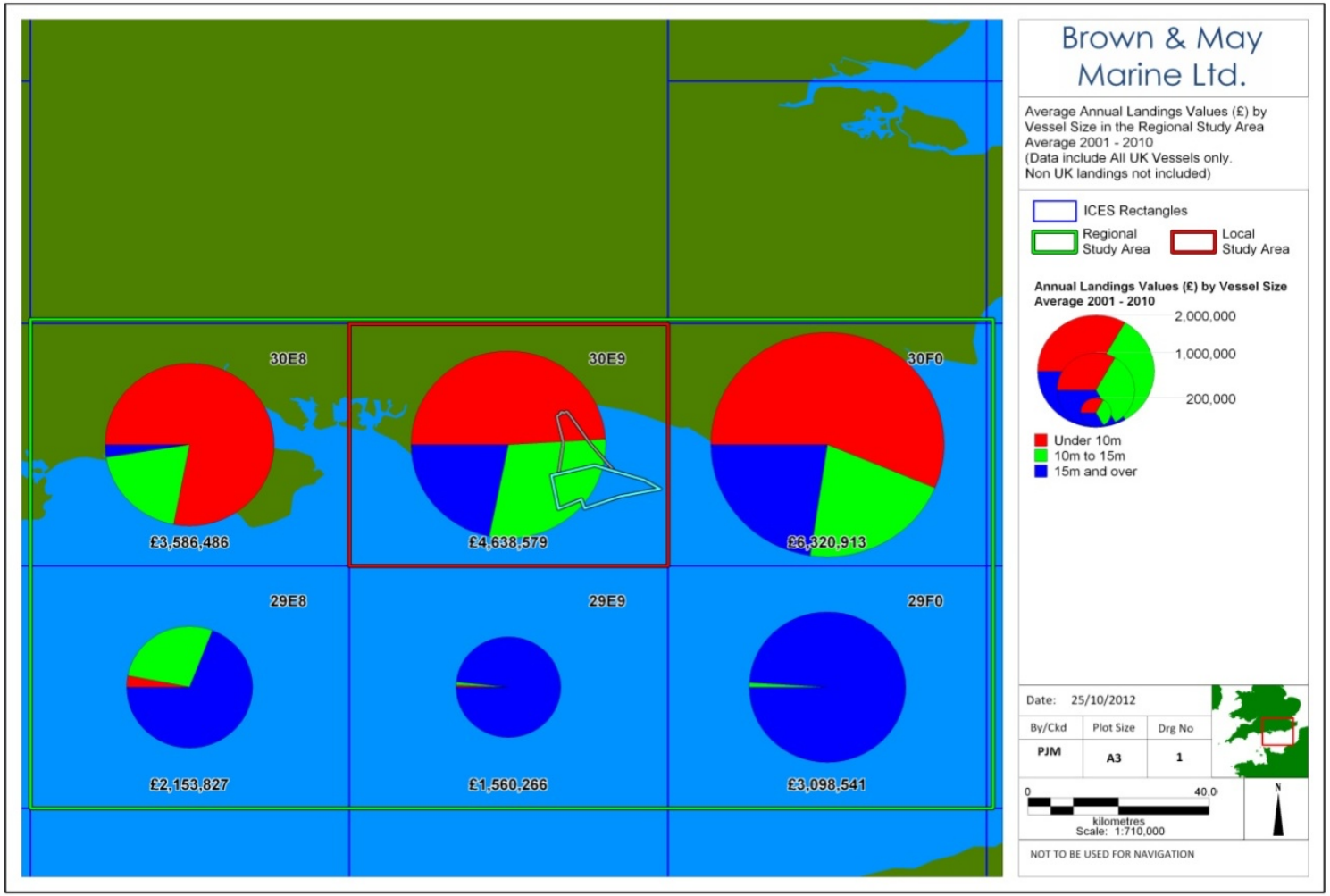


**Figure 18.6: Annual landings values (average 2001-2010) by vessel category in the regional area (Source: MMO, 2011)**

18.4.7 For UK 10-15m class of vessels involved in potting, whelks, lobsters, cuttlefish and crabs constitute the majority of the landings by value. For otter trawling, bass, squid and to a lesser extent plaice are the main species by value. For beam trawling the majority of landings values are from sole and plaice, and for dredging the majority of landings values are from scallops. For pair trawling the target species are almost entirely bass and black bream and for hooks and lines, the landings values are entirely from bass.

18.4.8 For the larger, over 15m class of vessels, mechanised dredging for scallops and beam trawling for soles and, to a lesser extent, other flatfish species, contribute the bulk of the landings values. Pair trawling for black bream, and mid-water and pair trawling for horse mackerel account for only moderate landing values.

Ports

18.4.9 The highest landings values from ICES rectangle 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. Approximately 30% of the value of fish landed into Shoreham is recorded as being caught in rectangle 30E9. For smaller local 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.

18.4.10 Catches from rectangle 30E9 also make a 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 12nm 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.

18.4.11 Belgian vessels fishing in the area of the site are likely to be based in Ostende or Zeebrugge, while French vessels are likely to operate out of a number of ports on the northern coast of France.

Seasonality

18.4.12 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 and almost entirely confined to April, May and June, reflecting the seasonality of the local black bream and cuttlefish fisheries.

**Location of fishing grounds & gear type used**

Potting and trapping

18.4.13 For potting (based on Sussex IFCA data 2004-2011) inshore activity in the export cable route corridor appears to be relatively low compared to further west. However, consultation with fishermen indicates that both crab/lobster and whelk potting may occur in the wind farm site and the cable route corridor.

18.4.14 For crab and lobster, "fleets" of parlour or inkwell pots are typically deployed in groups of 10-50, which can be from 100-500m in length. Anchors and buoys are present at each end. The gear is usually left in the water for between 12 hours to two days. Plastic drum pots are used for whelks, with up to 80 per fleet and fleet lengths can be up to 0.5nm.

18.4.15 Trapping for cuttlefish (Figure 18.7) only takes place within a short inshore section of the cable route corridor. Cylindrical steel frames enclosed in mesh are weighted to the seabed and baited with a live female cuttlefish or a lure. As with potting, traps are shot in fleets of 500 to 600m in length, rigged 20 to 25 traps per fleet. The vessels engaging in potting and trapping are generally under-10m in length.

Netting

18.4.16 For fixed and drift netting (based on Sussex IFCA observations 2004-2011) the activity is concentrated inshore and includes relatively high intensity fishing within the export cable route corridor. Consultation with fishermen suggests that principal netting grounds include both the wind farm site and the cable route corridor.

18.4.17 Netting is mostly undertaken by under-10m vessels and can either take the form of drift netting, or fixed (static) netting by anchors. Net lengths range from 200m to 1000m, but are most commonly around 500m. Soak times vary from a few hours for drift netting to 24-72 hours for fixed netting.


**Figure 18.7: Shoreham-based under-10m vessel engaged in cuttlefish trapping (source: BMM)**

Otter trawling

18.4.18 For otter trawling both the Sussex IFCA data and consultation with fishermen show a similar pattern of activity occurring over 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 offshore Project site.

18.4.19 The horizontal opening of the net is maintained by trawl doors, also known as otter boards. The otter trawling undertaken in the vicinity of the offshore Project is understood to be single net trawling with effective gear widths (i.e. the distance between the trawl doors) between 25 and 65m.

Pair trawling

18.4.20 Pair trawling (where two boats tow a single net) in the area is principally for relatively fast-swimming black bream and bass. This activity takes place within the inshore part of the cable route corridor, with the highest intensity to the west of this corridor. Consultations with fishermen indicated that the northern part of the site is also used for pair trawling. The distances between vessels when fishing was stated to be between 65-200m.

Hook and line

18.4.21 Rod and line fishing is often undertaken by netting fishermen in between deploying and retrieving 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.

Scallop dredging

18.4.22 Scallop dredging activity (as reported by local fishermen) encompasses both the wind farm site and the cable route corridor. One particular ground, known as the “9 Miler”, is noted as being of particular importance to local scalloping vessels. A relatively small part of the “9 Miler” ground falls within the north-eastern part of the wind farm site. Satellite tracking data for over 15m UK vessels shows that the project site is located where medium levels of scallop dredging activity occurs, with higher levels occurring to the south-east and south-west.

18.4.23 The scallop dredges used in the area are known as a Newhaven or Springer type; attached to the leading edges are hinged, spring-loaded teeth bars to rake the scallops off the seabed and into the dredge bag. Typically for local vessels, five to eight dredges are attached to a steel beam, one on each side of the vessel, giving an effective gear width of 34m. In addition to local vessels, those based in Portsmouth and Plymouth also fish in the area. Larger “nomadic” vessels from the English, Scottish and Northern Irish fleets which fish areas around much of the UK, also fish the region in which the Offshore Project is located. These larger vessels can tow up to 20 dredges each side, with an effective gear width of up to 65m.

Beam trawling

18.4.24 Satellite tracking data of over 15m vessels for the year 2009 indicate that part of the Offshore Project site sustains UK beam trawling effort by over-15.0m vessels, with some of the highest levels recorded within the region occurring just to the southwest of the Offshore Project site.

18.4.25 The UK beam trawlers operating within the project site and the export cable corridor are the small to medium class of vessels (12 to 18m in length). These vessels tow two beam trawls of 4.0 to 4.5m in length along the seabed, each weighing up to three tonnes.

Belgian fishing activity

18.4.26 Belgium has historic fishing rights between the UK's 6 and 12Nm territorial fishing limits, although only beam trawlers with main engines of less than 300hp are permitted to fish within the 12Nm limit. Some otter trawling by smaller Belgian vessels also takes place between the 6Nm and 12Nm limits.

18.4.27 Most Belgian activity in the project site is from vessels of over 15m in length and is generally concentrated in the central and eastern part of the project site as illustrated by VMS data (Figure 18.8). Sole, plaice, king scallops, bib, cuttlefish and lesser spotted dogfish comprise the major proportion of the landings from rectangle 30E9. A high proportion of Belgian beam trawling effort in the region occurs between November and March.

French fishing activity

18.4.28 French vessels also have local historic fishing rights within the 6 to 12Nm limits, encompassing the project site. However, the site is to the north of the main fishing grounds with only a low number of surveillance sightings actually recorded within the Offshore Project boundaries (Figure 18.9). This is supported by the available VMS data. Consultation with fishermen's organisations (CRPMEM Nord Pas de Calais / Picardie and CRPMEM Haute-Normandie) indicated that 30 to 50 French vessels of lengths between 12 to 25m could fish the general project site area, with activity peaking in June to August. The French skippers consulted reported spending on average 3 weeks per year within the general project site area.

18.4.29 The majority of French vessels operating in the vicinity of the Offshore Project operate pelagic and demersal trawls, and dredges, with some gill-netters also possibly involved. 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 area of the project site.

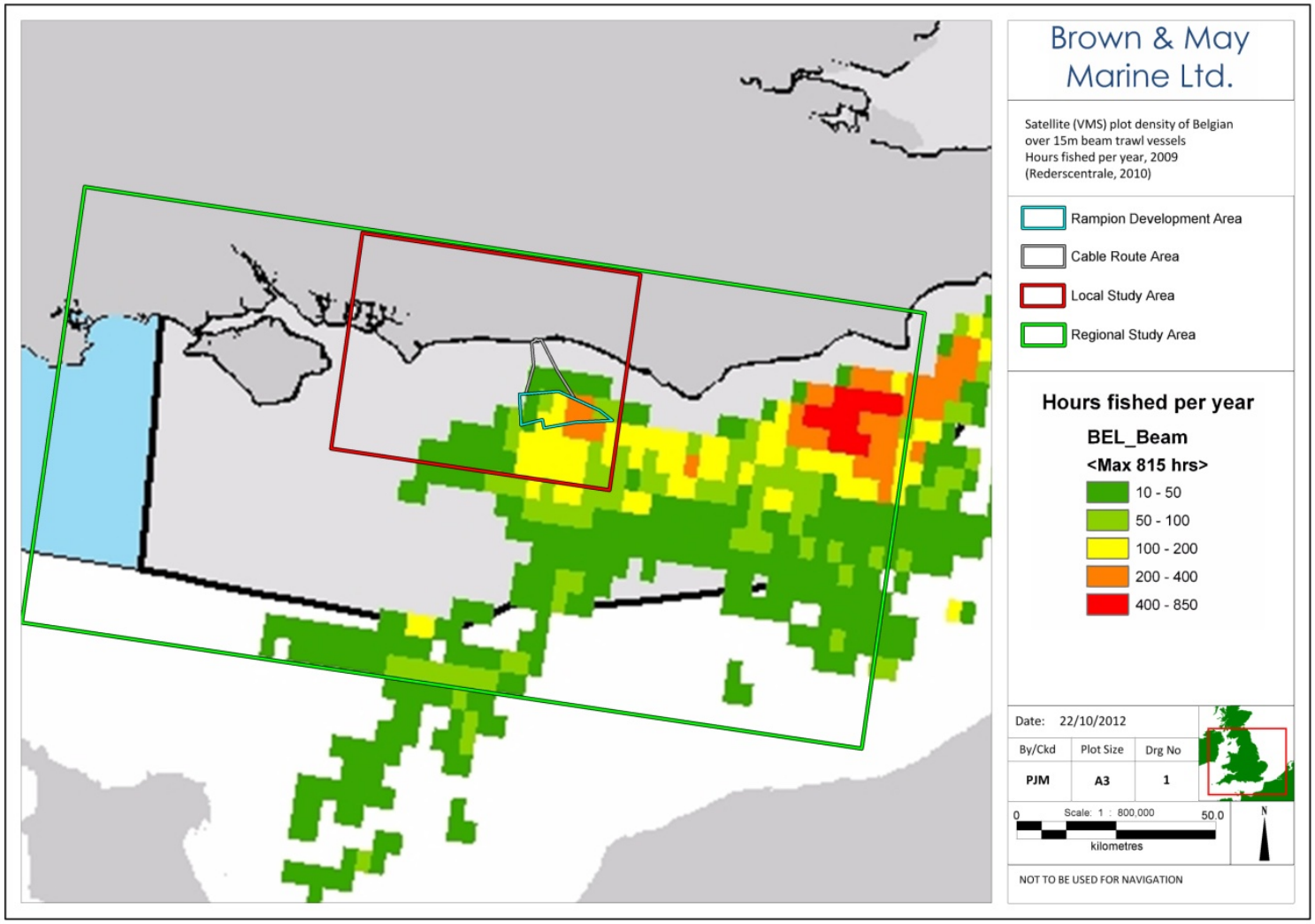


**Figure 18.8: Belgian beam trawl VMS data (2009) (Source: ILVO)**

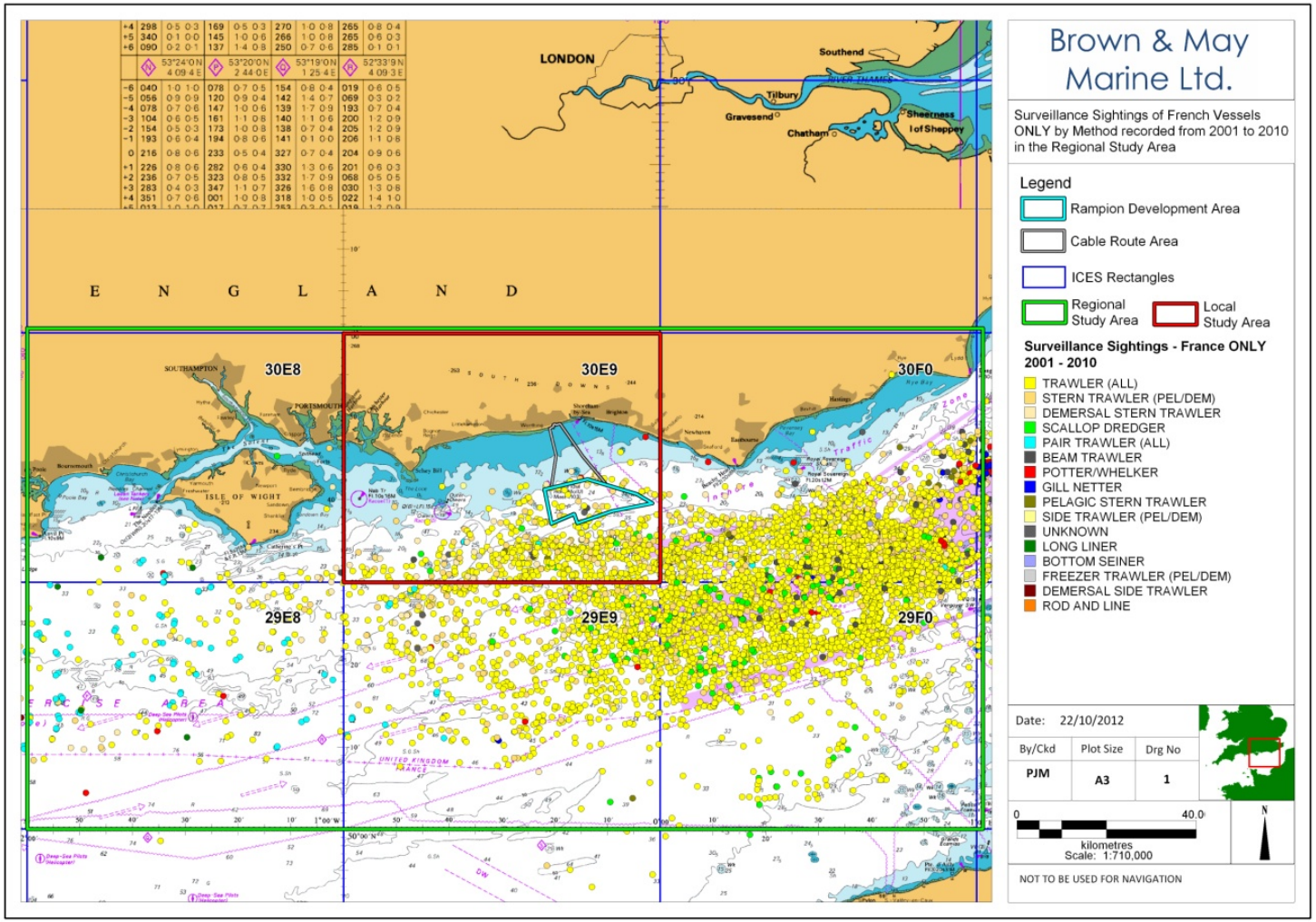


**Figure 18.9: Surveillance sightings of French vessels by method (2001-2010) in the regional area (Source: MMO, 2011)**

## 18.5 Predicted Impacts

18.5.1 Due to the uncertainties involved in predicting future fishing patterns, it is taken that the current baseline represents the worst realistic case in terms of the levels of fishing activity within the project site, i.e., it has been assumed that there will not be a substantial increase in activity in the absence of the Rampion project.

18.5.2 The "Rochdale Envelope" approach has been applied to identify the parameters which constitute the worst case scenario (greatest potential impact) with regard to impacts on fishing activities.

18.5.3 The realistic worst case could impact on commercial fishing activities in two ways: the first is for the offshore Project to cause adverse impacts to fish and shellfish population of commercial importance leading to changes in behavior or a decline in the population within a fishery. Secondly, the Project and associated structures can constitute a physical obstacle or a risk to the continuation of normal fishing activities as detailed in the baseline. The impact on fish and shellfish populations is assessed in Section 8 - Fish and Shellfish Ecology and therefore the second forms the basis of the following assessment.

18.5.4 It should, however, be recognised that it is unlikely that all of the worst case scenarios will occur and, as such, the actual significance of impacts may be lower than as assessed below.

18.5.5 A summary of the design parameters assessed as the worst case scenario are provided in Table 18.6. These have been derived from Section 2a - Offshore Project Description.

**Table 18.6: Wind farm design features and their influence on the Rochdale envelope for commercial fisheries**

| Design feature | Design options |
|---|---|
| Wind Farm Site Layouts | The layout E is assessed as the worst case due to having the maximum number of turbines (175) and 2 sub-stations laid out in a hexagonal pattern over the largest area. |
| Wind Turbines | The maximum number of turbines (175) will result in smaller spacings between turbines, reducing potential for trawling between them- see above, and higher numbers of smaller turbines presents a worst case in terms of fish ecology. |
| Foundations | Foundations which take up greatest area of seabed will reduce fishing opportunities within the site. Foundation selection will influence source noise levels and potential behavioural effects on target species as well as the relative risks of fishing gear interactions. |
| Cables | Routing of cables through black bream spawning area will be the worst case, but should be mitigated by routing outside of breeding season if routing through spawning area is unavoidable. Cables should be buried and over-trawlable. Worst case is requirement for rock armour and mattressing where full cable burial is not achievable. |
| Construction and Installation | The longest potential construction period results in the largest temporal effect. |
| Decommissioning | Assumed as installation. |

18.5.6 The scale of potential impacts is related to the size and character of the potential receiving environment. It is therefore possible that often unpredictable factors, unrelated to the project site, could cause changes in the commercial fisheries baseline over the life of the project.

18.5.7 Due to MMO restrictions upon the release of specific fisheries data, it has not been possible to undertake impact assessment on an individual vessel basis. The data that are available do however specify gear type, species landed and landing ports and the following assessment is by fishery/method. It should however be recognized that certain of the local vessels practice a number of fishing methods targeting a variety of species at different times of the year. A number of local vessels could potentially therefore be subjected to combinations of the specific impacts assessed below.

**Construction**

Complete loss or restricted access to traditional fishing grounds

18.5.8 As summarised above and described in detail in Appendix 18.1 fishing activity in the vicinity of the project and its export cable is predominantly carried out by local Sussex vessels with Shoreham and Newhaven the principal landing ports.

18.5.9 The principal effect of the construction phase will be the temporary restriction of access to fishing grounds as a result of the imposition of transitory safety zones around construction activities and the presence of partially installed infrastructure. In line with standard offshore practice, safety zones of 500m radius are likely to be implemented around construction activities, from which all non-construction associated vessels would be excluded. The worst case scenario would be construction and commissioning spread across the whole site during this phase leading to exclusion of fishing activity from the entire Offshore Project site. It is however unlikely that this will occur for the duration of the construction phase.

18.5.10 Inter-array and export cables are to be buried where feasible and protected by other means if burial is not possible. It is considered that fishing vessels will not be able to safely fish in the vicinity of the cables until such measures are completed and their “over-fishable” status confirmed by post-installation surveys. This would therefore result in loss of fishing grounds along the export cable route during the construction phase (exact routes have not yet been established, but it is expected that routes from both substations will be aligned close to the wind farm and will be laid close together from there into the landfall area. The whole width of the cable route corridor as shown in Figure 18.1 will not be an exclusion zone).

18.5.11 *UK fixed net fishery in relation to the project site*: The vessels undertaking fixed netting, whilst limited in range by their size, have a degree of versatility due to their ability to undertake a number of fishing methods and target a variety of species. Their sensitivity is therefore assigned as **medium**. The fixed netting

grounds targeted by the local fleet extend over an area from Bognor Regis in the west to Dungeness in the east and offshore beyond the 12Nm limit as illustrated in Figure 18.11 which was derived from information provided by fishermen. The grounds located within the Project site therefore represent a relatively small percentage of the total fishing grounds. The findings of the Sussex IFCA study (Figure 18.10) whilst confined to data within the 6 Nm limit, also suggest that fixed netting activity is concentrated within the 6 Nm limit inshore of the ROWF site. The concentration of fixed netting activity within the 6 Nm limit may be partly a function of there being less potential for nets being damaged by towed gear methods as a consequence of the various restrictions within the 6 mile limit on trawling and scallop dredging.

18.5.12 In ICES rectangle 30E9, within which the ROWF is located, static gillnets represent 16.6% of the total average landings values (2001 to 2010) and the sensitivity is assessed as medium. Due to the proportion of traditional fishing grounds occupied by the Offshore Project and the short period of exclusion, the magnitude of the impact on the fixed net fishery is considered to be small. The loss or restricted access to traditional grounds during the wind farm construction phase is therefore expected to result in a minor impact.

18.5.13 *UK fixed net fishery in relation to the cable route corridor*: The sensitivity of the fishery is as described above. Cable installation activities will occupy a smaller proportion of the total fishing area than installation of the wind farm itself and the period of exclusion will be shorter. The magnitude of the effect will, therefore, at worst be **small**, giving a **minor** impact

18.5.14 *UK driftnet fishery in relation to the project site*: The sensitivity of vessels engaged in drift netting is considered to be the same as the sensitivity of vessels undertaking fixed netting, namely **medium.** Drift netting grounds targeted by the local fleet, as described by the fishermen consulted; extend from Bognor Regis in the west to Hastings in the east and offshore to the 12Nm limit (Figure 18.12). Figure 18.13 provided by Sussex IFCA however, suggests low levels of isolated close inshore drift netting activity. Drift netting also accounts for only 1.4% of the total average landings values (2001 to 2010) in ICES rectangle 30E9. The magnitude of the effect is therefore assigned at worst as **small** giving a **minor** impact, whilst accepting that with the absence of a history of drift netting further offshore within the vicinity of the Project site, the impact could in fact be **negligible**.

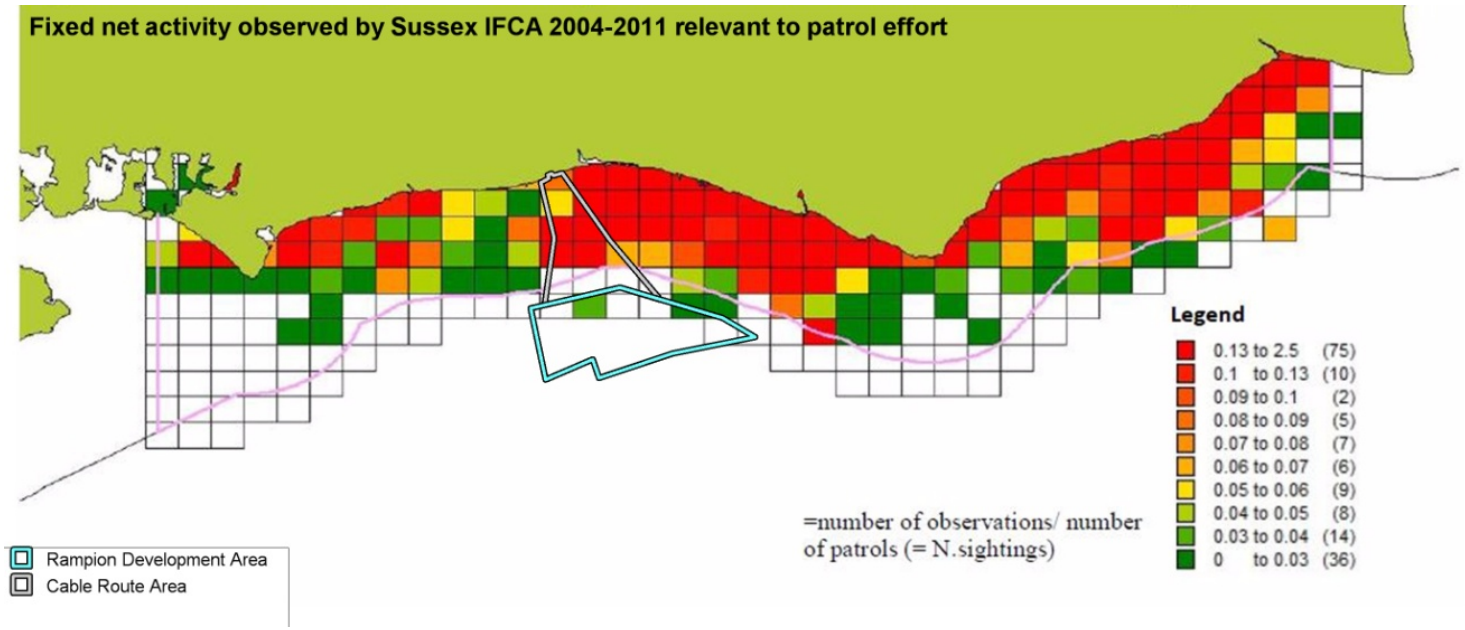


**Figure 18.10: Fixed netting activity observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

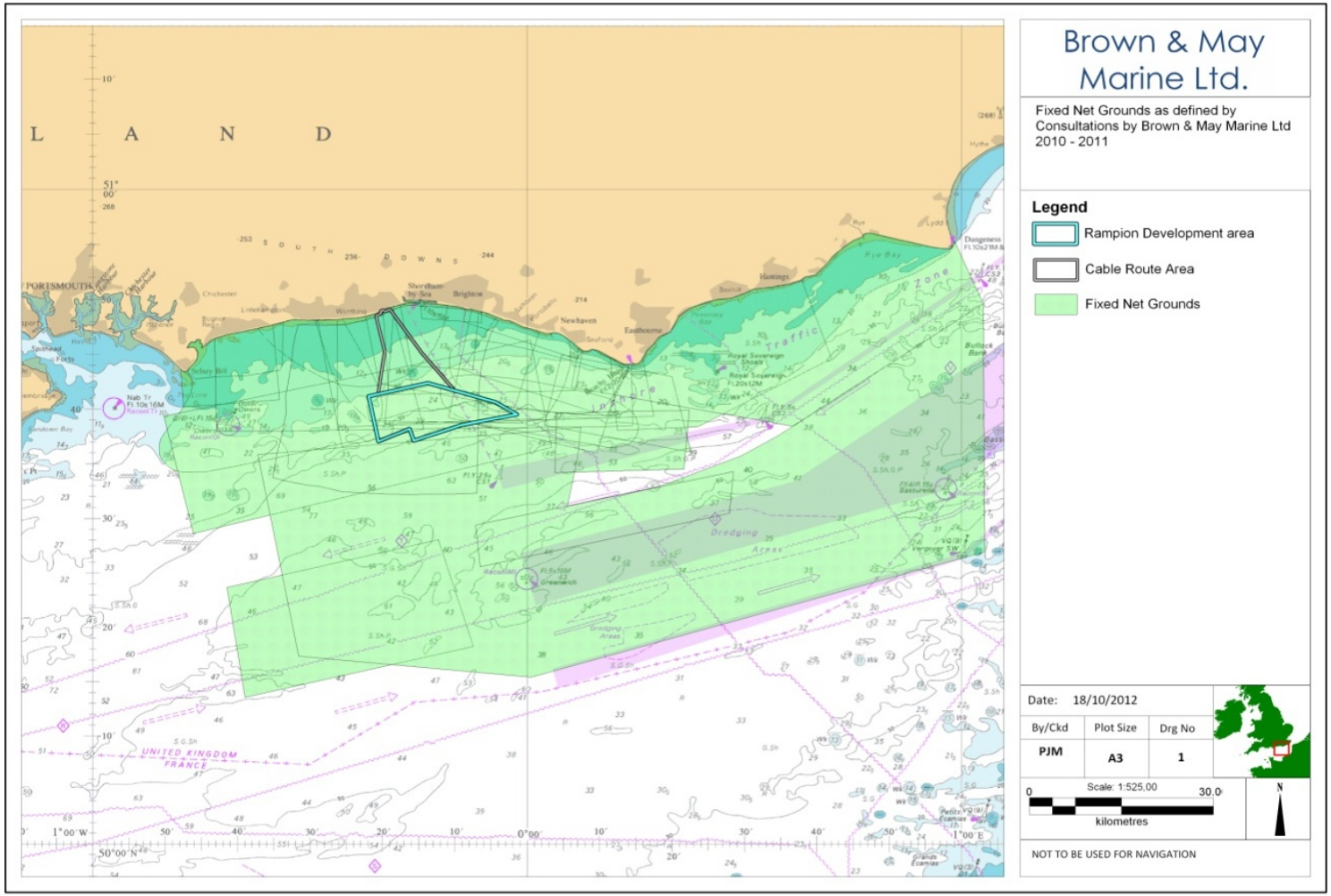


**Figure 18.11: Principal fixed net grounds as defined through consultation 2010-2011 (Source: BMM)**

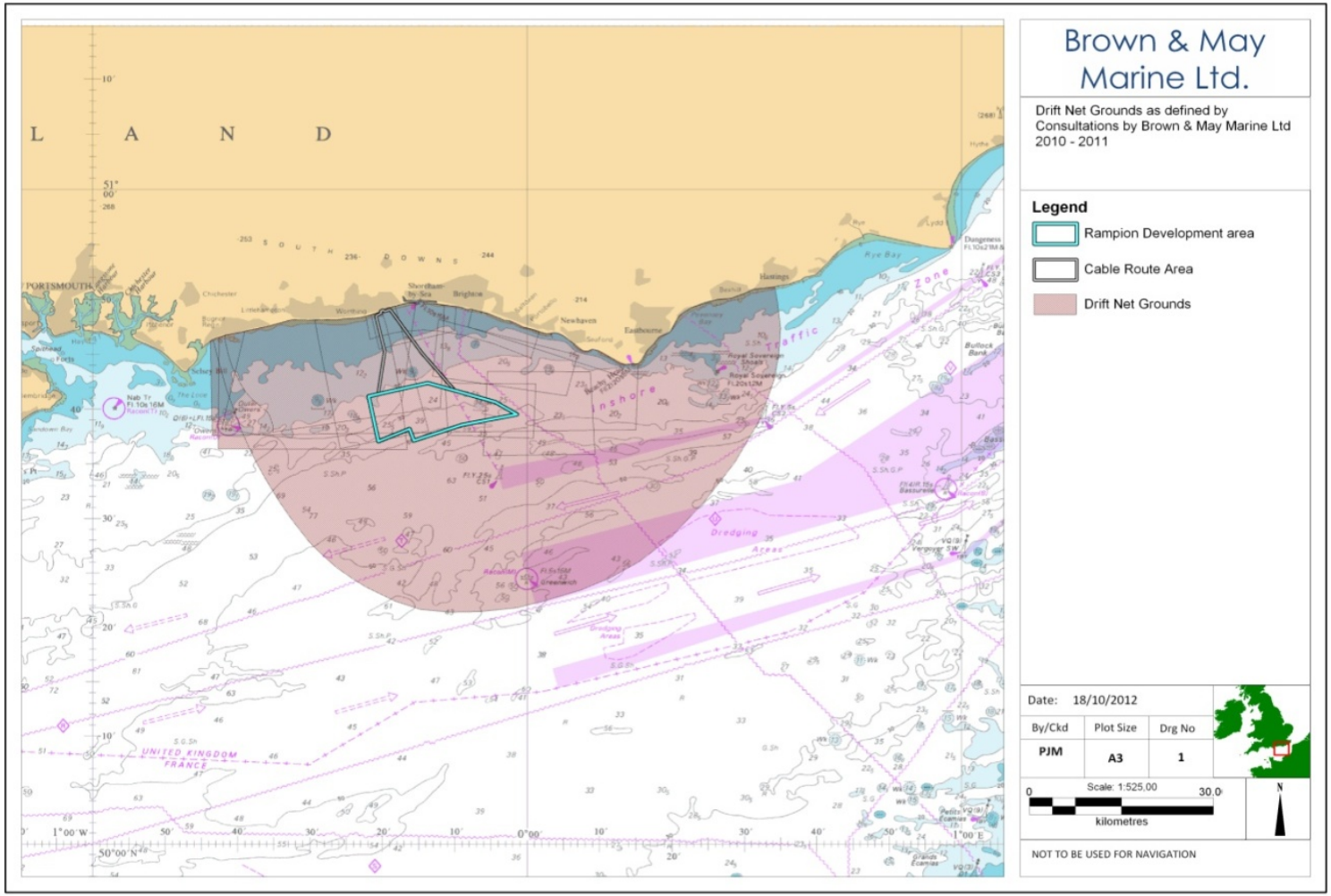


**Figure 18.12: Principal drift net fishing grounds as defined through consultation 2010-2011 (Source: BMM)**

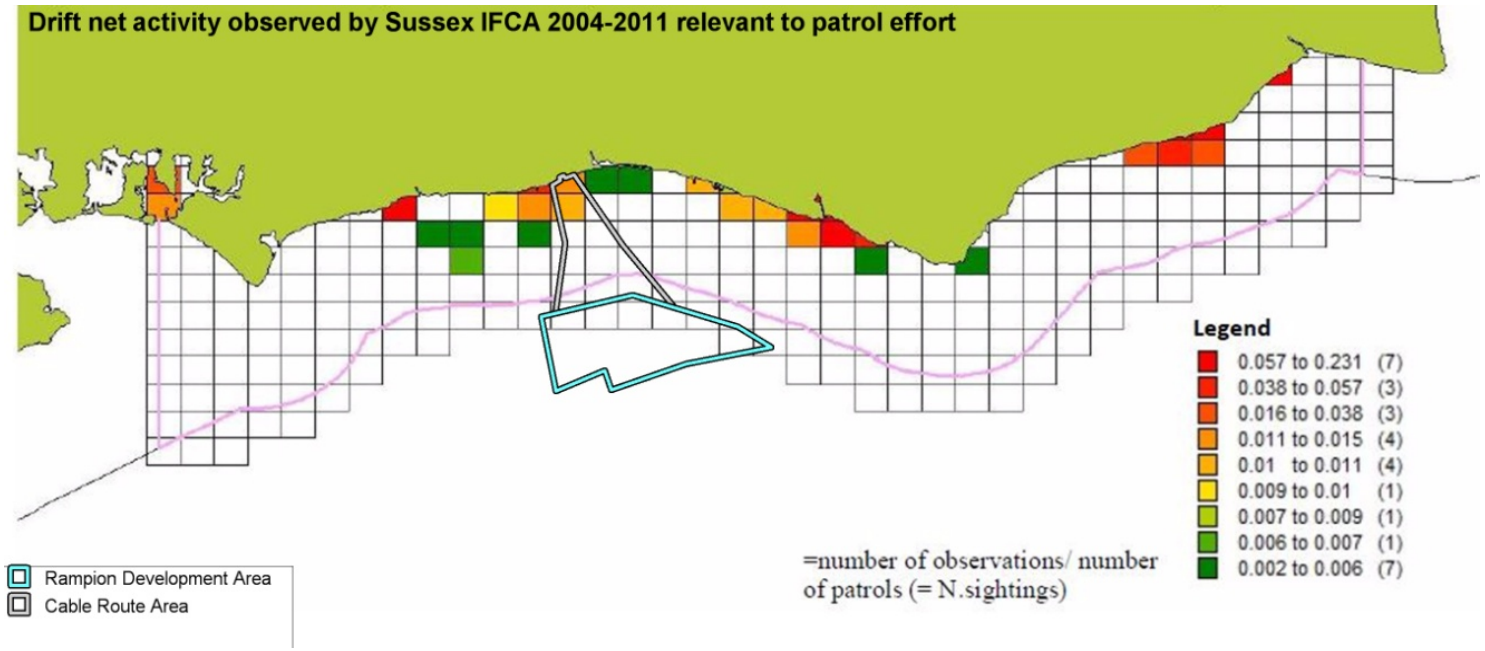


**Figure 18.13: Drift netting activity observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

18.5.15 *UK driftnet fishery in relation to the cable route corridor:* With regards to the magnitude of the effect associated with the export cable installation, the area of exclusion will be smaller than that associated with the construction of the wind farm. The period of exclusion will also be shorter. The magnitude of the effect will therefore be at worst **small**, giving a **minor** impact.

18.5.16 *UK pot and trap fishery in relation to the project site:* Potting and trapping represent 31.0% of the landings values in rectangle 30E9. The larger vessels, which at certain times of the year undertake potting and cuttlefish trapping, have wider operational ranges and the ability to practice a number fishing methods. The smaller local vessels are however limited both in their operational range and method versatility. The sensitivity of the vessels engaging in these fisheries therefore varies from **medium** to **high**.

18.5.17 Figure 18.14, Figure 18.16 and Figure 18.18 illustrate the extents of the crab and lobster, whelk and cuttlefish potting and trapping grounds. As discussed in the Baseline Assessment however, the majority of the crab and lobster potting and all of the cuttlefish trapping activity occurs inshore of the project site. This is further supported by the charts prepared by the Sussex IFCA (Figure 18.15, Figure 18.17 and Figure 18.19). In the case of these fisheries, the magnitude of the effect will therefore be **small.** In the case of the whelk fishery, whilst this activity extends further offshore, the grounds are extensive, with the project site representing only a small proportion of the total fishing area and as such the magnitude will also be **small.**

18.5.18 Taking the above considerations, the impact on the smaller vessels engaging in potting and trapping will be **moderate**. In the case of the whelk fishery, the impact is expected to be **minor**.

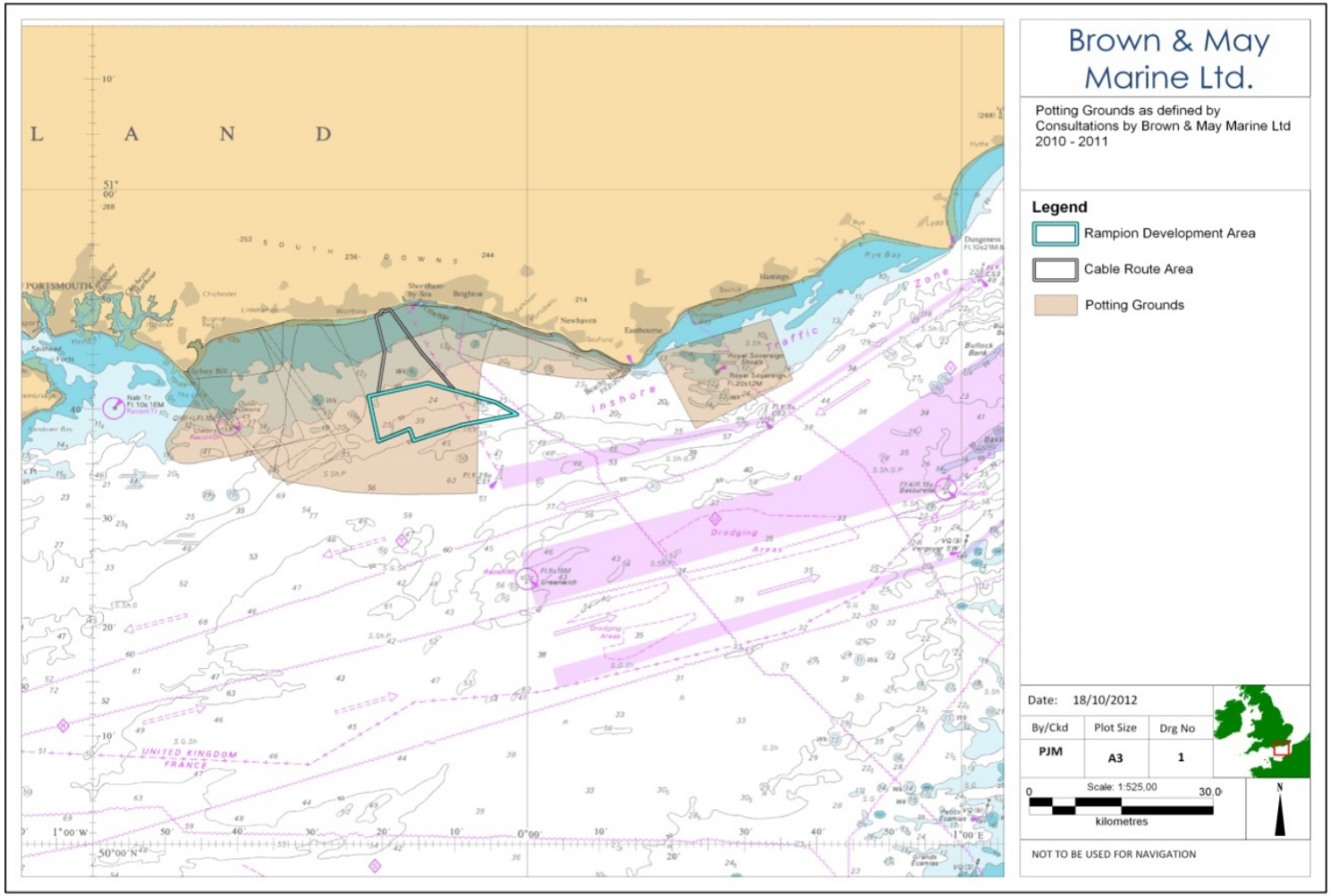


**Figure 18.14: Crab and lobster potting grounds as defined from consultation 2010-2011 (Source: BMM)**

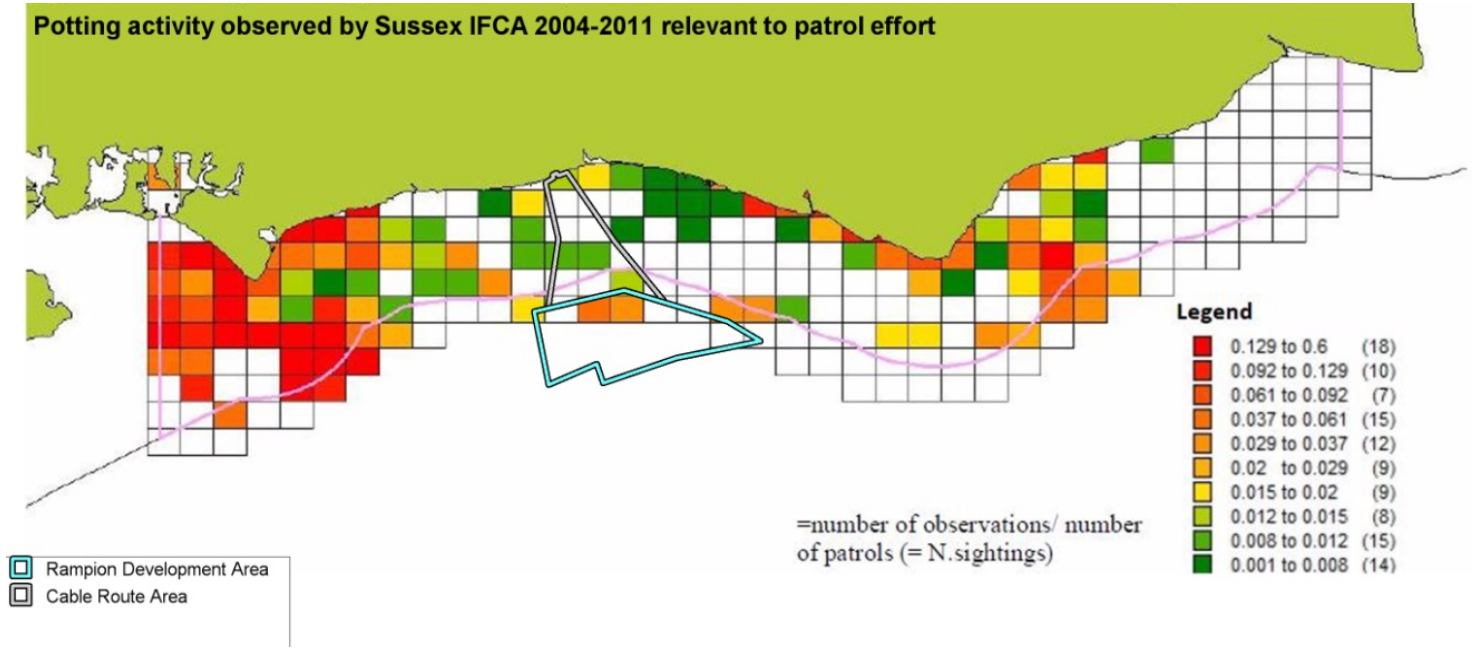


**Figure 18.15: Potting activity observed by SIFCA between 2004 and 2010 (Source: SIFCA, 2012)**

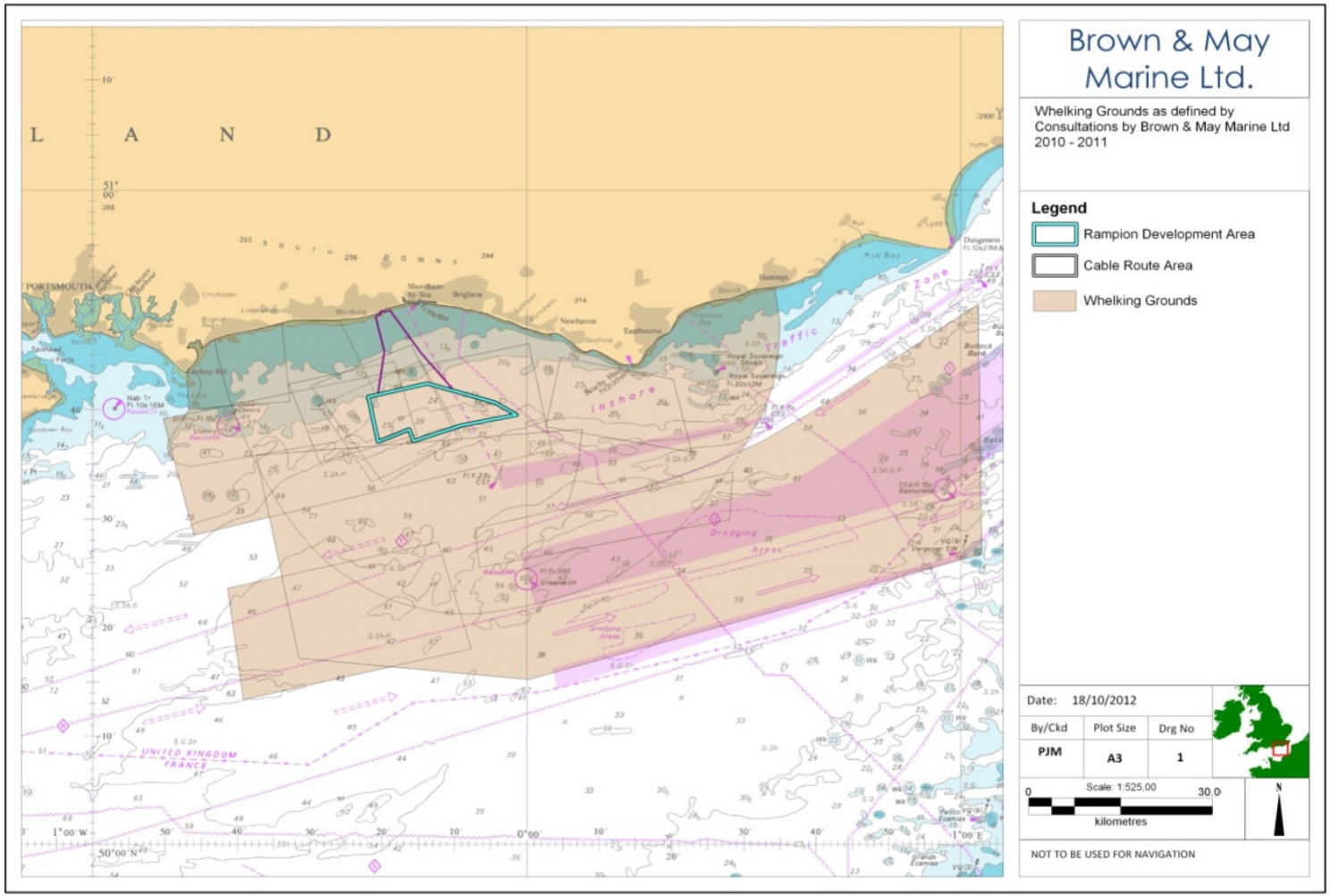


**Figure 18.16: Whelk fishing grounds as defined from consultation 2010-2011 (Source: BMM)**

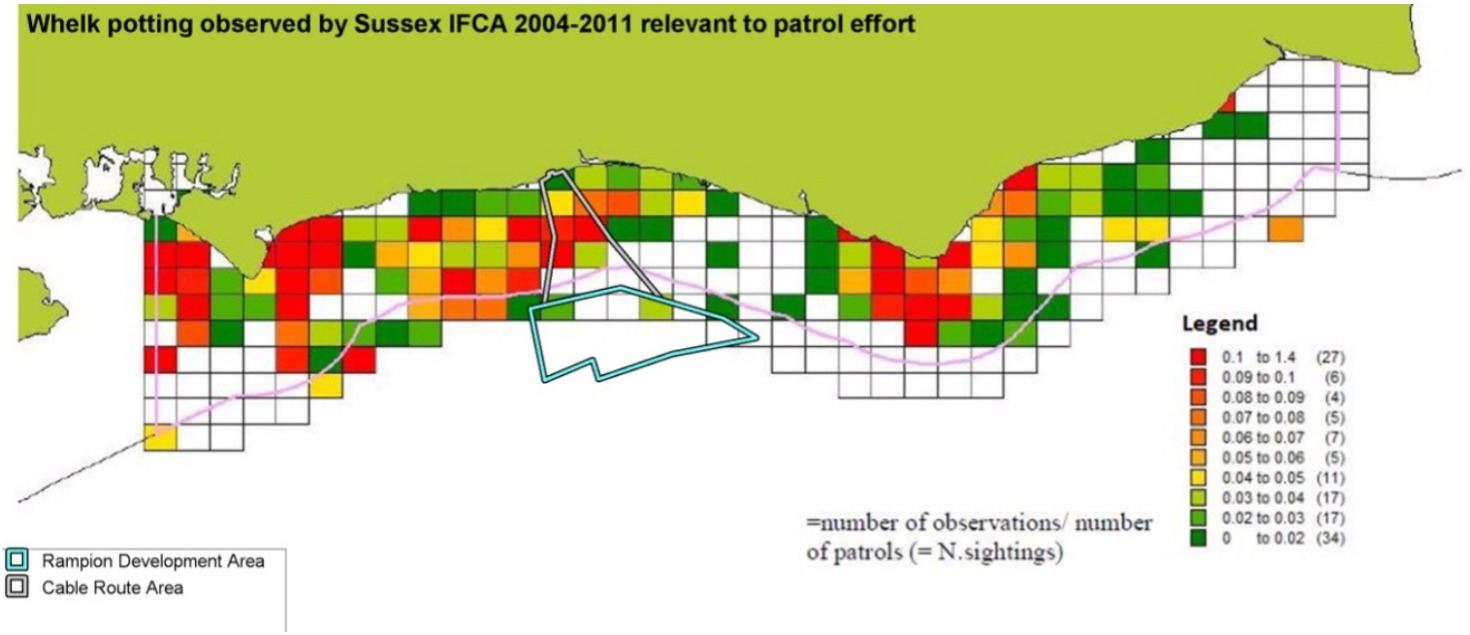


**Figure 18.17: Whelk potting activity observed by Sussex IFCA between 2004 and 2011 (Source; SIFCA, 2012)**

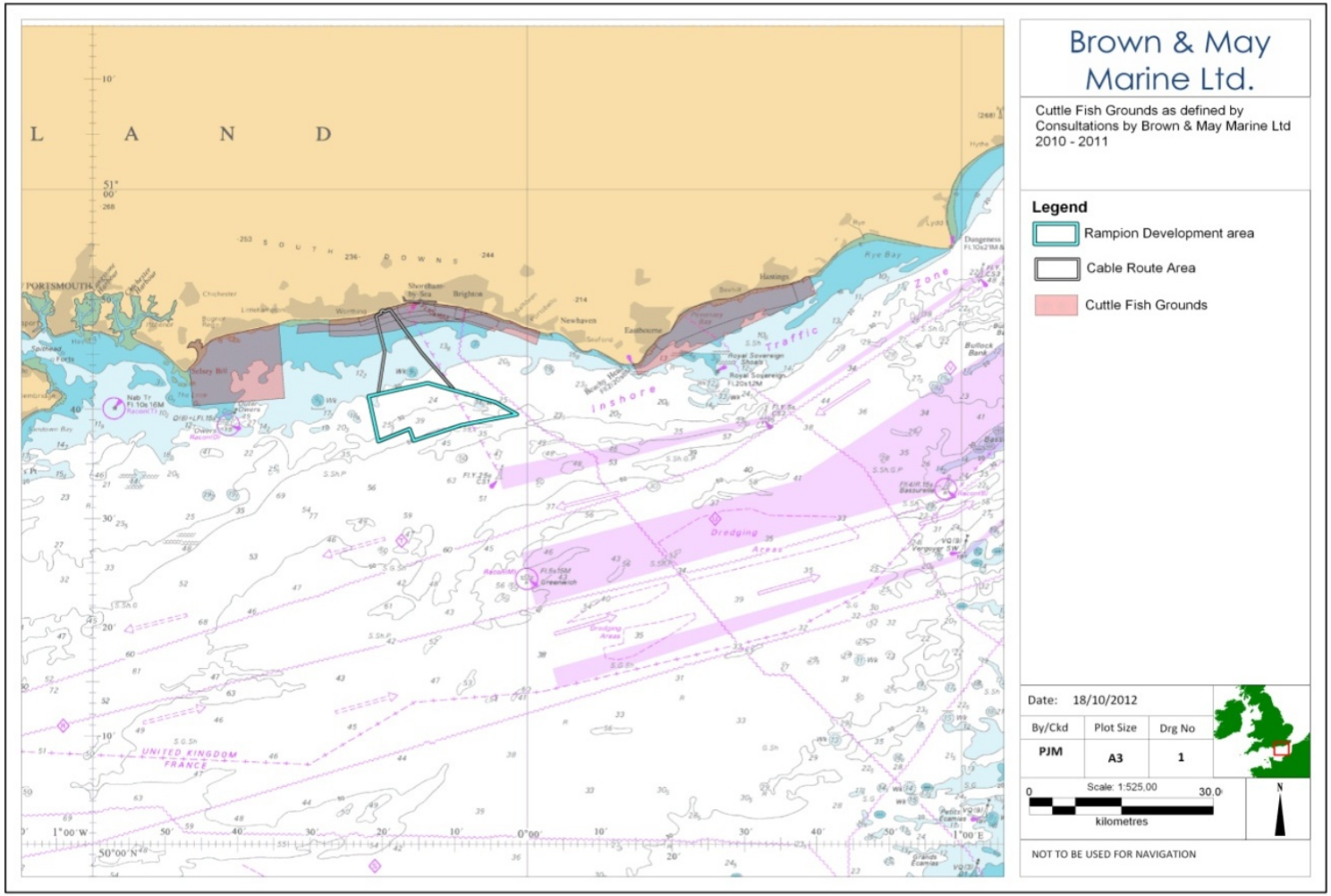


**Figure 18.18: Cuttlefish trapping grounds as defined from consultation 2010-2011 (Source: BMM)**

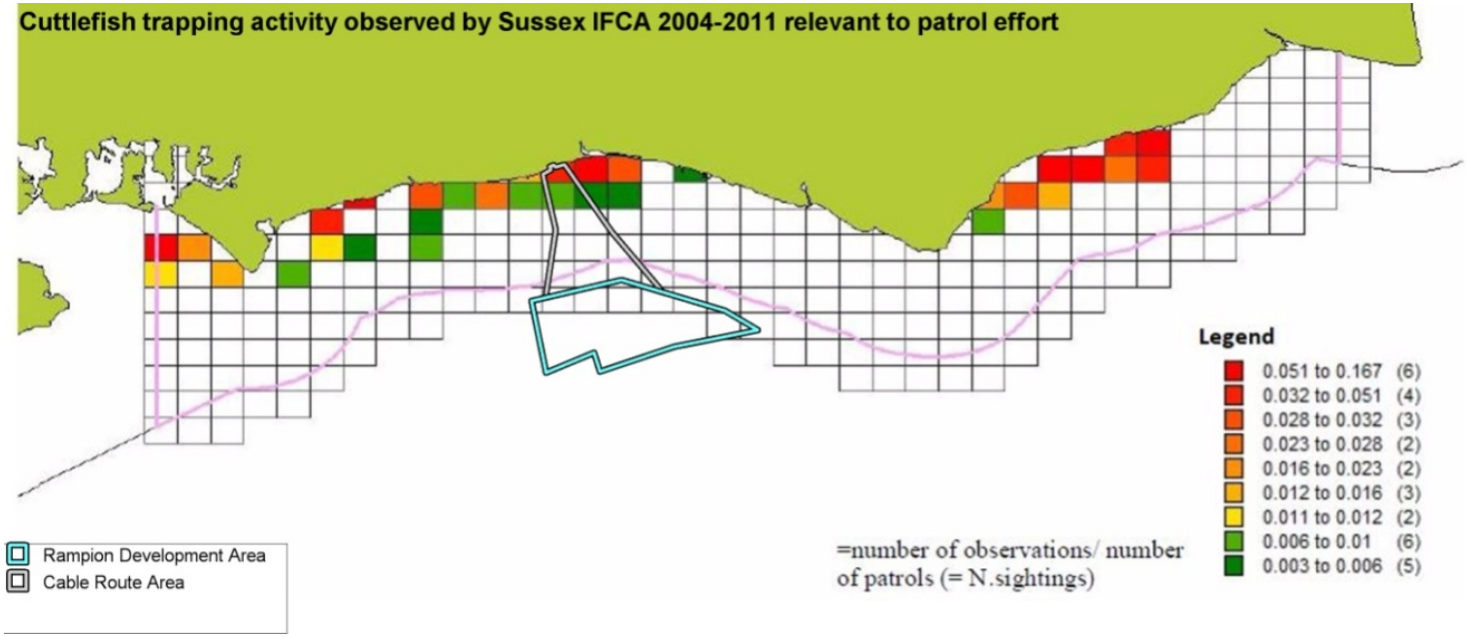


**Figure 18.19: Cuttlefish trapping activity observed by Sussex IFCA between 2004 and 2011 (Source: SIFCA, 2012)**

18.5.19 *UK pot and trap fishery in relation to the cable route corridor*: As described in the Baseline assessment, export cable installation activities will pass through potting and cuttlefish trapping grounds. In terms of the actual proportional area of exclusion and the duration of exclusion, the magnitude of the effect will vary between vessels from **negligible** to **small**, resulting in potentially **minor** to **moderate** impacts.

18.5.20 *UK hook and line fishery*: Due to mobile species targeted and the ability to fish alternative areas, the sensitivity of the hook and line fishery is considered to be **low.** Taking the very small gear deployment areas involved and the mobility of the target species, the magnitude of the effects of both the construction of the wind farm and installation of the export cables will be **small.** The resultant impact is therefore predicted to be **minor**.

18.5.21 *UK demersal otter trawl fishery in relation to the project site:* As discussed in the Baseline Assessment, the local vessels which engage in demersal otter trawling also practice other fishing methods such as scallop dredging and pair trawling. These vessels, by virtue of their size and accommodation facilities have the potential to operate over a wider area than their potting and netting counterparts. From consultation it is however understood that the majority of the activity by the under 15m vessels is focused on the grounds shown in Figure 18.14. The sensitivity of these vessels is therefore assigned as **medium**.

18.5.22 Demersal otter trawling represents 8.1% of the total average landings values (2001 to 2010) in ICES rectangle 30E9 with inshore fishing grounds of local vessels extending from Bognor Regis in the west to Eastbourne in the east with further grounds extending beyond the 12Nm limit and encompassing the project site (Figure 18.20). Taking the landing values recorded in rectangle 30E9, and the proportional area and duration of exclusion, the magnitude of the effect is expected to be **small**, giving a **minor** impact on the demersal otter trawling fishery.

18.5.23 *UK demersal otter trawl fishery in relation to the cable route corridor:* As for the other methods discussed, in both spatial and temporal contexts, the magnitude of the cable installation exclusion effect will be **small**. Taking the same sensitivity considerations as for the project area, the impact of the export cable installation on demersal otter trawling is expected to be **minor**.

18.5.24 *UK pair trawl fishery in relation to the project site:* The sensitivity of the vessels undertaking pair trawling, being the same local trawlers which practice demersal otter trawling in the region, is therefore **medium** (as above). Pair trawling in the project vicinity (Figure 18.21) is a short seasonal fishery, exploiting local migration patterns of black bream and bass and accounts for an average of 4.7% of the landing values from ICES rectangle 30E9. Taking the migratory patterns of the target species, the value of the fishery and the spatial and temporal contexts, the effect is assigned a **small** magnitude giving a **minor** impact for the fishery, but recognising that for a small number of local vessels the impact may be **moderate**.

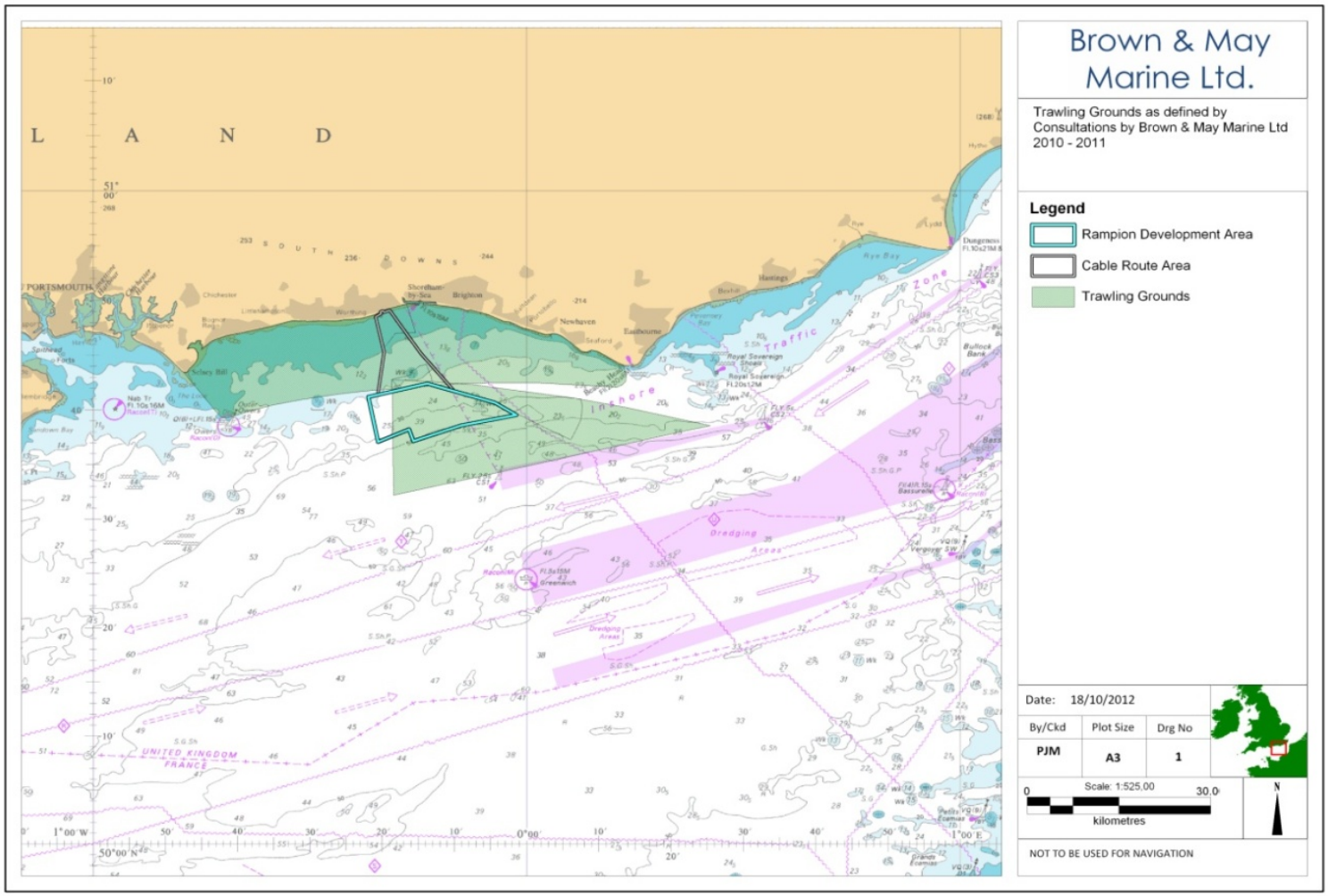


**Figure 18.20: Otter trawling fishing grounds as defined through consultation 2010-2011 (Source: BMM)**

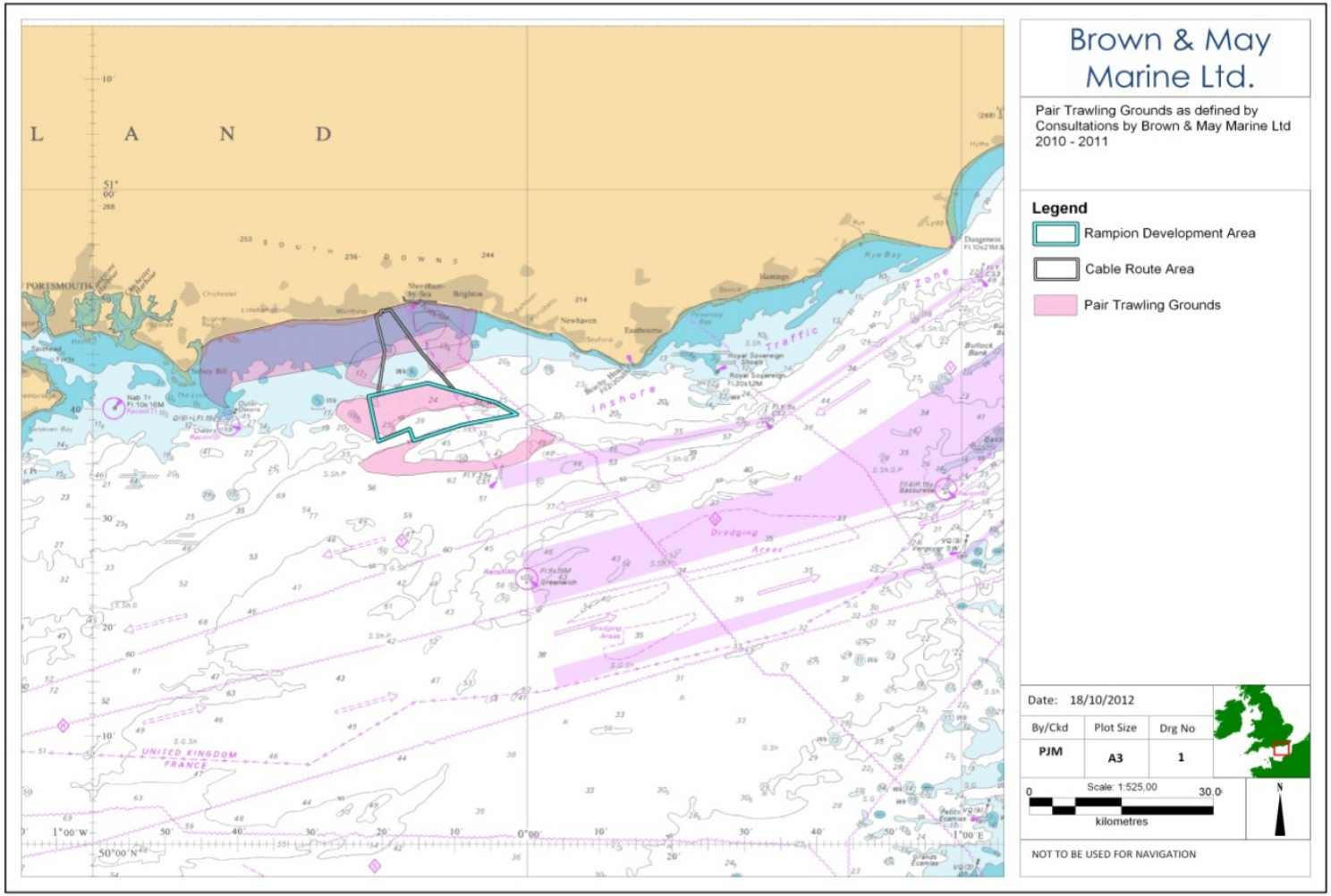


**Figure 18.21: Pair trawling fishing grounds as defined through consultation 2010-2011 (Source: BMM)**

18.5.25 *UK pair trawl fishery in relation to the cable route corridor:* In view of the very small proportional area of short term exclusion during export cable installation activities, the magnitude of the effect, which will only occur if installation activities coincide with the short seasonal fishery, is assessed as at worst **small**, giving a **minor** impact.

18.5.26 *UK beam trawl fishery in relation to the project site:* The operational areas of the larger class of beam trawlers are extensive. For example UK beam trawlers based at ports such as Brixham and Newlyn will on occasion fish areas of the Western Approaches, Channel, Irish Sea and North Sea. As previously stated, the majority of the local vessels are multi-purpose and those undertaking beam trawling will also engage in other methods on a seasonal basis. The sensitivity of the receptors is therefore **low**.

18.5.27 Beam trawling represents 14.7% of the total average landings values (2001 to 2010) in ICES rectangle 30E9. The beam trawl grounds targeted by the local fleet, cover a comparatively large area, from Portsmouth in the west to Hythe in the east and beyond the 12Nm limit (Figure 18.22). Due to engine and beam width restrictions with the 12Nm limit, beam trawling within the vicinity of the project is for the most part by a limited number of the smaller class of under 15m vessels based at Shoreham and Newhaven.

18.5.28 As illustrated by Figure 18.22, the grounds located within the project site represent a low percentage of the total grounds available to the fishery and the magnitude of the effect is assessed as **small**, giving a **minor** impact.

18.5.29 *UK beam trawl fishery in relation to the cable route corridor:* In the case of the installation of the export cable installation, due to the proportionally smaller area involved and shorter duration of activities where localised temporary exclusion will occur, the potential impact is not expected to exceed **minor** and may well be **negligible**.

18.5.30 *UK local scallop dredge fishery:* The local vessels undertaking scallop dredging are for the most part the same multi-purpose vessels as engaging in the beam trawling and otter trawling fisheries assessed above. The receptor sensitivity is therefore again assigned as **low**.

18.5.31 For both the project site and the cable route corridor, scallop grounds of the local vessels are understood to extend from Chichester Harbour in the west to Hythe in the east and well beyond the 12Nm limit (Figure 18.23). Within the immediate vicinity of the project site, is a ground known as the “9 miler” (Figure 18.24), a part of which extends into the project site.

18.5.32 As the fishing grounds within the Offshore Project site constitute only a small proportion of the total grounds available to local vessels, the magnitude of the effect is expected to be **small** resulting in a **minor** impact.

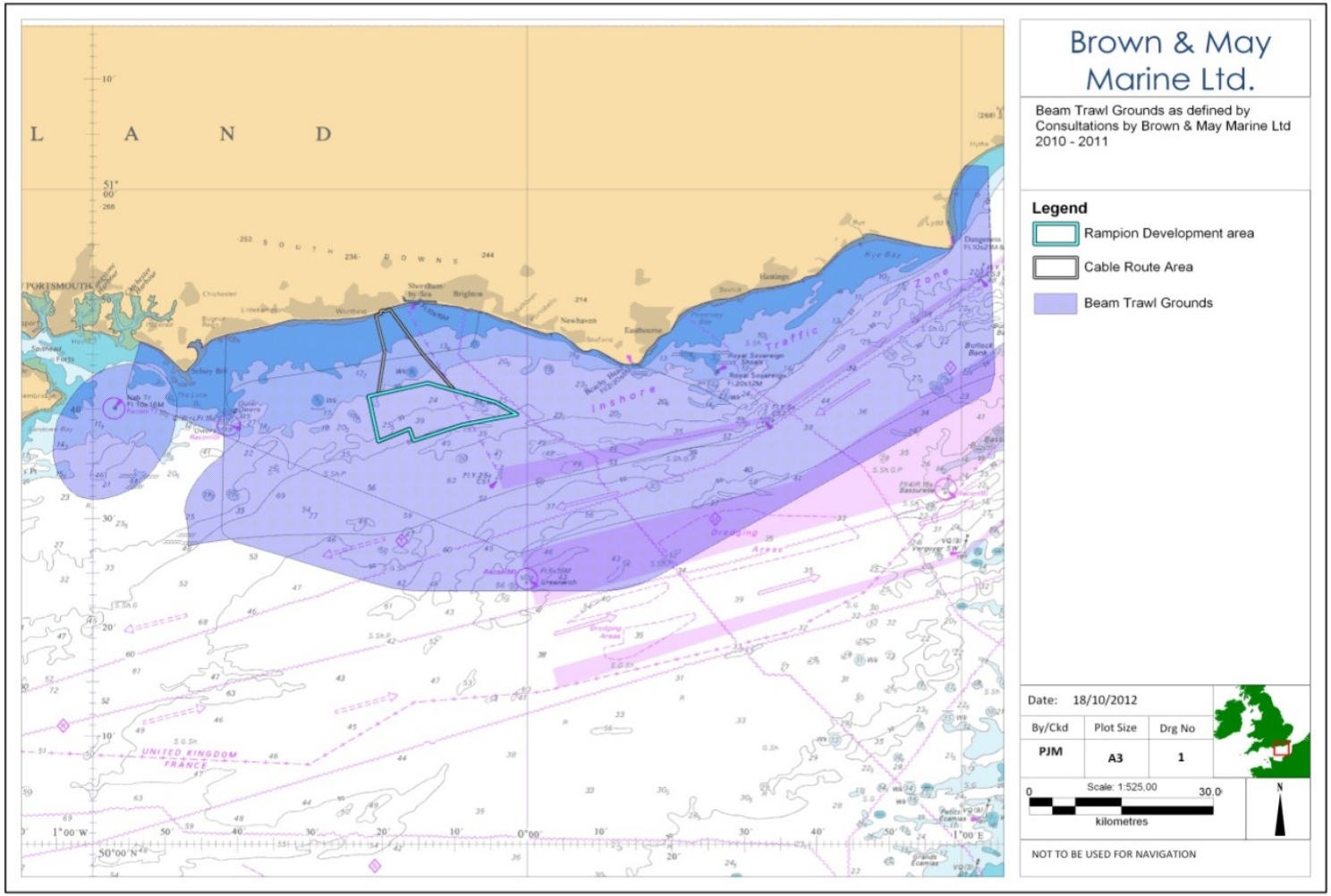


**Figure 18.22: Beam trawl fishing ground as defined through consultation 2010-2011 (Source: BMM)**

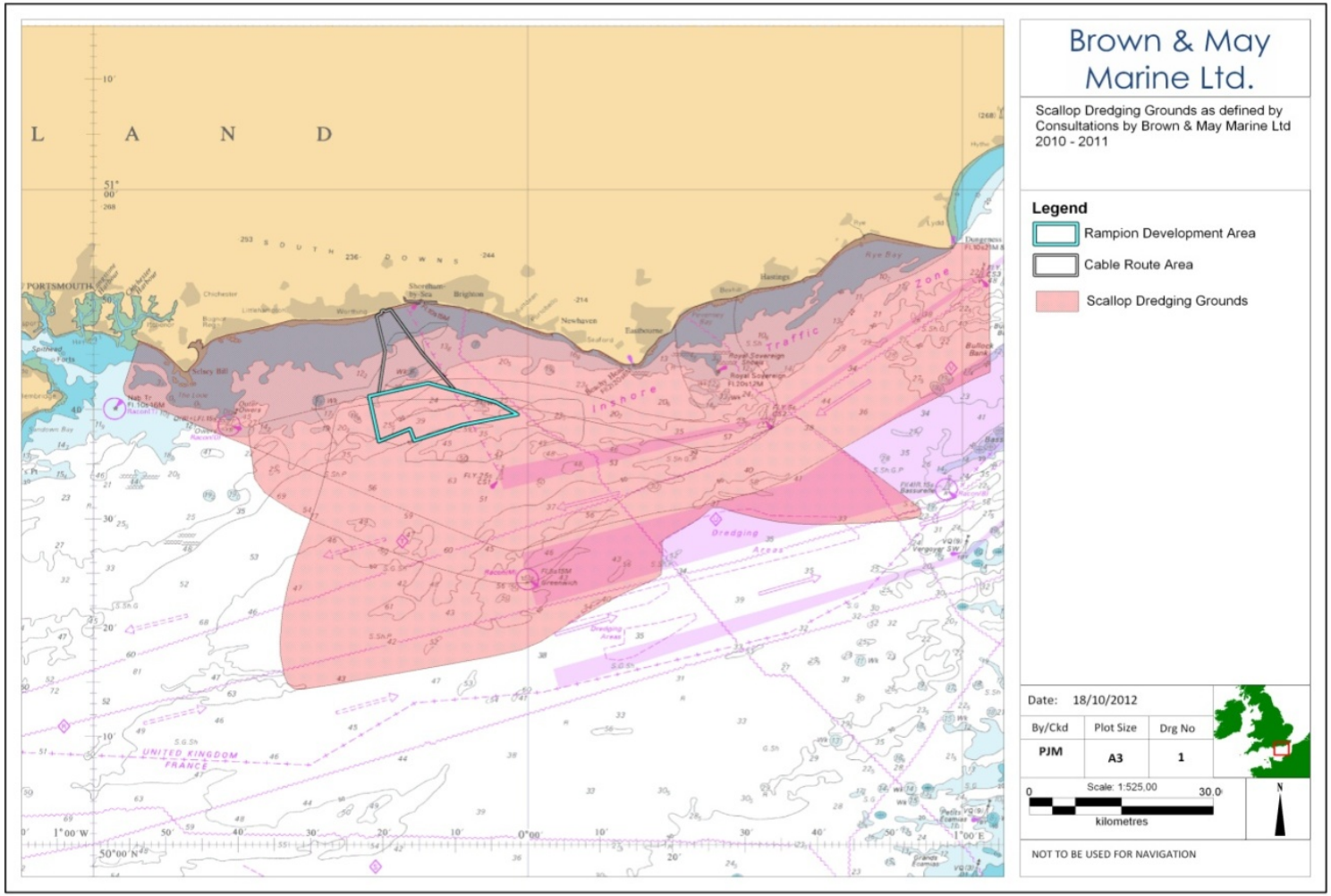


**Figure 18.23: Local scallop dredging grounds as defined through consultation 2010-2011 (Source; BMM)**

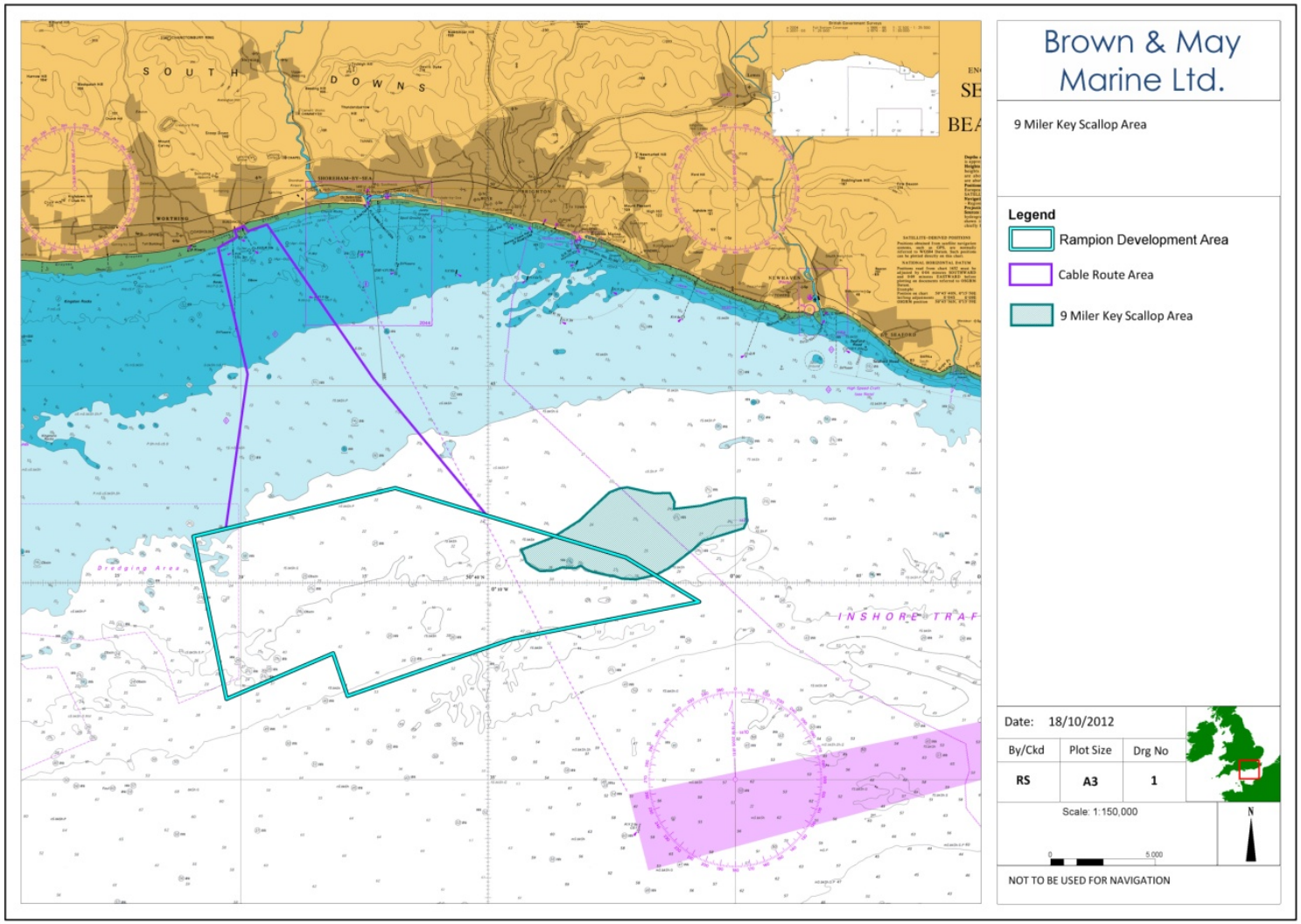


**Figure 18.24: Location of the "9-Miler" scallop dredging ground (Source: Leech Fishing Ltd, 2012)**

18.5.33 *UK nomadic scallop dredge fishery:* The larger nomadic scallop dredging vessels target extensive grounds around the UK, including those in the vicinity of the project site Figure 18.25). These vessels, whilst having little multi-purpose capacity, have extensive fishing opportunities and therefore have **low** sensitivity.

18.5.34 The areas within the project site and the export cable area constitute only a very small percentage of the total grounds available. The pattern of the nomadic fleet is for an area found to contain scallops to be intensively fished by a large number of vessels until catch rates become no longer viable, after which it is left until if and when stock recover to viable levels, which if it occurs can take up to 5 years.

18.5.35 Under restrictions placed on the number of dredges per side which can be operated within 12Nm under the Scallop Order 2012, large nomadic scallop dredge vessels are unlikely to target grounds in the vicinity of the Offshore Project site or cable route. Taking this and the proportion of the total grounds occupied by the Offshore Project site and export cable route, the magnitude of the effect is expected to be **negligible,** giving a **negligible** impact.

18.5.36 *Belgian beam trawl fishery:* As with the larger UK beam trawlers, the Belgian beam trawl fleet has a high spatial adaptability due to an extensive operational area and therefore the sensitivity is **low**.

18.5.37 The grounds within the project site comprise only a low percentage of the total grounds available to the fleet (Figure 18.26). Furthermore, by virtue of the vessels engine capacities and length of beam trawls used, the majority of the vessels within the fleet are prohibited from operating within the 12 Nm limit. The magnitude of the effect in respect of the project site is therefore expected to be, at worst, **small**, with an impact predicted to be **minor**. As the majority of the export cable corridor is located within the 6 Nm limit, within which all Belgian fishing vessels are prohibited from operating, the impact will be **negligible**.

18.5.38 *French trawl fishery*: As stated in the Commercial Fisheries Baseline, Appendix 18.1, it was not possible to obtain full datasets of either French VMS data or fisheries statistics from the French authorities in order to confidently establish the extent of relevant French trawler's activity. On the basis of available information, French vessel activity within the project site represents a low percentage of the total effort (Figure 18.9). The sensitivity of the French trawl fishery within the project site will be at most **low,** due to high method versatility and the ability to fish a number of fishing grounds. Due to a small proportion of traditional fishing grounds being occupied by short term construction activities, the magnitude has been assessed as **small.** The significance of the impact of loss of fishing on French trawlers as a result of the construction of Offshore Project is therefore given as **minor**. As the majority of the export cable corridor is located within 6nm of the coast French vessels will not fish grounds within the corridor, and therefore impacts here will be of **negligible** significance.

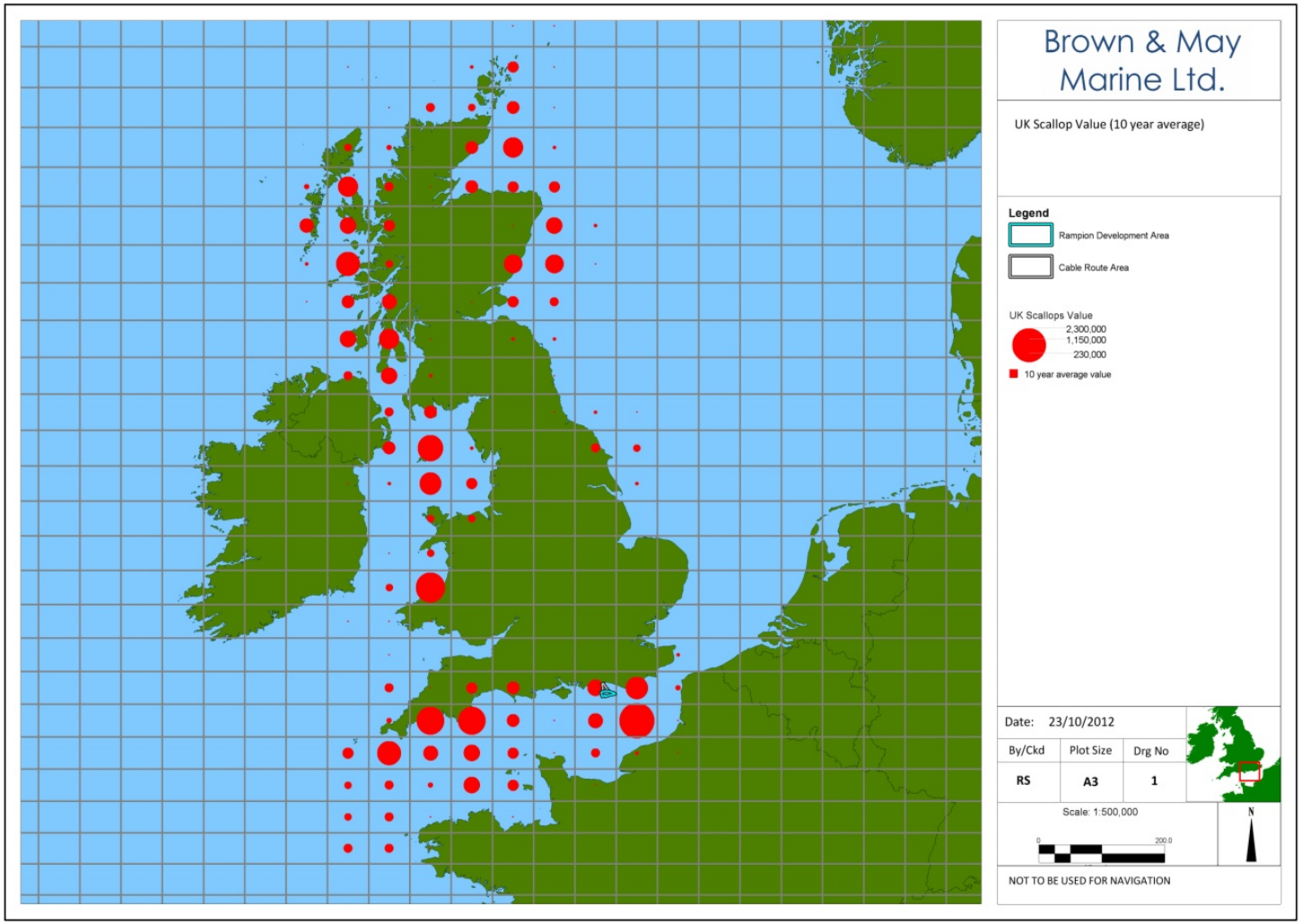


**Figure 18.25: Scallop landings values by ICES rectangle (average (2001-2010)) (Source: MMO)**

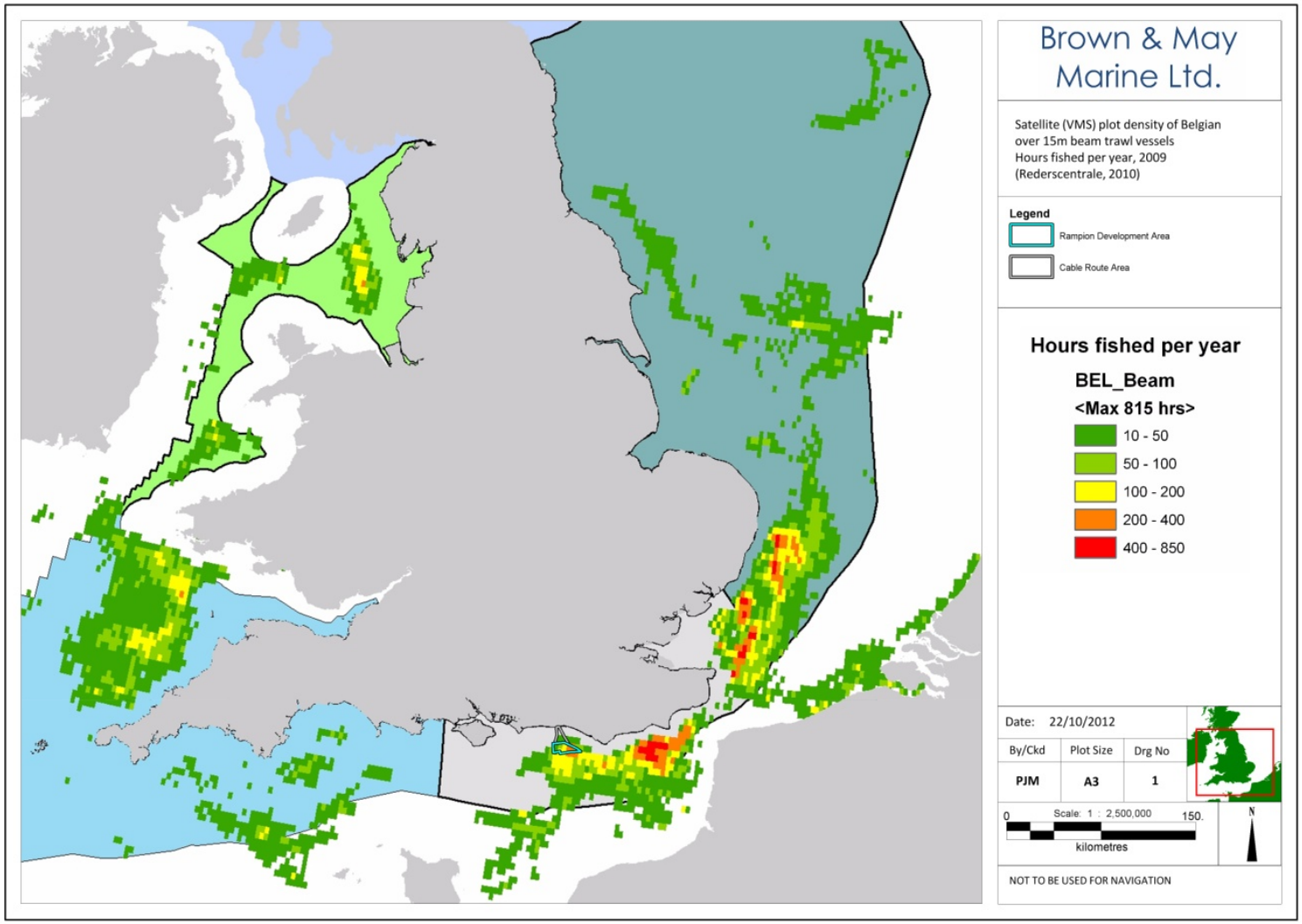


**Figure 18.26: Belgian beam trawl VMS data (2009) (Source: ILVO)**

Safety issues for fishing vessels

18.5.39 The full assessment of fishing, and other vessel, navigation risks is provided in Section 14 - Shipping and Navigation. During construction, the incidents which could compromise fishing vessels safety include collisions with construction vessels or with part installed turbines.

Increased steaming times to fishing grounds

18.5.40 The implementation of safety zones during the construction phases could theoretically result in some short term increases in steaming distances and times, and therefore higher operational costs for fishing vessels. As mentioned previously, 500m safety zones will be operational around all construction activities and 50m safety zones may be applied to partially installed infrastructure within the site. It is not the intention however for the whole project site to be closed to navigation and the areas of exclusion during the export cable installation will be short-term and very small in area.

18.5.41 For the purposes of this assessment, it is assumed that the sensitivity of the local receptors to increase in steaming times is the same for all categories and that the degree of impact will be purely a function of magnitude, i.e. the probability and frequency and extent of any steaming diversions which might occur.

18.5.42 The degree of the potential impacts on steaming times will be dependent upon the location of home ports in relation to the fishing grounds targeted and the size and duration of safety zones. The principal receptors which in theory could be impacted are the local fishing vessels from ports in close proximity to the project site such as Shoreham, Brighton and Newhaven.

18.5.43 *UK static gear methods (i.e. fixed nets, pots and traps) and drift netting in relation to the project site*: As discussed above and in Appendix 18.1, the majority of the fishing grounds for these fisheries are inshore of the project site. As such it is expected that here will be a **negligible** impact on steaming times.

18.5.44 *UK mobile gear (otter, pair and beam trawls; scallop dredges*): For the majority of these fishing activities, assuming that the vessels will be able to steam through most of the site during the construction phase, the impact on streaming times is also expected to be **negligible**. On the occasions where skipper may elect to avoid steaming through the site, there could however be a **minor** impact. In the case of export cable installation activities, due to the very small areas of avoidance required and the temporary and very short term duration of avoidance required, the impact is expected to be **negligible**.

18.5.45 *Non-UK vessels (French trawlers and Belgian beam trawlers):* Impacts are assessed as **negligible** as these vessels are unlikely to experience any increases in steaming times due to the wide extent and locations of their fishing grounds.

Interference to fishing activity

18.5.46 While all of the above impacts relate to interference with fishing activity, an additional impact is the potential for navigational conflicts arising between fishing vessels and construction vessels transiting to and from site. This could include the fouling of static gear marker buoys, or towed gear vessels being required to alter towing direction.

18.5.47 In order to mitigate such risks, the required consultation and liaison will be undertaken to identify prescribed construction vessel transit routes avoiding concentrations of static gears.

18.5.48 Transiting construction vessels will also fully comply with international regulations (COLREGS) to negate the requirement for fishing vessels engaged in fishing to alter course or to pose any risk to fishing gears being towed.

18.5.49 With full compliance to the above, there should be a **negligible** impact.

Adverse impacts on commercially exploited species

18.5.50 The potential impacts to fish and shellfish, including commercially exploited species, are presented in Section 8 -Fish and Shellfish Ecology).

18.5.51 As discussed in Section 8, the effects of piling noise are of concern in respect of the potential impacts on fish ecology as a consequence of the effects of avoidance behavioral reactions.

18.5.52 Given in Table 18.7 are the average landings values for the four ICES rectangles of relevance in respect of potential noise related impacts.

18.5.53 As discussed in Section 8 - Fish and Shellfish, and presented in more detail in Appendix 8.6 - noise contours have been produced for cod, herring, dab (surrogate for Dover sole and plaice), red bream (surrogate for black bream) and bass. In the case of bass, red bream and dab the 90 and 75$dB_{ht}$ contours are within the boundaries of ICES rectangle 30E9, whereas for herring and cod these extend into adjacent rectangles, mainly 29E9.

18.5.54 The maximum number of the largest piles to be installed is expected to be 90, with individual piling events estimated to take approximately 2 hours with a predicted schedule of one pile per day being installed. During these periods of piling it is likely that hearing sensitive species may exhibit some avoidance behavior by swimming away from the piling source. As such, when piling is occurring there, may be an indirect effect on fishing activities which could result in the requirement for temporary changes in fishing practices. Fish may also habituate to piling noise over time.

**Table 18.7: Average landings values (2006-2010) of the top 10 Species (29E9, 29F0, 30E9 & 30F0 combined) and other hearing specialists by vessel length (Source: MMO, 2011)**

| Species | 29E9 | | 29F0 | | 30E9 | | 30F0 | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | U10m | Over 10m | U10m | Over 10m | U10m | Over 10m | U10m | Over 10m | |
| Scallops | £300 | £776,394 | £1 | £3,479,123 | £60,331 | £696,259 | £243,368 | £649,629 | £5,905,404 |
| Sole | £489 | £140,125 | £7 | £49,154 | £533,304 | £430,801 | £1,947,017 | £518,720 | £3,619,618 |
| Whelks | £4,281 | £50,623 | £0 | £0 | £872,600 | £369,696 | £273,665 | £143,840 | £1,714,706 |
| Herring | £0 | £491,140 | £0 | £707,773 | £279 | £9,154 | £5,407 | £1,423 | £1,215,176 |
| Bass | £1,693 | £68,441 | £0 | £46,864 | £366,228 | £221,637 | £339,933 | £50,034 | £1,094,830 |
| Red Mullet | £15 | £305,235 | £0 | £196,295 | £5,273 | £21,384 | £9,473 | £185,024 | £722,699 |
| Lobsters | £5,139 | £5,891 | £0 | £33 | £397,419 | £99,976 | £117,055 | £66,925 | £692,439 |
| Cuttlefish | £2,239 | £12,541 | £0 | £23,717 | £347,962 | £36,538 | £182,615 | £32,942 | £638,554 |
| Horse Mackerel | £0 | £179,174 | £0 | £184,318 | £65 | £71,245 | £360 | £162,064 | £597,227 |
| Plaice | £340 | £15,893 | £5 | £8,778 | £43,761 | £116,697 | £268,888 | £141,769 | £596,133 |
| Cod | £0 | £5,970 | £1 | £6,031 | £1 | £12,445 | £124,567 | £31,300 | £180,314 |
| Black Seabream | £9 | £10,808 | £0 | £3,425 | £9 | £156,458 | £1,457 | £3,357 | £175,523 |

**Table 18.8: Average landings values (2006-2010) of the top 10 Species (929E9, 29F0, 30E9 & 30F0 combined) and other hearing specialists as a percentage of the total in each rectangle and by vessel category (Source: MMO, 2011)**

| Species | 29E9 | | 29F0 | | 30E9 | | 30F0 | |
|---|---|---|---|---|---|---|---|---|
| | U10m | Over 10m | U10m | Over 10m | U10m | Over 10m | U10m | Over 10m |
| Scallops | 0.0% | 32.4% | 0.0% | 70.1% | 1.0% | 12.0% | 3.5% | 9.4% |
| Sole | 0.0% | 5.8% | 0.0% | 1.0% | 9.2% | 7.4% | 28.2% | 7.5% |
| Whelks | 0.2% | 2.1% | 0.0% | 0.0% | 15.1% | 6.4% | 4.0% | 2.1% |
| Herring | 0.0% | 20.5% | 0.0% | 14.3% | 0.0% | 0.2% | 0.1% | 0.0% |
| Bass | 0.1% | 2.9% | 0.0% | 0.9% | 6.3% | 3.8% | 4.9% | 0.7% |
| Red Mullet | 0.0% | 12.7% | 0.0% | 4.0% | 0.1% | 0.4% | 0.1% | 2.7% |
| Lobsters | 0.2% | 0.2% | 0.0% | 0.0% | 6.9% | 1.7% | 1.7% | 1.0% |
| Cuttlefish | 0.1% | 0.5% | 0.0% | 0.5% | 6.0% | 0.6% | 2.6% | 0.5% |
| Horse Mackerel | 0.0% | 7.5% | 0.0% | 3.7% | 0.0% | 1.2% | 0.0% | 2.3% |
| Plaice | 0.0% | 0.7% | 0.0% | 0.2% | 0.8% | 2.0% | 3.9% | 2.1% |
| Cod | 0.0% | 0.2% | 0.0% | 0.1% | 1.0% | 0.2% | 1.8% | 0.5% |
| Black Seabream | 0.0% | 0.5% | 0.0% | 0.1% | 0.1% | 2.7% | 0.0% | 0.0% |

18.5.55 As shown from Table 18.7 and Table 18.8 a significant proportion of the landings values are from shellfish species (scallop, lobster and whelk) which are not expected to exhibit avoidance reaction to noise. As such it is likely that the impact on theses fisheries will be negligible.

18.5.56 In the case of herring and cod, which the noise assessment suggest may exhibit significant avoidance reactions over a relatively large area, as shown by Table 18.7 these species make a small contribution in 30E9. Significant landings values are recorded however for herring in the two further offshore rectangles into which the $75dB_{ht}$ contour impinges. It is however possible that the herring fishery occurs beyond the $75dB_{ht}$ contour and therefore would not be affected. In the case of the local fleet, herring does not represent an important target species, and as shown by Table 18.8, herring landings represent only 0.2% of landing values in 30E9, in which the majority of local activity occurs. Therefore the direct impact on local vessels of noise on herring is expected to be negligible. The impact on commercial fisheries associated with these species is therefore expected to be **minor.**

18.5.57 The $75dB_{ht}$ contours for black bream, bass and Dover sole almost all fall within ICES rectangle 30E9. As it apparent for Table 18.7 and Table 18.8, these species make a significant contribution to the landings values from this rectangle. In the case of black bream the main fishing period coincides with the spawning period of this species. A restriction of piling in relation to black bream spawning should therefore mitigate the potential impacts on this fishery. The landings data for Dover sole and bass however suggest that fishing for these species occurs

throughout the year with the result that if strong avoidance were to occur, there may be a **significant** impact on commercial fisheries.

18.5.58 In the case of Dover sole, there is some evidence to suggest that this species may not exhibit strong avoidance behavior to piling noise. From operations undertaken when piling was taking place at a UK offshore wind farm (personal observation, BMM, 2010b) little evidence of avoidance was found to piling at ranges of between 750 and 2000m from the piling source. It is also possible that the effect of avoidance would depend on the location of the fish prior to commencement of piling. For example fish to the north of the site might respond by swimming further inshore. With the available knowledge it is not possible to determine the scale of the impacts on commercial fishing due to the avoidance reactions of black bream, bass and Dover sole. Taking the precautionary approach, it is possible that for certain of the local vessels there could be a **significant** impact and as such, potential mitigation options, are being explored.

**Operation**

Complete loss of fishing grounds

18.5.59 Existing legislation does not currently prohibit fishing from occurring within operational wind farm sites however it should be noted that 50m safety zones around infrastructure may apply. Full details of the layout options and worst case scenarios for seabed take are given in Section 2a – Offshore Project Description.

18.5.60 Trawling and potting activity has been observed in a number of operational wind farms, including Barrow, Kentish Flats and Gunfleet Sands (BMM, 2007; 2008; 2010a; 2011; 2012a; 2012b; 2012c). It is however, recognised that the location of wind farm infrastructure may result in changes to current fishing practices.

18.5.61 It is intended that inter-array and export cables will be buried where feasible, with protection by other means if burial is not possible (Section 2a - Offshore Project Description and Section 6 - Physical Environment). In the event that seabed rectification procedures are required, and where practicably feasible, the appropriate measures will be undertaken to ensure that the seabed is returned to a condition whereby fishing can resume. As such, it is considered that there will be no significant impacts on commercial fishing activities associated with the export cabling in its operational phase. It is however recognised that certain skippers may choose not to fish within the operational project site. The sensitivities of receptors during the operational phase are considered to be the same as during the construction phase.

18.5.62 Reproduced from Linnane *et al*. (2000), Table 18.9 summarises research into the penetration depths of otter and beam trawl gears in various seabed types. The findings suggest that the target burial depth of at least 1m would be sufficient to prevent contact with otter and beam trawl gears. As shown, the research was undertaken between 1970 and 1998. As a consequence of rising fuel prices,

there has been a recent focus to reduce drag from trawl doors and beams and therefore the penetration depths by gear.

**Table 18.9: Fishing gear seabed penetrations depths (Linnane *et al*., 2000)**

| Gear Type | Penetration Depth | Reference | Substratum |
|---|---|---|---|
| Otter boards | 100mm to 150mm | Arntz and Weber, 1970 | Muddy fine sand |
| Otter trawl ticklers | A thin layer of top substrate | Bridger, 1970 | Sand |
| Beam trawls | 80mm to 100mm | Margetts and Bridger, 1971 | Muddy sand |
| Beam trawls | 100mm to 200mm | Houghton *et al*., 1971 | Sand |
| Beam trawls | 0mm to 27mm | Bridger, 1932 | Mud |
| Beam trawls | Rather limited | De Clerck and Hovart, 1972 | Rough ground |
| Otter boards | Few centimetres | Caddy, 1973 | Sandy sediment |
| Beam trawls | 10mm to 30mm | De Groot, 1984 | Mud, sand |
| Otter boards | 200mm | Khandriche *et al*., 1986 | Mud |
| Beam trawls | A few centimetres | Blom, 1990 | Sand |
| Beam trawls | Approximately 60mm | Bergman *et al.*, 1990 | Fine to medium hard sand |
| Otter boards<br>Rollers on foot rope | 5mm to 200mm<br>20mm to 50mm | Krost *et al.,* 1990 | Mud, sand |
| Beam trawls | 200mm | Laane *et al*., 1990 | Mud, sand |
| Beam trawls | 20mm to 300mm | Rauck, 1998 | Mud, sand |
| Otter boards | 5mm to 170mm | Rumohr (in Krost *et al.*, 1990) | Mud, sand |
| Beam trawls | 40mm to 70mm | Laban and Lindeboom, 1991 | Fine sand |
| Beam trawls | 50mm to 60mm | BEON, 1991 | Fine sand |
| Otter boards | Few centimetres to 300mm | Jones, 1992 | Deepest in soft mud |
| Beam trawls | 20mm to 40mm | Santbrink and Bergman, 1994 | Fine to medium sand sediment |
| Beam trawls | 15mm to 70mm | De Groot, 1995 | Substratum dependant |
| Otter boards | Approximately 140mm | Lindeboom and de Groot (edit.), 1998 | Mud |

18.5.63 *UK fixed net fishery*: Taking the worst case scenario that skippers elect not to deploy the their gears within the operational site, in terms of the proportional loss of area discussed above, the magnitude of the effect would be **small** giving a **minor** impact. It may however, be the case that skippers will deploy their gears

within the operational wind farm, in which case the magnitude and therefore the impact would be reduced to possibly **negligible**.

18.5.64 *UK drift net fishery*: It is assumed that drift nets will not be able to be deployed within the operational project site, due to the risk of the nets fouling on the turbines. As discussed above however, the value of this fishery is low and the SIFCA evidence suggests that there is no history of this activity occurring within the area of the Project site. As such the magnitude of the effect will be at worst **small** and taking the **medium** receptor sensitivity, the potential impact is assessed as **minor** but in reality may well be **negligible.**

18.5.65 *UK pot and trap fishery*: As stated above, the evidence for currently operational wind farms suggests that potting should be able to resume within the operational Offshore Project site. Evidence from observation trips onboard potting vessels within the Barrow wind farm site also suggest that commercially viable catch rates occur within operational wind farms. It is also speculated (Linley *et al*., 2007) that installed infrastructure and scour protection may provide a beneficial habitat for crabs and lobsters with associated benefits to potting fisheries. As a consequence it is expected that the magnitude of the effect will be **negligible** and possibly even **beneficial,** with the result that the impact will also be **negligible** and possibly **beneficial**.

18.5.66 *UK hook and line fishery*: The impacts on the hook and line fishery are expected to be **negligible,** as this activity should able to take place within the operational site.

18.5.67 *UK demersal otter trawl fishery*: As discussed above, it may be feasible for demersal otter trawling to resume within the operational site, although it is appreciated that there will be a requirement to modify towing patterns. If catch rates and landings over the course of a year are similar to those obtained prior to the onset of construction of the project, there will be **negligible** impact. If however skippers elect not to fish within the site, due to the proportionally small loss of area and the possibility that this loss could be mitigated by fishing adjacent areas, the magnitude of the effect would be **small**, which in conjunction with the **medium** sensitivity of the receptor, would result in a **minor** predicted impact.

18.5.68 *UK pair trawling*: Taking the distances between turbine rows and the operational widths of pair trawling, as with demersal otter trawling, it may be possible that pair trawling could take place within the project site with the result that there would be a **negligible** impact. If however it was not considered to be practical, in view of migratory nature of the species and the proportionally small area affected, the magnitude of the impact would be **small** with a resultant **minor** impact.

18.5.69 *UK beam trawl fishery*: Assuming that the inter-array cables are sufficiently buried and protected, it should be possible for beam trawling to take place within the operational wind farm site, resulting in a **negligible** impact. Taking the

worst case however, such that beam trawling was not able to resume within the project site, whilst accepting the longer temporal context, the loss of fishing area is proportionally small, rendering the magnitude of the effect **small**. Taking the low sensitivity of the receptors, the impact on this fishery is expected to be **minor**.

18.5.70 *UK scallop dredge fishery*: Whilst local vessels may be able to resume scallop dredging within the operational wind farm site, for this assessment it is assumed that it will not be possible. As previously discussed in view of the extent of alternative fishing grounds, the sensitivity of this fishery is **low**. Also, in terms of proportional permanent loss of area, the magnitude of the effect is **small** giving a **minor** impact. There may however be a beneficial effect of scalloping not occurring with the project site. As discussed below, the presence of discrete closed parent stock areas can have the effect of increasing local spat production and settlement with a longer term beneficial effect on stocks and fisheries.

18.5.71 *UK nomadic scallop dredge fishery*: As discussed above due to restrictions placed on the number of dredges per side which can be operated within 12nm under the Scallop Order 2012, the majority of the nomadic scallop dredge vessels cannot target grounds in the vicinity of the ROWF site or cable route. Considering this and the proportion of the total grounds occupied by the ROWF site, the impact on this fleet is expected to be **negligible**.

18.5.72 *Belgian beam trawl fishery*: As for the construction phase, due to the low receptor sensitivity and the proportional fishing area involved, the impact on Belgian beam trawlers is expected to be **negligible**.

18.5.73 *French trawl fishery*: As with the UK trawlers, French otter trawlers should be able to fish within the operational wind farm site, a view confirmed during consultation with French fishermen. It is therefore expected that there will be a **negligible** loss of fishing impact.

Increased steaming times to fishing grounds

18.5.74 In view of the distances between turbines, fishing vessels should be able to steam through the Project site without any significant deviation from existing routes. As such, with the exception of adverse weather conditions (during which local vessels would be unlikely to be at sea) there is likely to be little or no impact. Further information can be found in Section 14 - Navigation and Shipping. Therefore, the impact upon steaming distances and times of all fishing vessels is considered to be of **negligible** significance.

Seabed objects and obstructions

18.5.75 Construction and maintenance contractors engaged in the installation works will be contractually prevented from discarding objects and material as part of the Project's marine license and any accidently dropped objects will have to be

recovered. As such there will be a **negligible** impact associated with seabed objects.

Interference with fishing activities

18.5.76 As the same policies and procedures will be in place, as discussed above for the construction phase to prevent project vessels interfering with static fishing gears and mobile gear vessels, the impact should be **negligible**.

18.5.77 The effects of operational noise are discussed in Section 8 - Fish and Shellfish. Whilst there is a degree of uncertainty as to the effects of operational turbine noise, post construction fish surveys undertaken by BMM (2007, 2008, 2010a, 2011, 2012a, 2012b, 2012c) within a variety of operational wind farms suggest that there is no obvious avoidance reactions by fish to turbine noise.

Electromagnetic Fields

18.5.78 As discussed in Section 8, there is a degree of uncertainty with regard to electromagnetic fields and it is unlikely that if any effects occur they will be so localised that they do not significantly impact commercial fisheries.

**Decommissioning**

18.5.79 As previously stated it has been assumed that the impacts of decommissioning will not be greater as those assessed above for the construction phase and will be subject to a specific EIA and Marine Licence. It is however recognized that if there are any beneficial effects associated with the operational phase, they could be lost by decommissioning of the project. It is also recognized that the commercial fisheries baseline at the time of decommissioning is likely to be different from the current baseline.

## 18.6 Mitigation Measures

18.6.1 Proposed mitigation measures, and residual impacts, are summarised in Table 18.11.

**Construction**

Piling noise

18.6.2 As noted in Section 8 – Fish and Shellfish Ecology – a ‘soft start’ procedure will be used at the commencement of each piling event to allow species sensitive to noise (including commercially exploited fish and shellfish species) to move away from the immediate vicinity of the piling. Installation of foundations for the Project is expected to take approximately 12 months, with individual piling events taking an average of 2 hours (ranging between 1 and 4 hours), with a maximum of one large monopile being installed every 24 hours.

18.6.3 Seasonal and/or spatial restrictions on piling to minimise impacts on commercially exploited fish species are under consideration and will be developed in consultation between the developer and the MMO.

18.6.4 Mitigation measures would be applied with the aim of reducing the residual effect to an impact of **moderate** significance, or lower.

Fishing activity

18.6.5 E.ON has established a Commercial Fisheries Working Group with the objective of maintaining ongoing dialogue with the local fishing communities. A primary objective of the Working Group is to integrate fishermen's concerns into the Fisheries Engagement Plan. This will set out the protocol for engagement with fishermen throughout the construction and operational phases. In addition, protocols will be agreed for navigation routes for wind farm construction and works vessels to and from the site via approved transit lanes. Procedures will also be established in the event of interactions between wind farm construction and fishing activities (i.e. claims for lost and/or damaged gear).

18.6.6 During the construction period it will be necessary to instigate exclusion zones, within which fishing will be prohibited. It should be noted that in other fishing areas such as Ramsey Bay, Isle of Man where activity has been prohibited for a defined period, recovery, and an increase in scallop numbers has been recorded (Isle of Man Department of Environment, Food and Agriculture, 2010). The procedure of closing these fishing grounds has been supported by the local fishermen to safe guard the future of their fishery.

18.6.7 During the various phases of the Offshore Project development, it is expected that local fishing vessels, with the appropriate certification, will continue to be employed to undertake surveys and, if required, may also be contracted to undertake guard ship duties.

18.6.8 Any temporarily unburied cables will be guarded and statutory safety procedures implemented until complete burial is achieved and has been confirmed by survey. Should any post construction surveys highlight the presence of seabed features attributable to the development, rectification measures will be implemented.

Safety issues

18.6.9 In order to reduce the likelihood of occurrence of safety issues in the construction phase, ongoing communication with fishing vessels via direct interaction and weekly Notice to Mariners that will highlight any changes in the positioning of safety zones or dedicated construction traffic routes. If required, guard vessels will be employed to ensure that fishing vessels remain clear of potential snagging risks such as unburied cables. In addition there will be a code of practice for crews of construction and maintenance vessels to minimise interference with those undertaking fishing. All partially or fully installed turbines

and other associated infrastructure will be marked and lit in line with required navigational standards.

18.6.10 There are likely to be multiple construction events occurring at locations across the project site and construction safety zones of 500m will be operational around offshore construction activities. It should be noted that for specific operations such as cable laying, fishing activity cannot resume until appropriate post installation surveys have been undertaken and any necessary rectification measures undertaken.

18.6.11 A marine coordinator will be appointed who can facilitate information dissemination to all potentially impacted parties. It should be noted that in accordance with standard marine practice, the ultimate responsibility for fishing in the vicinity of safety zones lies with the master of a vessel.

Operation

18.6.12 Fishermen will be made fully aware of the locations of cables, their status and the turbines and sub-stations. These will be marked and lit to industry standards, as well as marked on admiralty charts.

18.6.13 Codes of conduct to avoid conflicts between operation/ maintenance vessels, and fishing vessels, will be established.

## 18.7 Significance of Residual Effects

18.7.1 Residual impacts, and proposed mitigation measures during construction/ decommissioning and operation, are summarized in Table 18.11.

**During Decommissioning**

18.7.2 Upon decommissioning, appropriate mitigation measures will be proposed as necessary, based on both an assessment of likely impacts and the recognised best practice at the time with the intention of reducing impacts as far as possible. It is likely that impacts during decommissioning will be lower than those experienced during the construction phase.

## 18.8 Cumulative Impacts

18.8.1 An assessment of cumulative impacts on commercial fishing activities arising from the construction and operation of the project site, in conjunction with other existing and foreseeable planned project and development activities, takes into account the elements listed below.

Operational, Planned or Under Construction Offshore Wind Farms

18.8.2 The other developments located in the Southern North Sea and the English Channel are given in Table 18.10 along with the assessment their potential to contribute to cumulative impacts.

18.8.3 The contribution of the Offshore Project to the cumulative impact will be a function of the scale of the impacts of the development on the various receptor groups and the extent to which those receptors are impacted by other developments. Construction-related cumulative loss of fishing area would only occur where construction phases of one or more sites coincide, which will depend on project size and timescales. It should be noted that many of the listed projects are still at the concept stage.

18.8.4 Due to the limited operational range, the under-10m vessels which operate static gillnets, driftnets, pots, traps and hooks and lines, target grounds in close vicinity to their home port, it is considered therefore that there will be **negligible** cumulative impacts on these vessels from any of the wind farms listed in Table 18.10.

18.8.5 Local vessels operating bottom otter and pair trawls, beam trawls and scallop dredges are generally larger vessels (10-15m or >15m in length) and potentially equipped to target grounds further from their home ports. Due to the current focus on targeting species within local grounds however, these vessels rarely operate outside the English Channel. The only other wind farm development with the potential to cumulatively impact these vessels is the Navitus Bay development which is currently at the pre-consent stage. The potential cumulative impact is therefore considered to be **minor** to **negligible**.

18.8.6 As previously stated the fishing grounds of the UK nomadic scallop fleet are extensive including areas of the Irish Sea and off the Scottish coast and in the North Sea. Developments in these areas could therefore have a cumulative impact on these vessels. However, due to the negligible impact associated with the Offshore Project, the contribution of the development to the cumulative effect will also be **negligible.**

18.8.7 As illustrated in Figure 18.26, Belgian fishing grounds are extensive. As it is considered that the impact of the Offshore Project will be negligible, its contribution to the cumulative impact will also be **negligible**.

18.8.8 Similarly it has been assessed that the Offshore Project will have a negligible impact on French trawling, its contribution to the cumulative impact will be **negligible**.

18.8.9 In respect of seabed obstacles and safety issues to fishing vessels, it is assumed that all wind farm developers will adhere to the required standards and that the cumulative impacts will be negligible. Similarly it is assumed that other wind farm operators will have the necessary policies and procedures to ensure construction and maintenance vessels do not cause interference to fishing activities.

## Table 18.10: Proposed developments assessed for cumulative impacts on commercial fisheries

| Wind Farm by Nationality | Status | Assessment of cumulative impact of other wind farm developments by fishery | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UK Fixed Net Fishery | UK Drift Net Fishery | UK Pot and Trap Fishery | UK Hook and Line Fishery | UK Demersal Otter Trawl Fishery | UK Pair Trawl Fishery | UK Beam Trawl Fishery | UK Local Scallop Dredge Fishery | UK Nomadic Scallop Dredging Fishery | Belgian Beam Trawl Fishery | French Trawl Fishery |
| **UK** | | | | | | | | | | | | |
| Thanet | Fully commissioned | No | No | No | No | Minor | Minor | Minor | No | No | Moderate | Minor |
| Kentish Flats | Fully commissioned | No | No | No | No | Minor | Minor | Minor | No | No | No | No |
| Kentish Flats Extension | Consent application submitted | No | No | No | No | Minor | Minor | Minor | No | No | No | No |
| Gunfleet Sands | Fully commissioned | No | No | No | No | Minor | Minor | Minor | No | No | No | No |
| London Array | Under construction (Phase 1)/consent application submitted (Phase 2) | No | No | No | No | Minor | Minor | Minor | No | No | No | No |
| Galloper | Consent application submitted | No | No | No | No | Minor | Minor | Minor | No | No | Moderate | Minor |
| East Anglia Offshore Wind | Concept/ early planning | No | No | No | No | Minor | Minor | Minor | No | No | Moderate | Minor |
| Inner Gabbard | Partial generation / under construction | No | No | No | No | Minor | Minor | Minor | No | No | Moderate | Minor |

| Wind Farm by Nationality | Status | Assessment of cumulative impact of other wind farm developments by fishery | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UK Fixed Net Fishery | UK Drift Net Fishery | UK Pot and Trap Fishery | UK Hook and Line Fishery | UK Demersal Otter Trawl Fishery | UK Pair Trawl Fishery | UK Beam Trawl Fishery | UK Local Scallop Dredge Fishery | UK Nomadic Scallop Dredging Fishery | Belgian Beam Trawl Fishery | French Trawl Fishery |
| Navitus Bay Wind Park | Concept/ early planning | No | No | No | No | Moderate | Moderate | Moderate | Minor | No | No | No |
| Irish Sea Round 3 | Concept/ early planning | No | No | No | No | No | No | No | No | Moderate | Moderate | No |
| Moray Firth Round 3 Zone | Concept/ early planning | No | No | No | No | No | No | No | No | Moderate | No | No |
| Firth of Forth Round 3 Zone | Concept/ early planning | No | No | No | No | No | No | No | No | Moderate | No | No |
| Inchcape | Concept/ early planning | No | No | No | No | No | No | No | No | Moderate | No | No |
| **France** | | | | | | | | | | | | |
| Maia | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Baie de Seine | Consent application submitted | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Courseulles Sur Mer | Development zone | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Fecamp WPD | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Fecamp | Development zone | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Fecamp GDF Suez | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Pointe de Caux | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |

| Wind Farm by Nationality | Status | Assessment of cumulative impact of other wind farm developments by fishery | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | UK Fixed Net Fishery | UK Drift Net Fishery | UK Pot and Trap Fishery | UK Hook and Line Fishery | UK Demersal Otter Trawl Fishery | UK Pair Trawl Fishery | UK Beam Trawl Fishery | UK Local Scallop Dredge Fishery | UK Nomadic Scallop Dredging Fishery | Belgian Beam Trawl Fishery | French Trawl Fishery |
| Cote d'Albatre | Consent authorised | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Cote d'Albatre II | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Haute Normandie | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Deux Cotes | Consent application submitted | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Le Preport | Development zone | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Bassure de Baas | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| 3B | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |
| Boulogne | Concept/ early planning | No | No | No | No | No | No | No | No | No | To be assessed | To be assessed |

18.8.10 As vessels are expected to be able to navigate through operational wind farms, there should be **negligible** cumulative impact on vessel steaming times. Whilst there may be safety zones implemented during construction periods, these are likely to be temporary and to have a **negligible** cumulative impact on vessel steaming times.

Subsea pipelines and cables

18.8.11 An England-France HVDC interconnector (Interconnexion France-Angleterre, IFA2) cable is proposed with potential landfalls in the vicinity of the Solent and Caen. It is currently in the feasibility stage and if successful could be operational by 2020.

Aggregate dredging

18.8.12 Licensed aggregate dredging areas are located in close proximity to the project site (see Figure 19.1 and Section 19 – Other Marine Users), potentially causing cumulative impacts on the vessels with a history of fishing within the Project site. The majority of aggregate dredging areas are located to the east of the Isle of Wight both inside the 6nm and between the 6 and 12nm limits, whilst additional sites are located off the coast of Littlehampton and Shoreham, principally between the 6 and 12nm limits. There are also aggregate dredging sites located off the coast of Eastbourne outside of the 12nm limit (Crown Estates, 2011). Additionally, an area within The Crown Estate Zone 6 has been identified for aggregate development.

18.8.13 Vanstaen *et al*. (2010) concluded that "there was no evidence that the introduction of aggregate extraction activities in the Eastern English Channel significantly altered the distribution or intensity of mobile fishing gears in the area". The cumulative impact of aggregate areas will therefore be **negligible** for the inshore fleet due to distance and at worst **minor** for the larger beam trawlers and scallopers.

**Marine Protected Areas**

18.8.14 Under the UK Marine and Coastal Access Act (2009) it is proposed that a number of conservation areas are in place within the local area surrounding the ROWF. Final recommendations for the location of Marine Conservation Zones (MCZs) have been proposed by the Balanced Seas Regional Stakeholder Group (see Section 9 – Nature Conservation, and Figures 9.1 and 9.2), although the exact location, size and level of associated restrictions will be assessed prior to final designation in 2013. As described within Section 9 - Nature Conservation), there are a number of MCZ sites within the English Channel which may contribute to a cumulative impact. At present however, the level of impact cannot be assessed accurately until the number, location and key features of these MCZ have been finalised.

18.8.15 In addition there are non-statutory designated Marine Sites of National Conservation Importance (MSNCI) and Voluntary Marine Conservation Areas

within inshore waters. MSNCIs are recognized by local councils and designated by Sussex Seasearch.

18.8.16 The offshore MCZs result in a cumulative impact on fixed nets, scallop dredging and beam trawling. The Selsey Bill MCZ could have a cumulative impact on potting and scalloping activity, whilst the Beachy Head site could have a cumulative impact on potting, fixed nets, beam trawling and the cuttlefish trapping. It should be noted that these cumulative impacts will only occur if fishing is restricted or banned in the MCZs.

## Table 18.11: Summary of residual effects and mitigation measures

| Aspect | Effect | Proposed Mitigation Measures | Sensitivity | Magnitude | Residual Effect |
|---|---|---|---|---|---|
| **Construction Phase** | | | | | |
| Piling noise | **Change in the distribution of locally important commercially exploited species** | Soft start procedure | Medium | Medium (or below, pending agreed mitigation) | Moderate (or below, pending agreed mitigation) |
| | **Disruption to spawning activity, leading to subsequent reduction in stocks** | Possible seasonal/spatial restrictions on piling (to be agreed with regulatory authorities). | | | |
| Construction activity and safety zones in the **project site** | **Restricted Access to or loss of Traditional Fishing Grounds**: | None proposed | | | |
| | UK Fixed Net fishery | | Medium | Small | Minor |
| | UK Pot and Trap fishery | | Medium/ High | Small | Moderate / Minor |
| | UK Drift Net fishery | | Medium | Small | Minor |
| | UK Hook and line fishery | | Low | Small | Minor |
| | UK Demersal Otter Trawl Fishery, | | Medium | Small | Minor |
| | UK Pair Trawl Fishery | | Medium | Medium/Small | Moderate/Minor |
| | UK Beam Trawl Fishery, UK Local Scallop Dredge Fishery | | Low | Small | Minor |
| | UK Nomadic Scallop Dredge Fishery | | Low | Negligible | Negligible |

| Aspect | Effect | Proposed Mitigation Measures | Sensitivity | Magnitude | Residual Effect |
|---|---|---|---|---|---|
| | Belgian Beam Trawl Fishery, French Trawl Fishery | | Low | Small | Minor |
| Construction activity and safety zones in the **cable route corridor** | **Restricted Access to or loss of Traditional Fishing Grounds**: UK fixed net fishery, UK drift net fishery, | None proposed | Medium | Small | Minor |
| | UK pot and trap fishery | | Medium | Small /Negligible | Moderate / Minor |
| | UK Hook and Line Fishery | | Low | Small | Minor |
| | UK Demersal Otter Trawl Fishery, UK Pair Trawl Fishery | | Medium | Small | Minor |
| | UK Beam Trawl Fishery | | Low | Small | Minor/ Negligible |
| | UK Local Scallop Dredge Fishery | | Low | Small | Minor |
| | UK Nomadic Scallop Dredge Fishery | | Low | Negligible | Negligible |
| | Belgian Beam Trawl Fishery, French Trawl Fishery | | Low | Negligible | Negligible |
| Construction activity and safety zones in the **project site** | **Increased steaming times to fishing grounds**: UK Static Gear Vessels | None proposed | Low | Small/Negligible | Minor/ Negligible |
| | UK mobile gear | | Low | Small/ Negligible | Minor/ Negligible |
| | Non-UK vessels | | Low | Negligible | Negligible |
| Construction activity and safety zones in the **cable route corridor** | **Increased steaming times to fishing grounds**: UK Static Gear Vessels | None proposed | Low | Small/ Negligible | Minor/ Negligible |
| | UK mobile gear | | Low | Negligible | Negligible |
| | Non-UK vessels | | Low | Negligible | Negligible |
| Construction vessel activity in **project site** | **Interference to Fishing Activities**: UK Static Gear Vessels | Implementation of code of practice for construction vessel crew to minimise interference. | Low | Negligible | Negligible |
| | UK mobile gear | | Low | Negligible | Negligible |
| | Non-UK vessels | | Low | Negligible | Negligible |

| Aspect | Effect | Proposed Mitigation Measures | Sensitivity | Magnitude | Residual Effect |
|---|---|---|---|---|---|
| Construction vessel activity in **cable route corridor** | **Interference to Fishing Activities**: UK Static Gear Vessels | Implementation of code of practice for construction vessel crew to minimise interference. | Low | Negligible | Negligible |
| | UK Mobile Gear Vessels | | Low | Negligible | Negligible |
| | Non-UK Vessels | | Low | Negligible | Negligible |
| **Operational Phase** | | | | | |
| Presence of infrastructure | **Loss of Traditional Fishing Grounds**: UK Fixed Net Fishery | None proposed | Medium | Small | Minor |
| | UK Driftnet Fishery | | Medium | Small | Minor/ Negligible |
| | UK Pot and Trap Fishery | | Low | Negligible | Negligible |
| | UK Hook and Line Fishery | | Low | Negligible | Negligible |
| | UK Demersal Otter Trawl Fishery | | Medium | Small | Minor |
| | UK Pair Trawl Fishery | | Medium | Small | Minor |
| | UK Beam Trawl Fishery | | Low | Small | Minor |
| | UK Local Scallop Dredge Fishery | | Low | Small | Minor |
| | UK Nomadic Scallop Dredge Fishery | | Low | Negligible | Negligible |
| | Belgian Beam Trawl Fishery | | Low | Negligible | Negligible |
| | French Trawl Fishery | | Low | Negligible | Negligible |
| Presence of infrastructure | Increased Steaming Times to Fishing Grounds; all fisheries | None proposed | Low | Negligible | Negligible |
| Vessel activity: operation/ Maintenance | Interference to Fishing Activities: all fisheries | None proposed | Low | Negligible | Negligible |
| **Decommissioning Phase** | | | | | |
| Effects from the decommissioning of the various wind farm components will be subject to a detailed assessment during the decommissioning planning study | | | | | |

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# Rampion Offshore Wind Farm

# ES Section 18 – Commercial Fisheries Appendix

**Brown & May Marine** **Document 6.3.18**

**December 2012** **APFP Regulation 5(2)(a)**

**Revision A**

**E.ON Climate & Renewables UK Rampion Offshore Wind Limited**

# E-ON

# Rampion Offshore Wind Farm

# Commercial Fisheries Baseline

## Brown & May Marine Ltd

| Ref | Issue Date | Issue type | Originated | Checked | Approved |
|---|---|---|---|---|---|
| CFB003 | 09/11/2012 | Final | JK/SJA | RR | SJA |

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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).

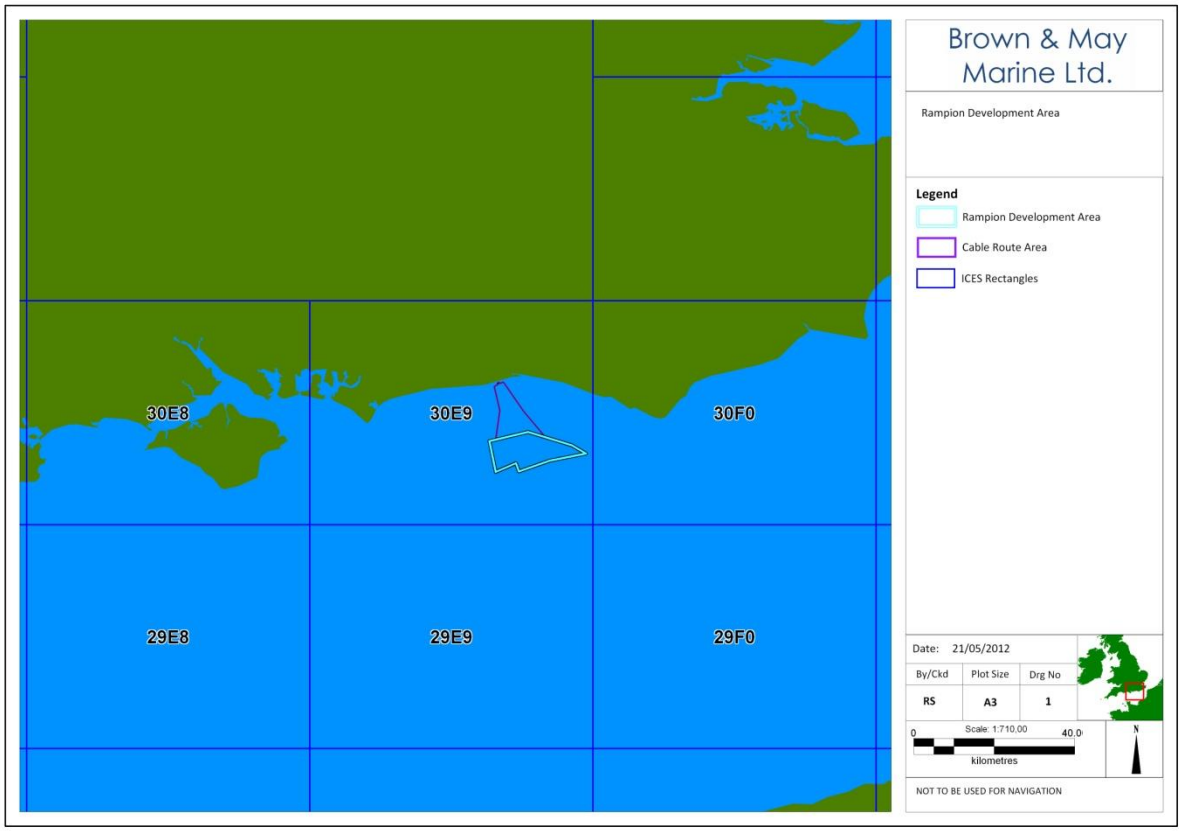



**Figure 18.1 Chart illustrating the Rampion Development Area**

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 900nm$^2$. 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, CNPMEM, 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 IFCAs.
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*

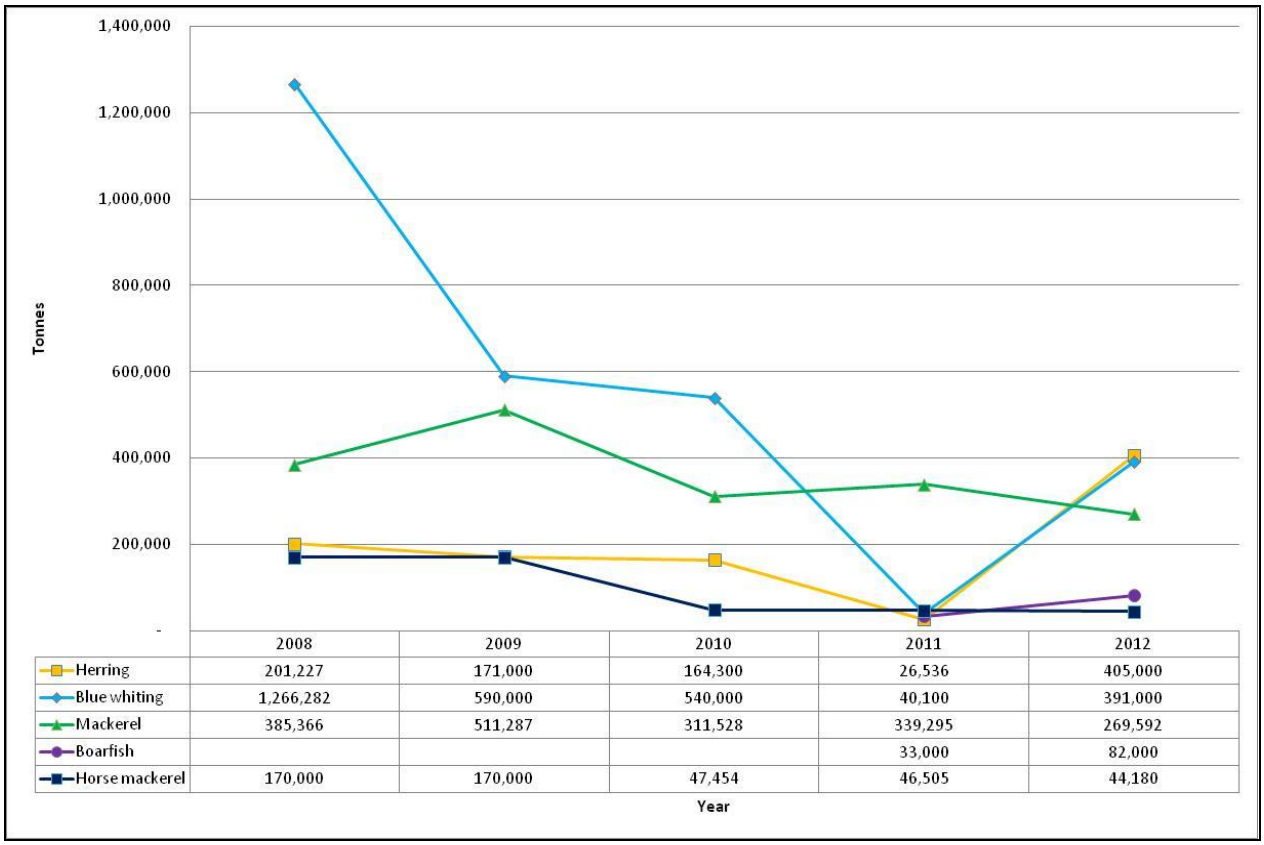
All EU registered fishing vessels are required to hold a valid license. The vessel licensing scheme was designed to stabilise fleet numbers and to reduce its catching capacity over time through a system of Vessel Capacity Units (VCUs). New or additional licenses are not allocated and license transfers 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

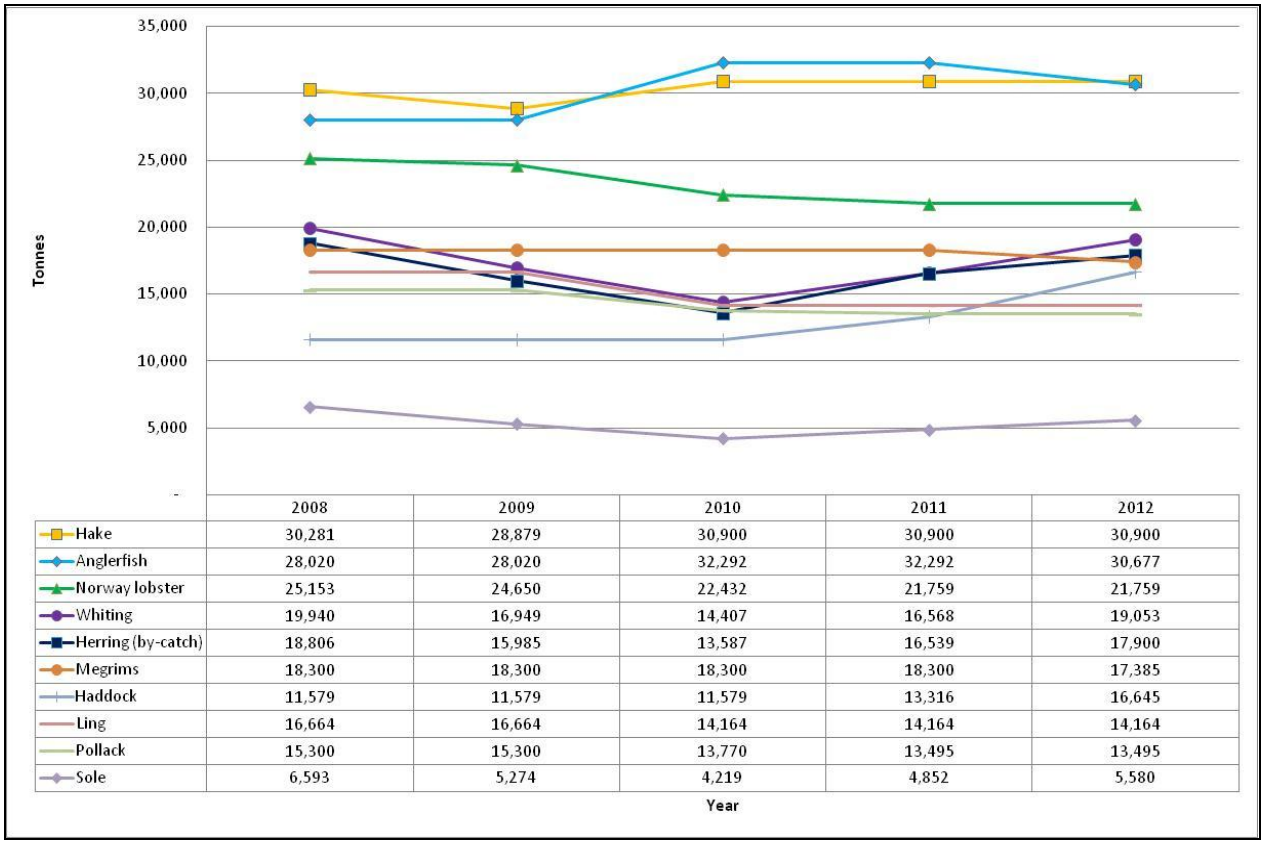
requiring management (also known as 'pressure stocks'). Annual TACs are subsequently allocated to individual vessels either via Producer Organisations or collectively via non-sector allocations.

The project site is located within ICES division VIId, and the TACs allocated for the principal pressure stock species in VIId 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.




| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Herring | 201,227 | 171,000 | 164,300 | 26,536 | 405,000 |
| Blue whiting | 1,266,282 | 590,000 | 540,000 | 40,100 | 391,000 |
| Mackerel | 385,366 | 511,287 | 311,528 | 339,295 | 269,592 |
| Boarfish | | | | 33,000 | 82,000 |
| Horse mackerel | 170,000 | 170,000 | 47,454 | 46,505 | 44,180 |

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




| | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Hake | 30,281 | 28,879 | 30,900 | 30,900 | 30,900 |
| Anglerfish | 28,020 | 28,020 | 32,292 | 32,292 | 30,677 |
| Norway lobster | 25,153 | 24,650 | 22,432 | 21,759 | 21,759 |
| Whiting | 19,940 | 16,949 | 14,407 | 16,568 | 19,053 |
| Herring (by-catch) | 18,806 | 15,985 | 13,587 | 16,539 | 17,900 |
| Megrims | 18,300 | 18,300 | 18,300 | 18,300 | 17,385 |
| Haddock | 11,579 | 11,579 | 11,579 | 13,316 | 16,645 |
| Ling | 16,664 | 16,664 | 14,164 | 14,164 | 14,164 |
| Pollack | 15,300 | 15,300 | 13,770 | 13,495 | 13,495 |
| Sole | 6,593 | 5,274 | 4,219 | 4,852 | 5,580 |

**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, VIIId, VIIIe, XII and XIV | 1,266,282 | 590,000 | 540,000 | 40,100 | 391,000 |
| Mackerel | VI, VII, VIIIa, VIIIb, VIIId and VIIIe; 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, VIIId and VIIIe; 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, VIIe, 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 |
|---|---|---|---|---|---|---|
| Megrims | 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 | VIId and VIIe | 6,144 | 6,144 | 5,532 | 5,421 | 5,150 |
| Plaice | VIId and VIIe | 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 (VIId only from 2010 onwards) | 4,316 | 4,023 | 1,955 | 1,564 | 1,543 |
| Skates and Rays | EU waters of VIId 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 VIIe, 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.

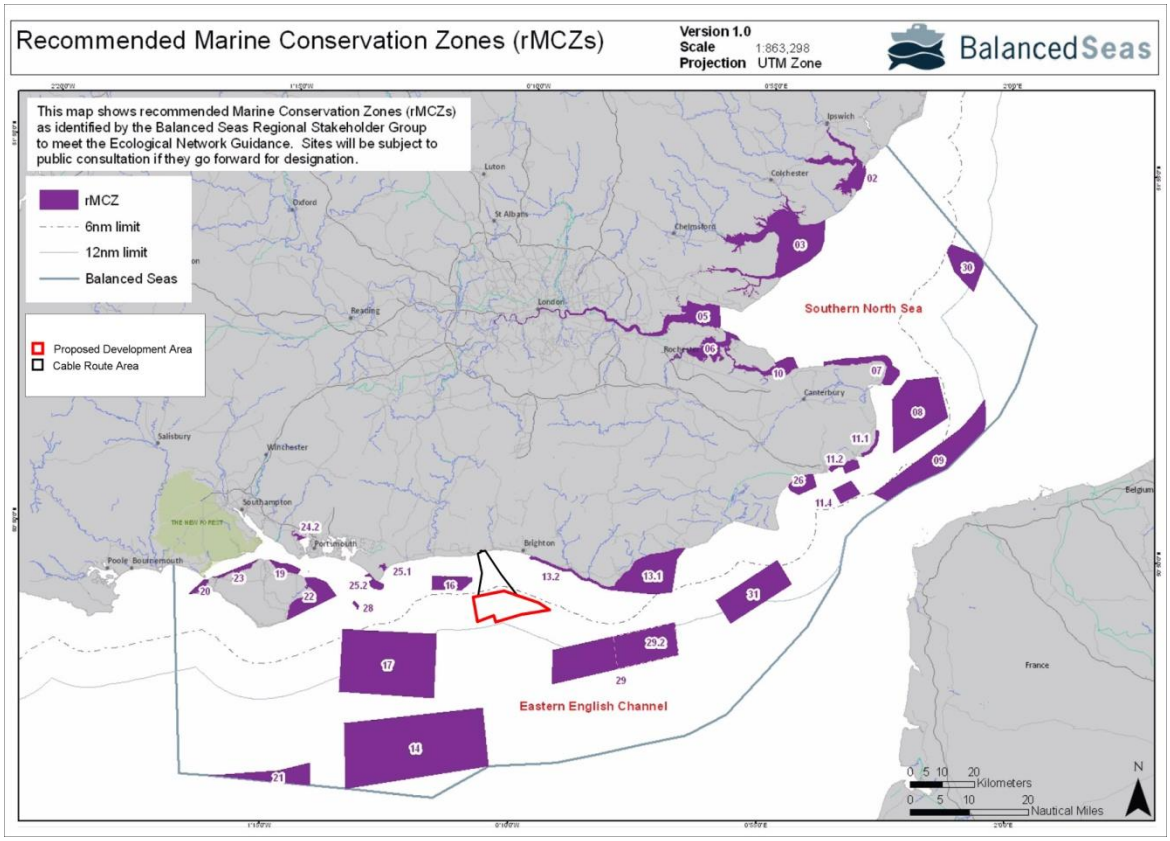



**Figure 18.4 Recommended Marine Conservation Zones as defined by the Balanced Seas Regional Stakeholder Group (Source: Balanced Seas, October 2011) in relation to the Project Site**

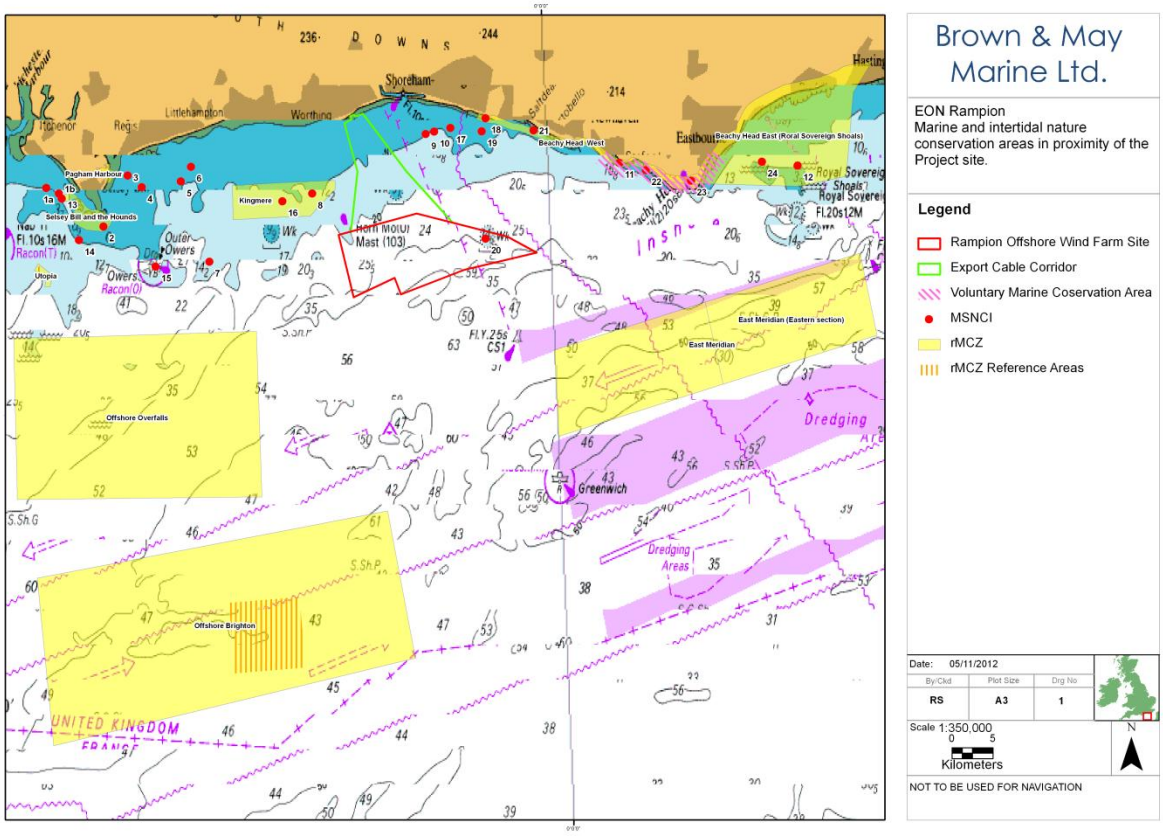



**Figure 18.5 Proposed Marine Conservation Zones and other conservation areas in proximity to the ROWF site.**

### *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.

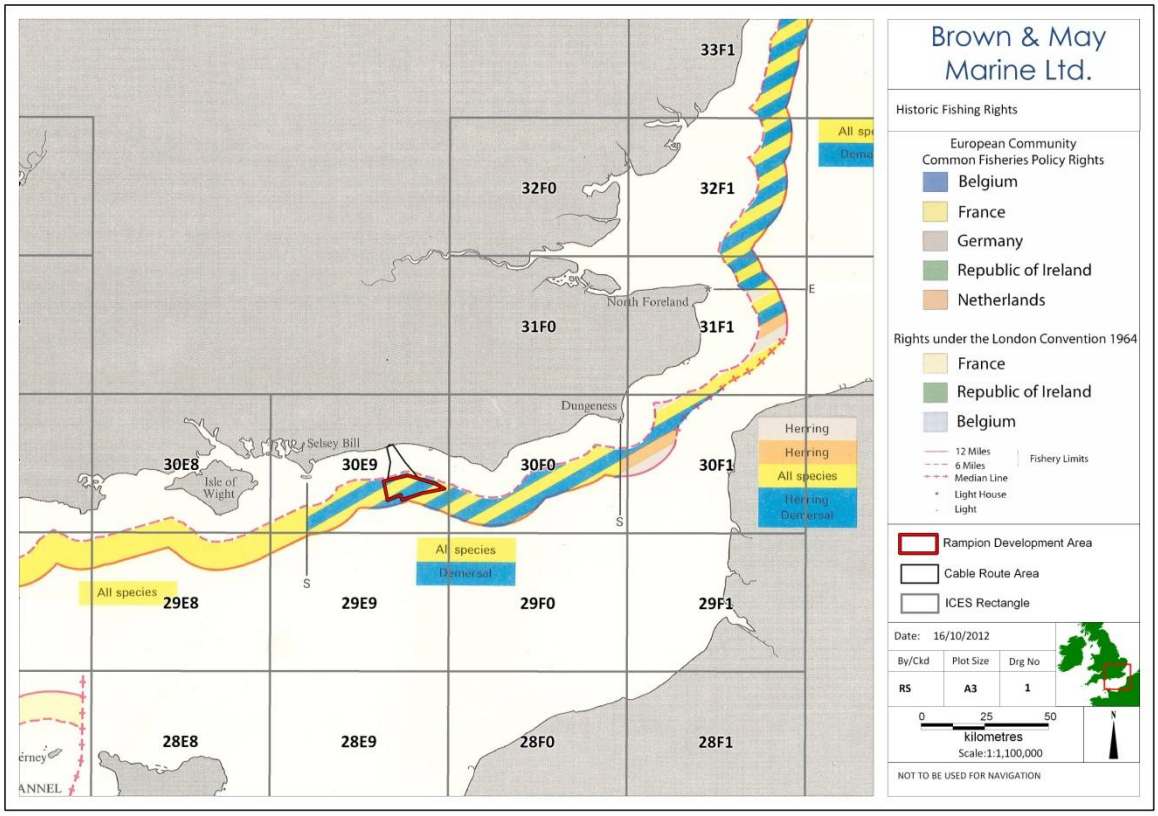



**Figure 18.6 Historic Fishing Rights of Non-UK Vessels in the Area Relevant to the Project Site (Source: Admiralty Chart Q6385)**

## 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.

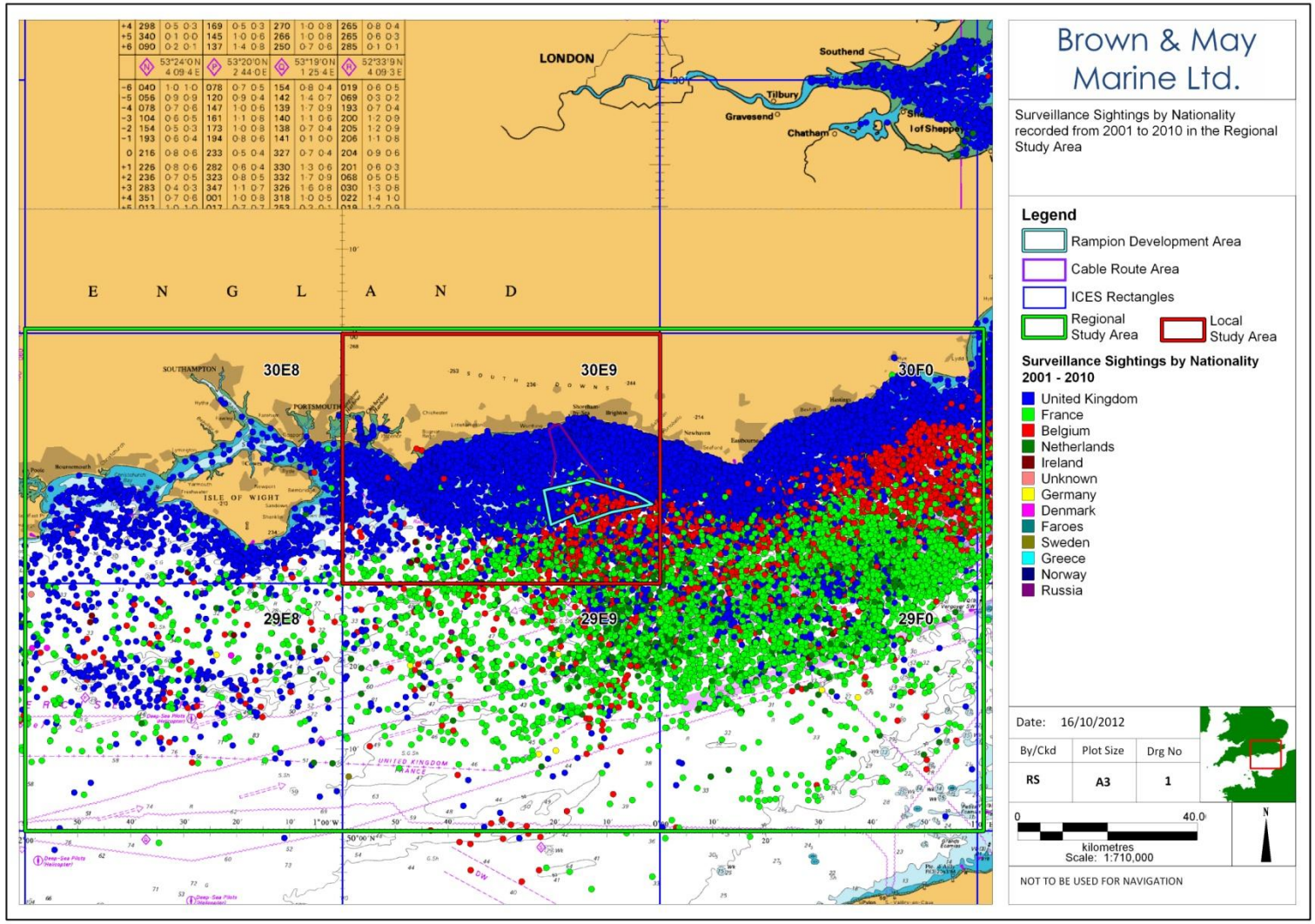



**Figure 18.7 Surveillance Sightings of all Fishing Vessels (2001-2010) by Nationality in the Regional Study Area (Source: MMO, 2011)**

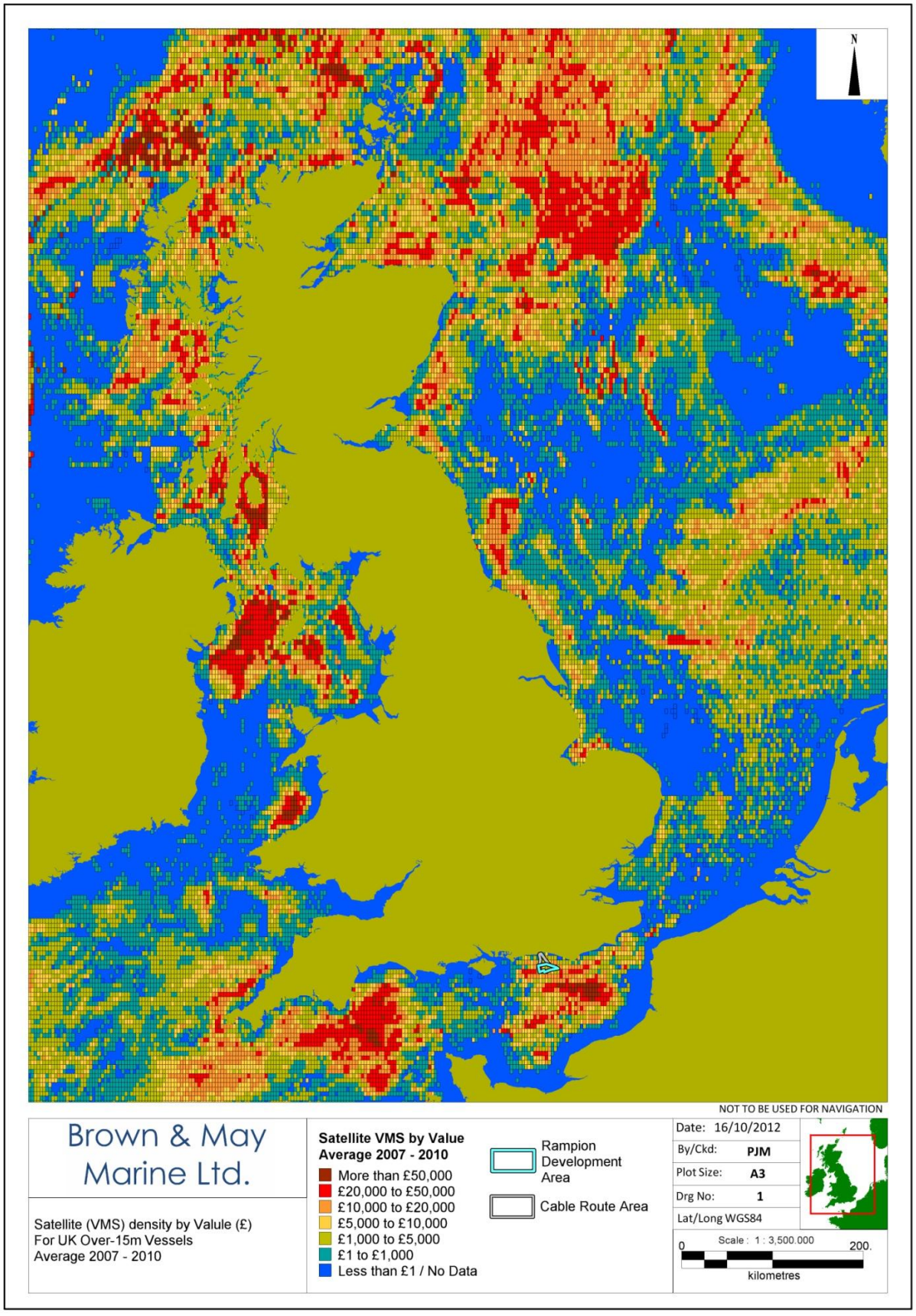



**Figure 18.8 Satellite Density of UK vessels in waters around the UK by Value (Average 2007-2010) (Source: MMO, 2010)**

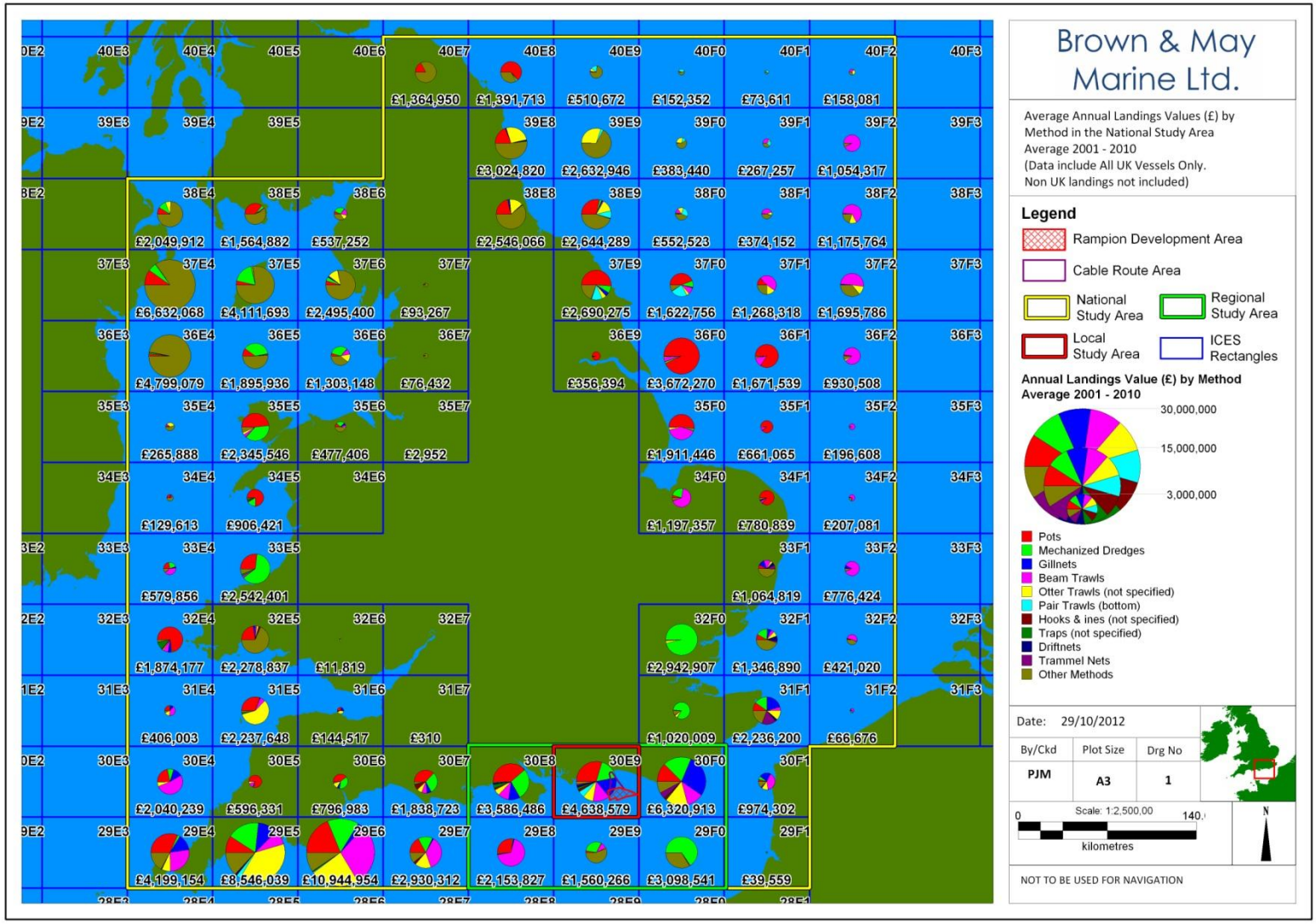



**Figure 18.9 Landings Values by Method (Average 2001-2010) in the National Study Area (Source: MMO, 2011)**

## 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.

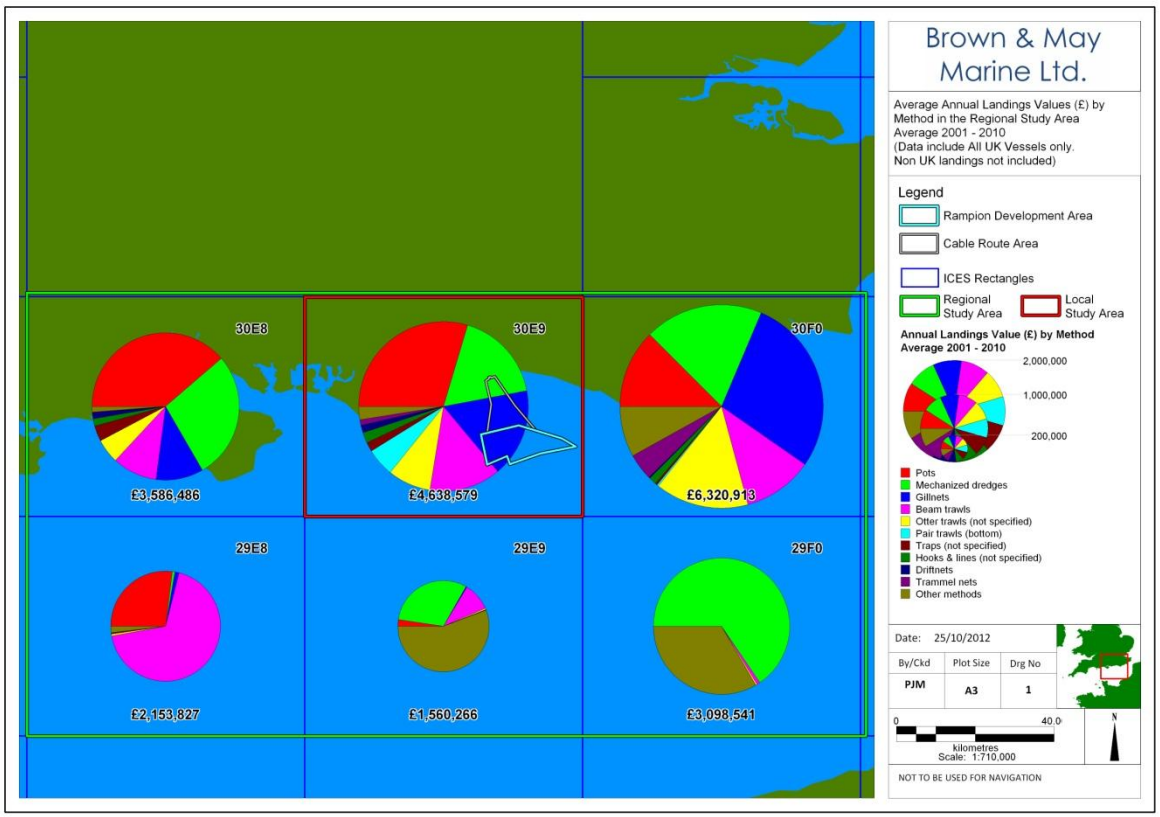



**Figure 18.10 Annual Landings Values (Average 2001-2010) by Method in the Regional Area (Source: MMO, 2011)**

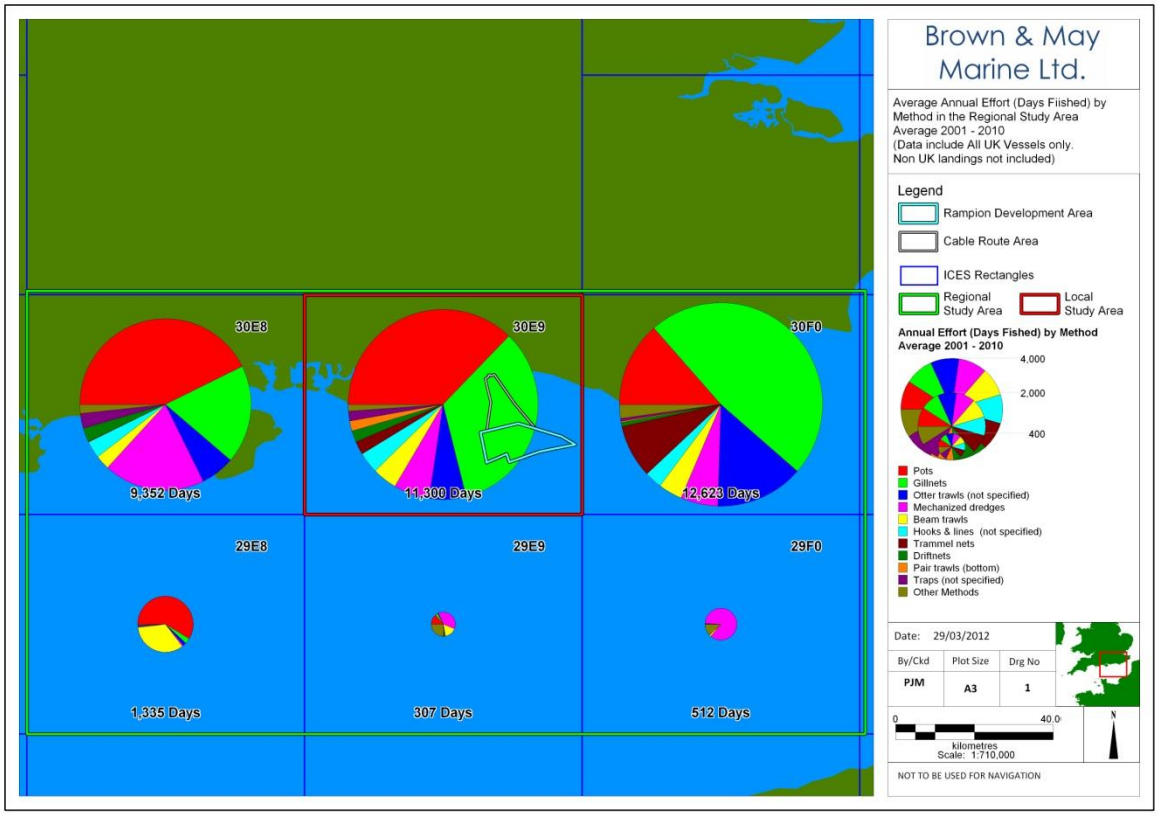



**Figure 18.11 Annual Effort (Days Fished) by Method (Average 2001-2010) in the Regional Area (Source: MMO, 2011)**

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.

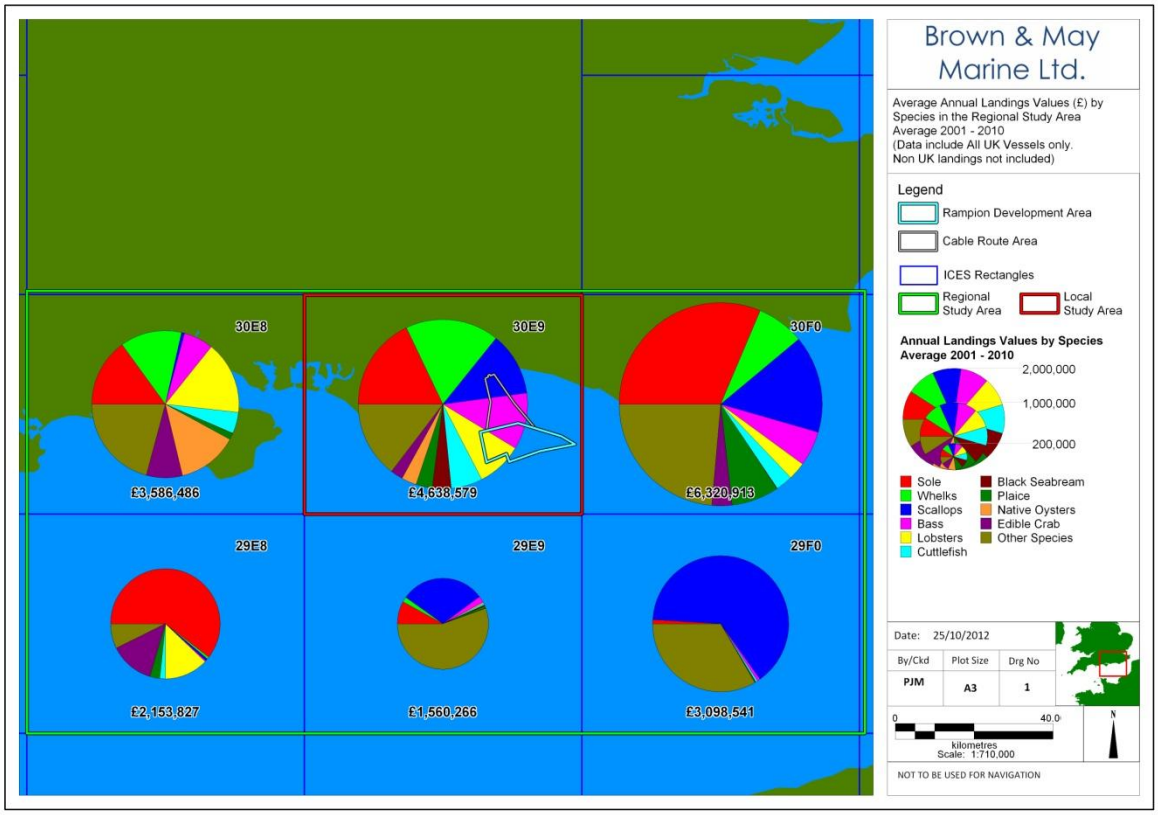



**Figure 18.12 Annual Landings Values (Average 2001-2010) by Species in the Regional Area (Source: MMO, 2011)**

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.

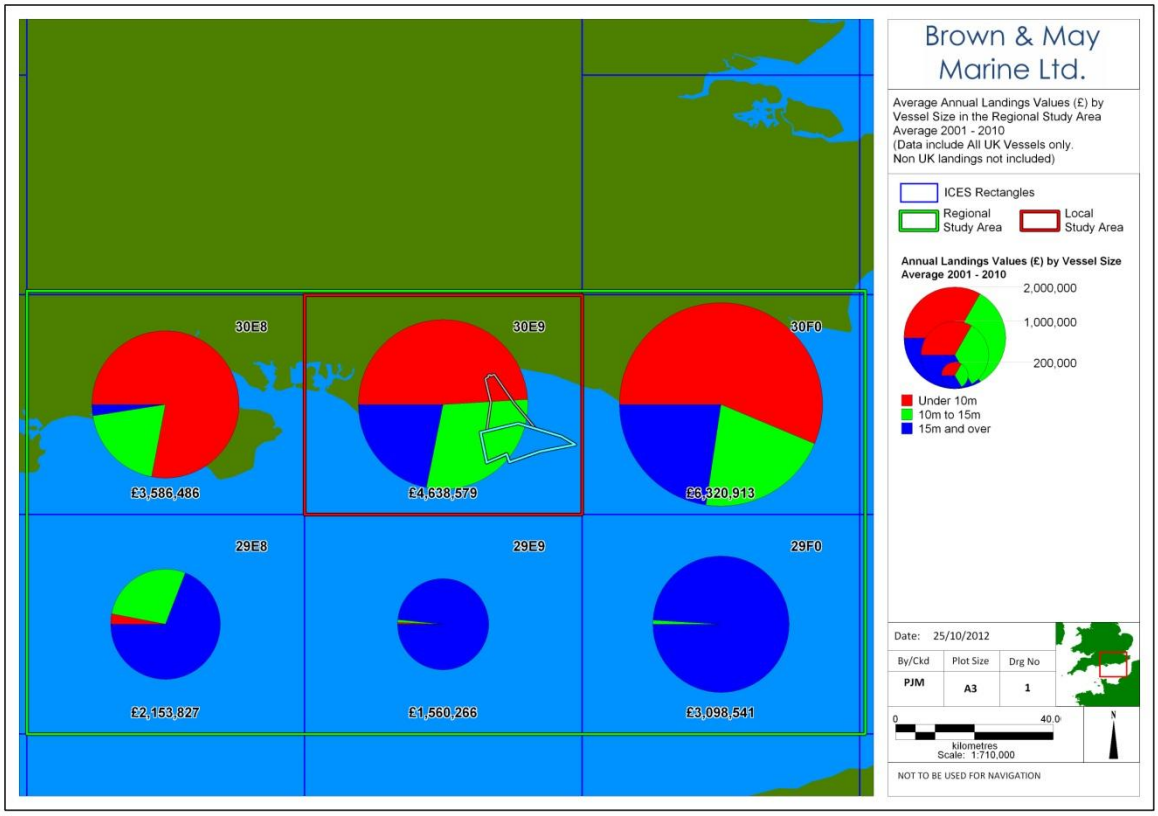



**Figure 18.13 Annual Landings Values (Average 2001-2010) by Vessel Category in the Regional Area (Source: MMO, 2011)**

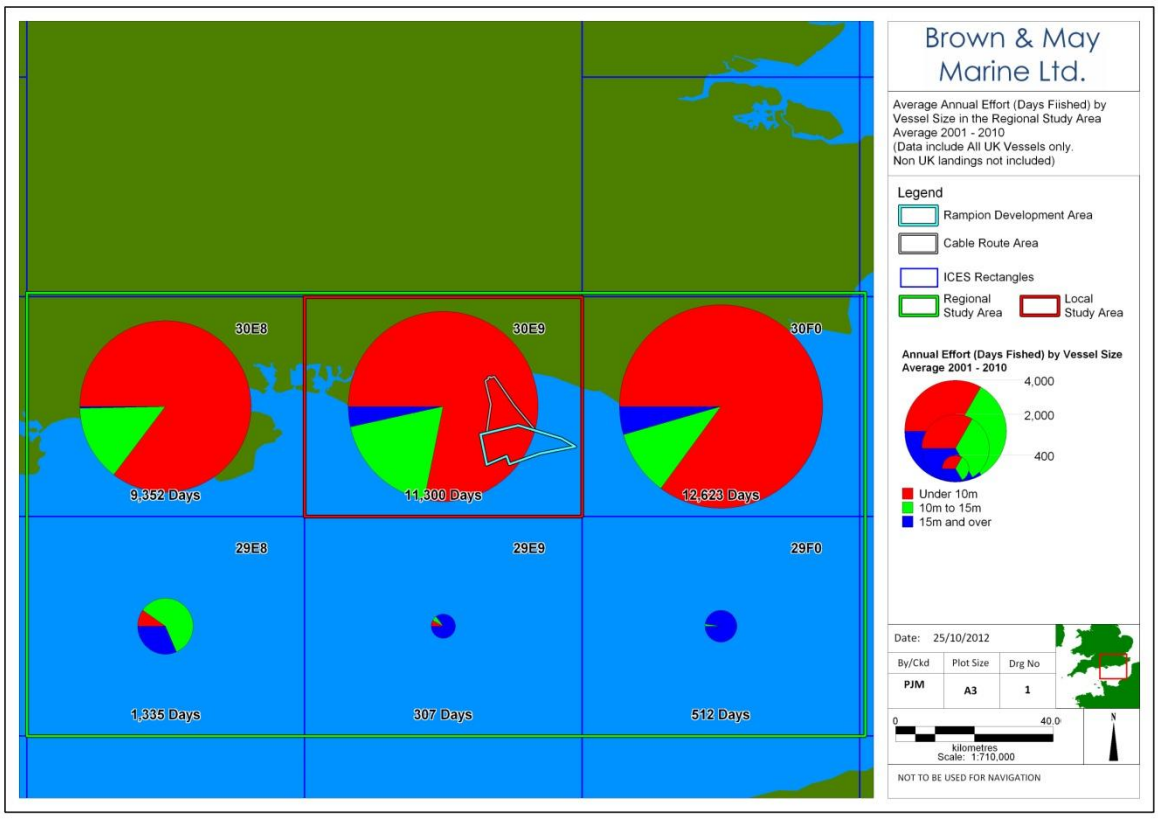
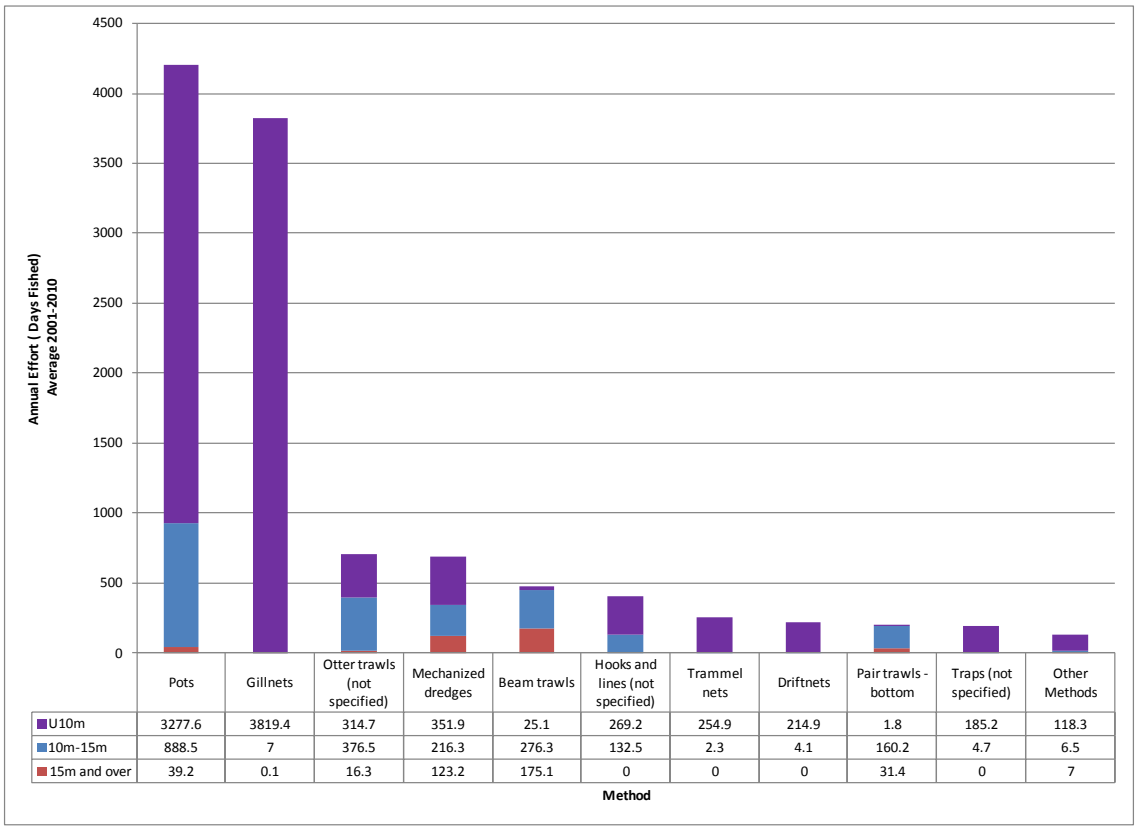



**Figure 18.14 Annual Effort (Days Fished) by Vessel Category (Average 2001-2010) in the Regional Area (Source: MMO, 2011)**




| | Pots | Gillnets | Otter trawls (not specified) | Mechanized dredges | Beam trawls | Hooks and lines (not specified) | Trammel nets | Driftnets | Pair trawls - bottom | Traps (not specified) | Other Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U10m | 3277.6 | 3819.4 | 314.7 | 351.9 | 25.1 | 269.2 | 254.9 | 214.9 | 1.8 | 185.2 | 118.3 |
| 10m-15m | 888.5 | 7 | 376.5 | 216.3 | 276.3 | 132.5 | 2.3 | 4.1 | 160.2 | 4.7 | 6.5 |
| 15m and over | 39.2 | 0.1 | 16.3 | 123.2 | 175.1 | 0 | 0 | 0 | 31.4 | 0 | 7 |

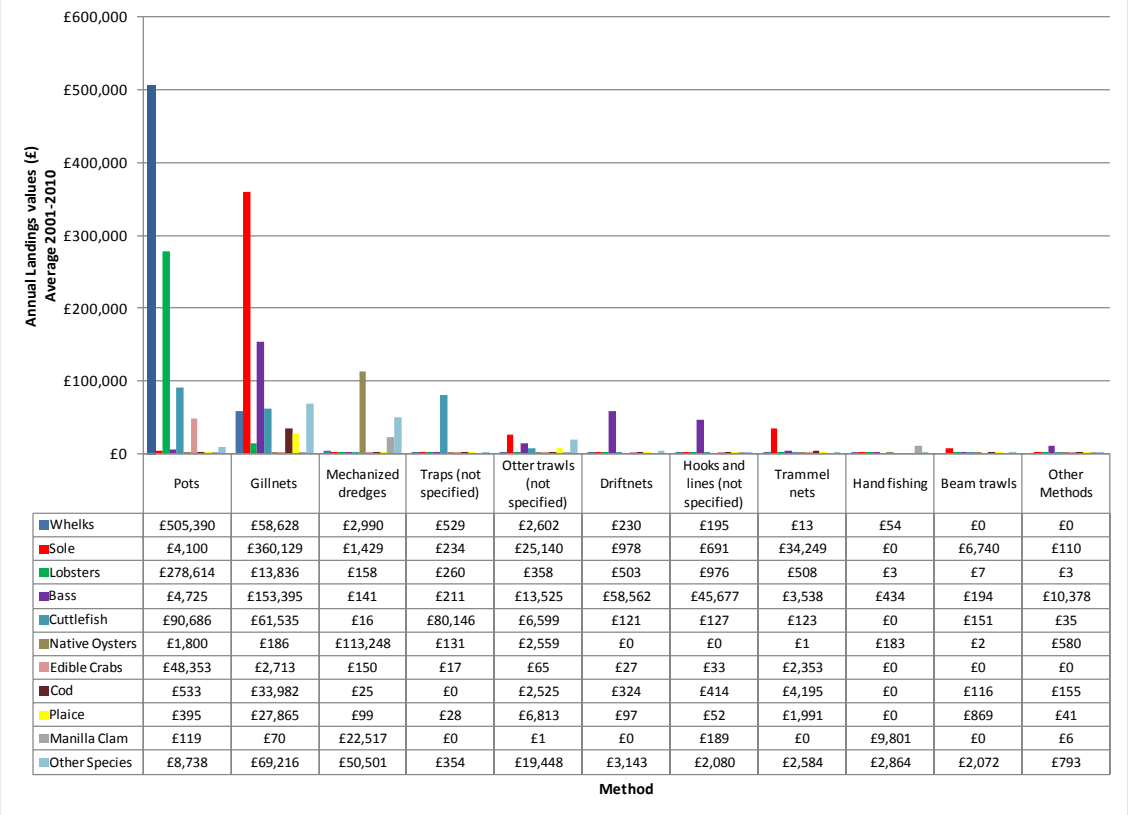
**Figure 18.15 Annual Effort (Days Fished) of Fishing Methods (Average 2001-2010) by Vessel Category in ICES Rectangle 30E9 (Source: MMO, 2011)**

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

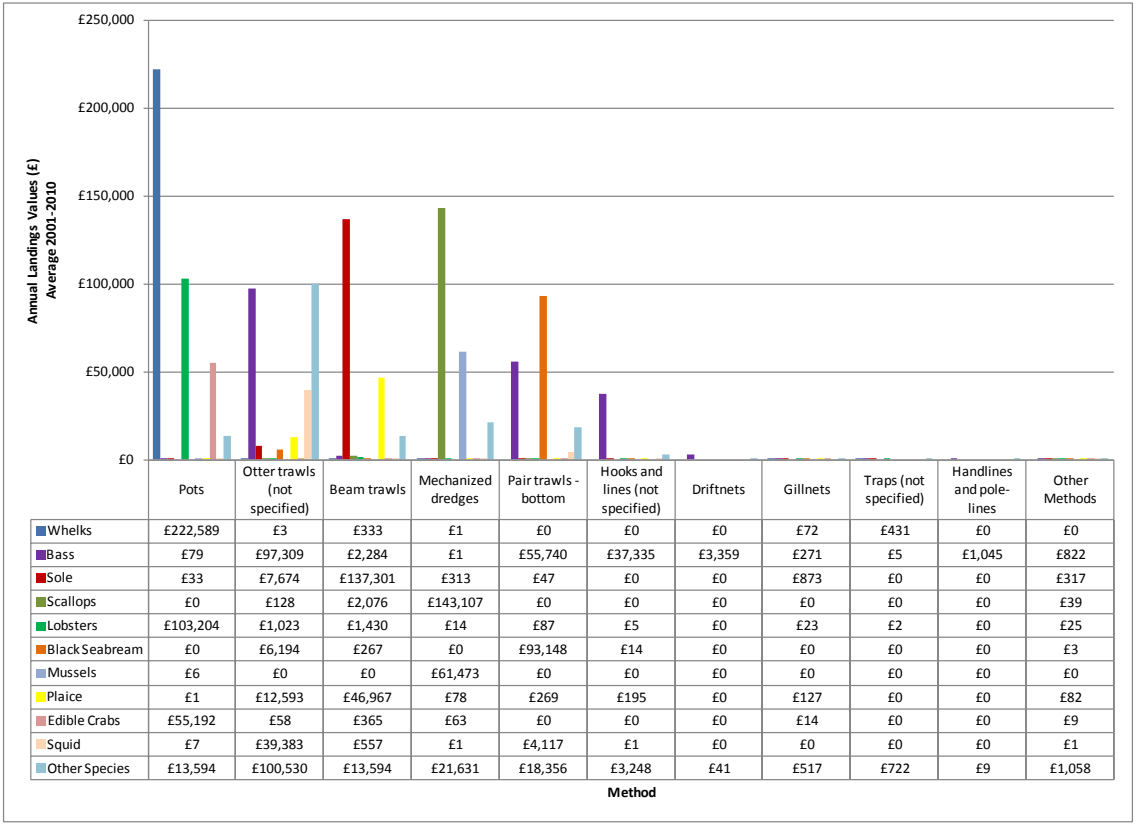
values for mechanised dredging is from the landing of scallops although significant values are also recorded for mussels. Mussel dredging is however to the west of the area under consideration (Pers. Comm, R.Clark 2012). As shown, with pair trawling, the target species are almost entirely bass and black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




| | Pots | Gillnets | Mechanized dredges | Traps (not specified) | Otter trawls (not specified) | Driftnets | Hooks and lines (not specified) | Trammel nets | Hand fishing | Beam trawls | Other Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Whelks | £505,390 | £58,628 | £2,990 | £529 | £2,602 | £230 | £195 | £13 | £54 | £0 | £0 |
| Sole | £4,100 | £360,129 | £1,429 | £234 | £25,140 | £978 | £691 | £34,249 | £0 | £6,740 | £110 |
| Lobsters | £278,614 | £13,836 | £158 | £260 | £358 | £503 | £976 | £508 | £3 | £7 | £3 |
| Bass | £4,725 | £153,395 | £141 | £211 | £13,525 | £58,562 | £45,677 | £3,538 | £434 | £194 | £10,378 |
| Cuttlefish | £90,686 | £61,535 | £16 | £80,146 | £6,599 | £121 | £127 | £123 | £0 | £151 | £35 |
| Native Oysters | £1,800 | £186 | £113,248 | £131 | £2,559 | £0 | £0 | £1 | £183 | £2 | £580 |
| Edible Crabs | £48,353 | £2,713 | £150 | £17 | £65 | £27 | £33 | £2,353 | £0 | £0 | £0 |
| Cod | £533 | £33,982 | £25 | £0 | £2,525 | £324 | £414 | £4,195 | £0 | £116 | £155 |
| Plaice | £395 | £27,865 | £99 | £28 | £6,813 | £97 | £52 | £1,991 | £0 | £869 | £41 |
| Manilla Clam | £119 | £70 | £22,517 | £0 | £1 | £0 | £189 | £0 | £9,801 | £0 | £6 |
| Other Species | £8,738 | £69,216 | £50,501 | £354 | £19,448 | £3,143 | £2,080 | £2,584 | £2,864 | £2,072 | £793 |

Method

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

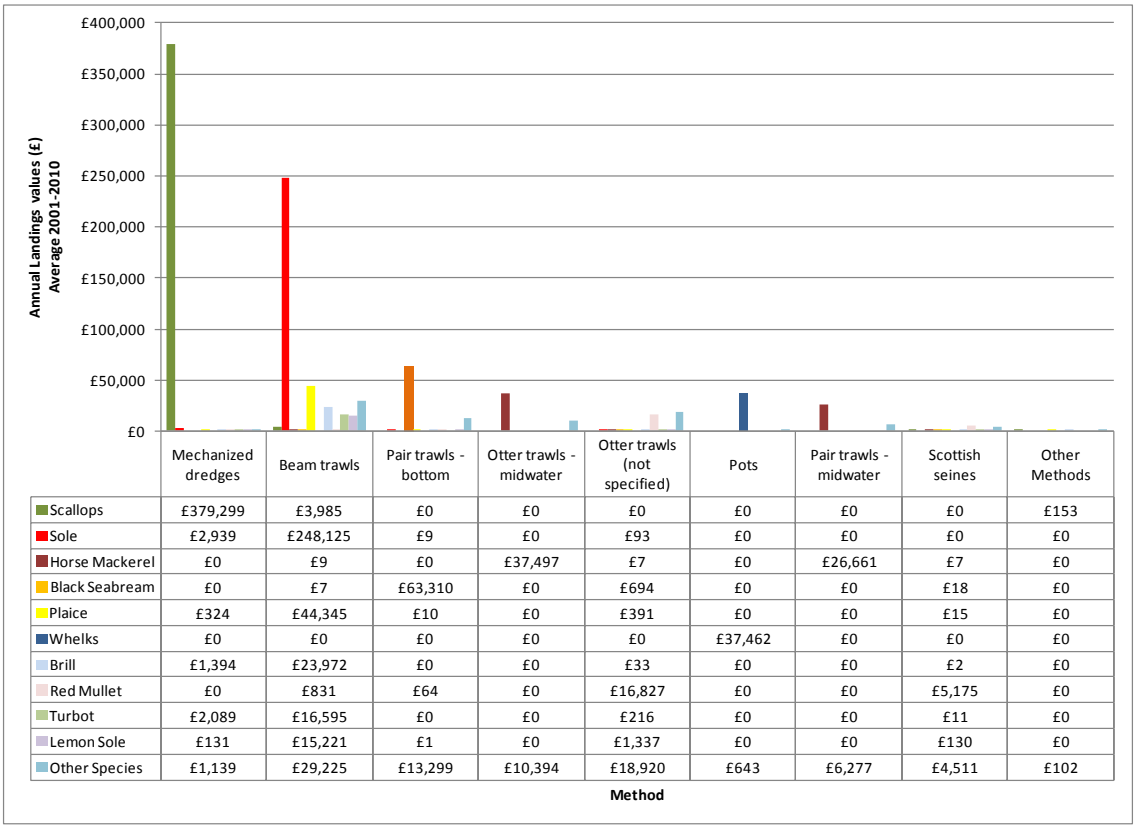



| | Pots | Otter trawls (not specified) | Beam trawls | Mechanized dredges | Pair trawls - bottom | Hooks and lines (not specified) | Driftnets | Gillnets | Traps (not specified) | Handlines and pole-lines | Other Methods |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Whelks | £222,589 | £3 | £333 | £1 | £0 | £0 | £0 | £72 | £431 | £0 | £0 |
| Bass | £79 | £97,309 | £2,284 | £1 | £55,740 | £37,335 | £3,359 | £271 | £5 | £1,045 | £822 |
| Sole | £33 | £7,674 | £137,301 | £313 | £47 | £0 | £0 | £873 | £0 | £0 | £317 |
| Scallops | £0 | £128 | £2,076 | £143,107 | £0 | £0 | £0 | £0 | £0 | £0 | £39 |
| Lobsters | £103,204 | £1,023 | £1,430 | £14 | £87 | £5 | £0 | £23 | £2 | £0 | £25 |
| Black Seabream | £0 | £6,194 | £267 | £0 | £93,148 | £14 | £0 | £0 | £0 | £0 | £3 |
| Mussels | £6 | £0 | £0 | £61,473 | £0 | £0 | £0 | £0 | £0 | £0 | £0 |
| Plaice | £1 | £12,593 | £46,967 | £78 | £269 | £195 | £0 | £127 | £0 | £0 | £82 |
| Edible Crabs | £55,192 | £58 | £365 | £63 | £0 | £0 | £0 | £14 | £0 | £0 | £9 |
| Squid | £7 | £39,383 | £557 | £1 | £4,117 | £1 | £0 | £0 | £0 | £0 | £1 |
| Other Species | £13,594 | £100,530 | £13,594 | £21,631 | £18,356 | £3,248 | £41 | £517 | £722 | £9 | £1,058 |

Method

**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.




| | Mechanized dredges | Beam trawls | Pair trawls - bottom | Otter trawls - midwater | Otter trawls (not specified) | Pots | Pair trawls - midwater | Scottish seines | Other Methods |
|---|---|---|---|---|---|---|---|---|---|
| Scallops | £379,299 | £3,985 | £0 | £0 | £0 | £0 | £0 | £0 | £153 |
| Sole | £2,939 | £248,125 | £9 | £0 | £93 | £0 | £0 | £0 | £0 |
| Horse Mackerel | £0 | £9 | £0 | £37,497 | £7 | £0 | £26,661 | £7 | £0 |
| Black Seabream | £0 | £7 | £63,310 | £0 | £694 | £0 | £0 | £18 | £0 |
| Plaice | £324 | £44,345 | £10 | £0 | £391 | £0 | £0 | £15 | £0 |
| Whelks | £0 | £0 | £0 | £0 | £0 | £37,462 | £0 | £0 | £0 |
| Brill | £1,394 | £23,972 | £0 | £0 | £33 | £0 | £0 | £2 | £0 |
| Red Mullet | £0 | £831 | £64 | £0 | £16,827 | £0 | £0 | £5,175 | £0 |
| Turbot | £2,089 | £16,595 | £0 | £0 | £216 | £0 | £0 | £11 | £0 |
| Lemon Sole | £131 | £15,221 | £1 | £0 | £1,337 | £0 | £0 | £130 | £0 |
| Other Species | £1,139 | £29,225 | £13,299 | £10,394 | £18,920 | £643 | £6,277 | £4,511 | £102 |

Method

**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.

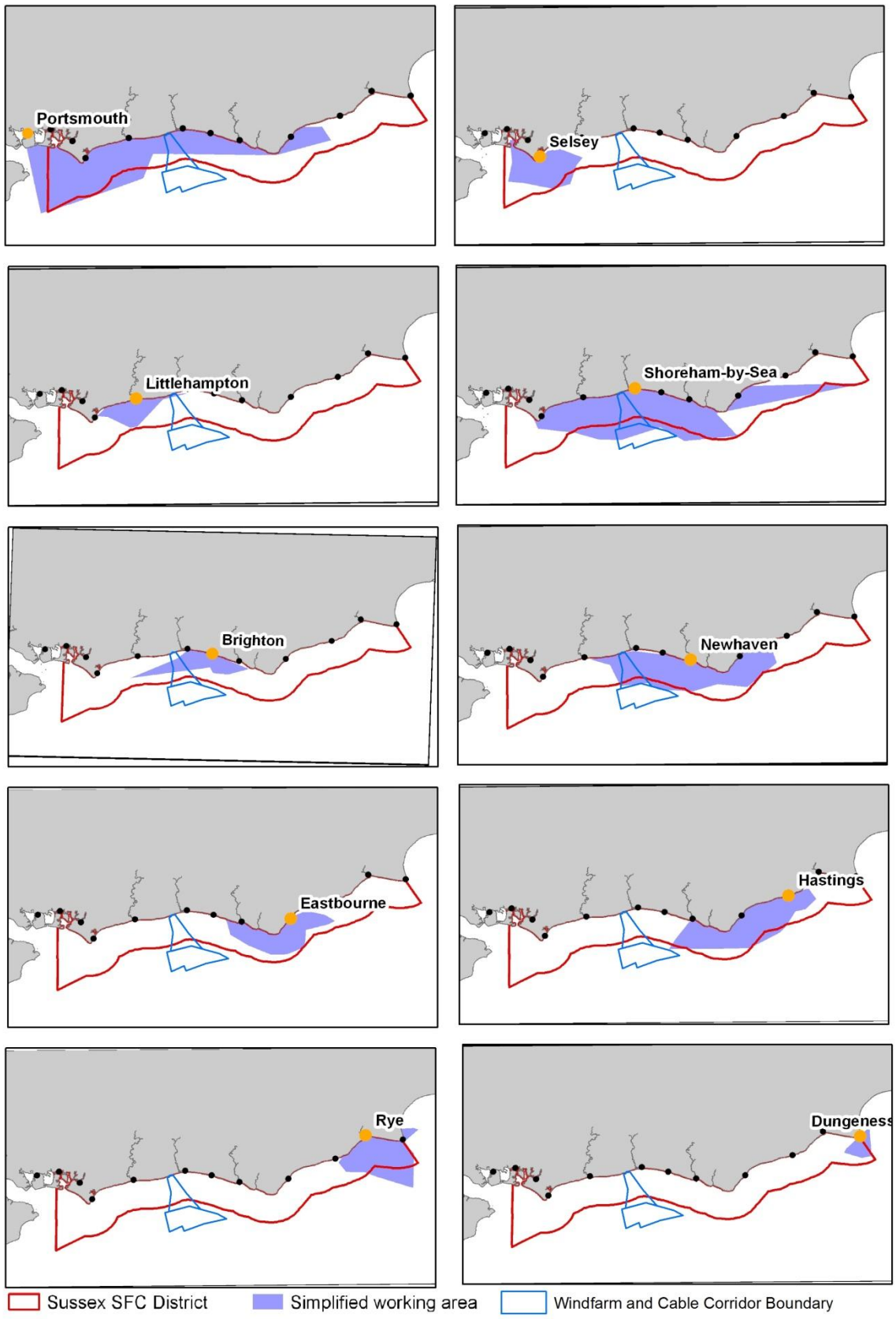
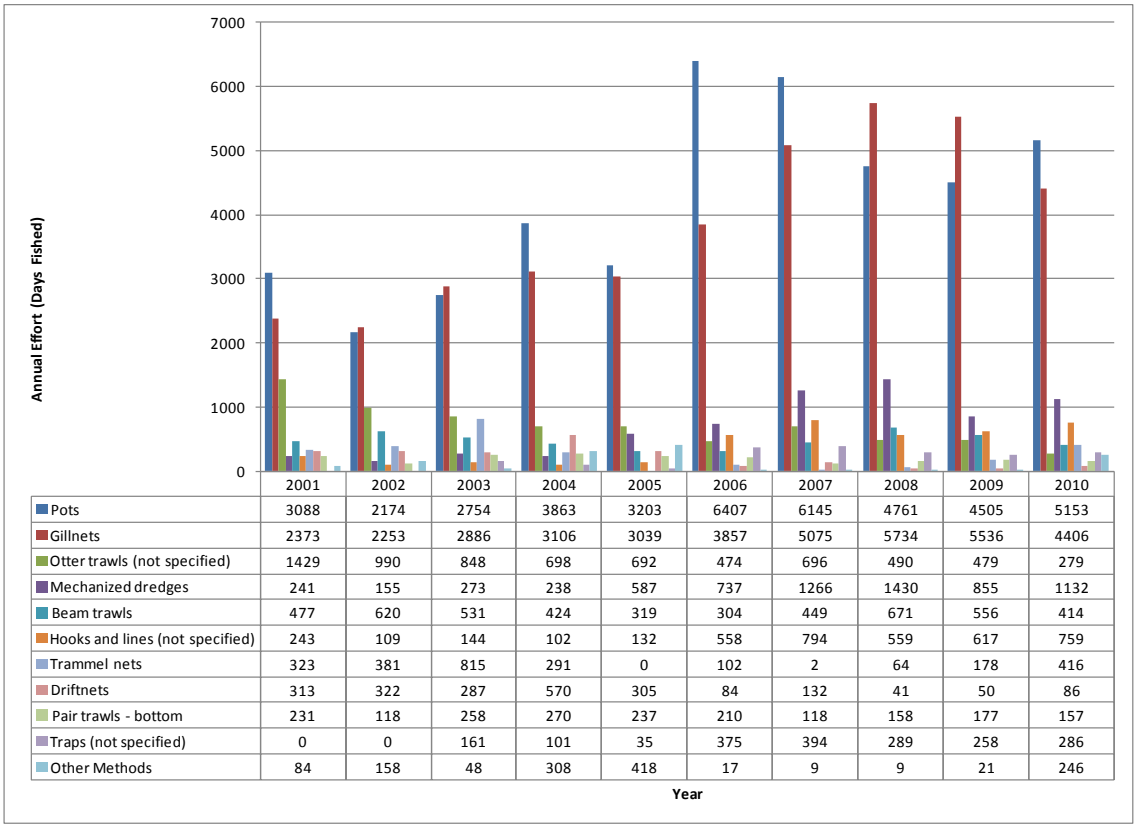



**Figure 18.19 Zone of Influence for Vessel Home Ports within the SIFCA District in Relation to the ROWF and Associated Cable Route (Source: Vanstaen et al., 2010)**

### *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.




| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| Pots | 3088 | 2174 | 2754 | 3863 | 3203 | 6407 | 6145 | 4761 | 4505 | 5153 |
| Gillnets | 2373 | 2253 | 2886 | 3106 | 3039 | 3857 | 5075 | 5734 | 5536 | 4406 |
| Otter trawls (not specified) | 1429 | 990 | 848 | 698 | 692 | 474 | 696 | 490 | 479 | 279 |
| Mechanized dredges | 241 | 155 | 273 | 238 | 587 | 737 | 1266 | 1430 | 855 | 1132 |
| Beam trawls | 477 | 620 | 531 | 424 | 319 | 304 | 449 | 671 | 556 | 414 |
| Hooks and lines (not specified) | 243 | 109 | 144 | 102 | 132 | 558 | 794 | 559 | 617 | 759 |
| Trammel nets | 323 | 381 | 815 | 291 | 0 | 102 | 2 | 64 | 178 | 416 |
| Driftnets | 313 | 322 | 287 | 570 | 305 | 84 | 132 | 41 | 50 | 86 |
| Pair trawls - bottom | 231 | 118 | 258 | 270 | 237 | 210 | 118 | 158 | 177 | 157 |
| Traps (not specified) | 0 | 0 | 161 | 101 | 35 | 375 | 394 | 289 | 258 | 286 |
| Other Methods | 84 | 158 | 48 | 308 | 418 | 17 | 9 | 9 | 21 | 246 |

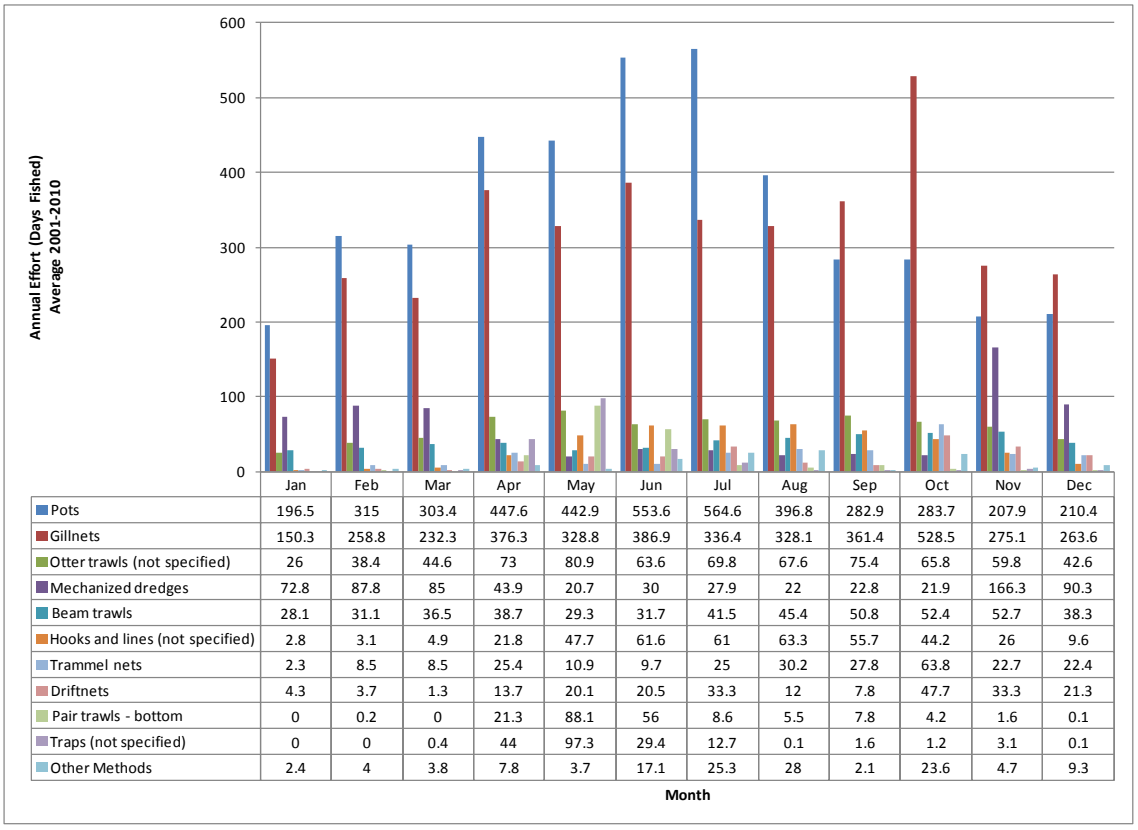
**Figure 18.20 Annual Effort (Days Fished) by Fishing Method (all vessel length categories) in ICES Rectangle 30E9 (Source: MMO, 2011)**

### *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.




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pots | 196.5 | 315 | 303.4 | 447.6 | 442.9 | 553.6 | 564.6 | 396.8 | 282.9 | 283.7 | 207.9 | 210.4 |
| Gillnets | 150.3 | 258.8 | 232.3 | 376.3 | 328.8 | 386.9 | 336.4 | 328.1 | 361.4 | 528.5 | 275.1 | 263.6 |
| Otter trawls (not specified) | 26 | 38.4 | 44.6 | 73 | 80.9 | 63.6 | 69.8 | 67.6 | 75.4 | 65.8 | 59.8 | 42.6 |
| Mechanized dredges | 72.8 | 87.8 | 85 | 43.9 | 20.7 | 30 | 27.9 | 22 | 22.8 | 21.9 | 166.3 | 90.3 |
| Beam trawls | 28.1 | 31.1 | 36.5 | 38.7 | 29.3 | 31.7 | 41.5 | 45.4 | 50.8 | 52.4 | 52.7 | 38.3 |
| Hooks and lines (not specified) | 2.8 | 3.1 | 4.9 | 21.8 | 47.7 | 61.6 | 61 | 63.3 | 55.7 | 44.2 | 26 | 9.6 |
| Trammel nets | 2.3 | 8.5 | 8.5 | 25.4 | 10.9 | 9.7 | 25 | 30.2 | 27.8 | 63.8 | 22.7 | 22.4 |
| Driftnets | 4.3 | 3.7 | 1.3 | 13.7 | 20.1 | 20.5 | 33.3 | 12 | 7.8 | 47.7 | 33.3 | 21.3 |
| Pair trawls - bottom | 0 | 0.2 | 0 | 21.3 | 88.1 | 56 | 8.6 | 5.5 | 7.8 | 4.2 | 1.6 | 0.1 |
| Traps (not specified) | 0 | 0 | 0.4 | 44 | 97.3 | 29.4 | 12.7 | 0.1 | 1.6 | 1.2 | 3.1 | 0.1 |
| Other Methods | 2.4 | 4 | 3.8 | 7.8 | 3.7 | 17.1 | 25.3 | 28 | 2.1 | 23.6 | 4.7 | 9.3 |

**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 1/16$^{th}$ 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.

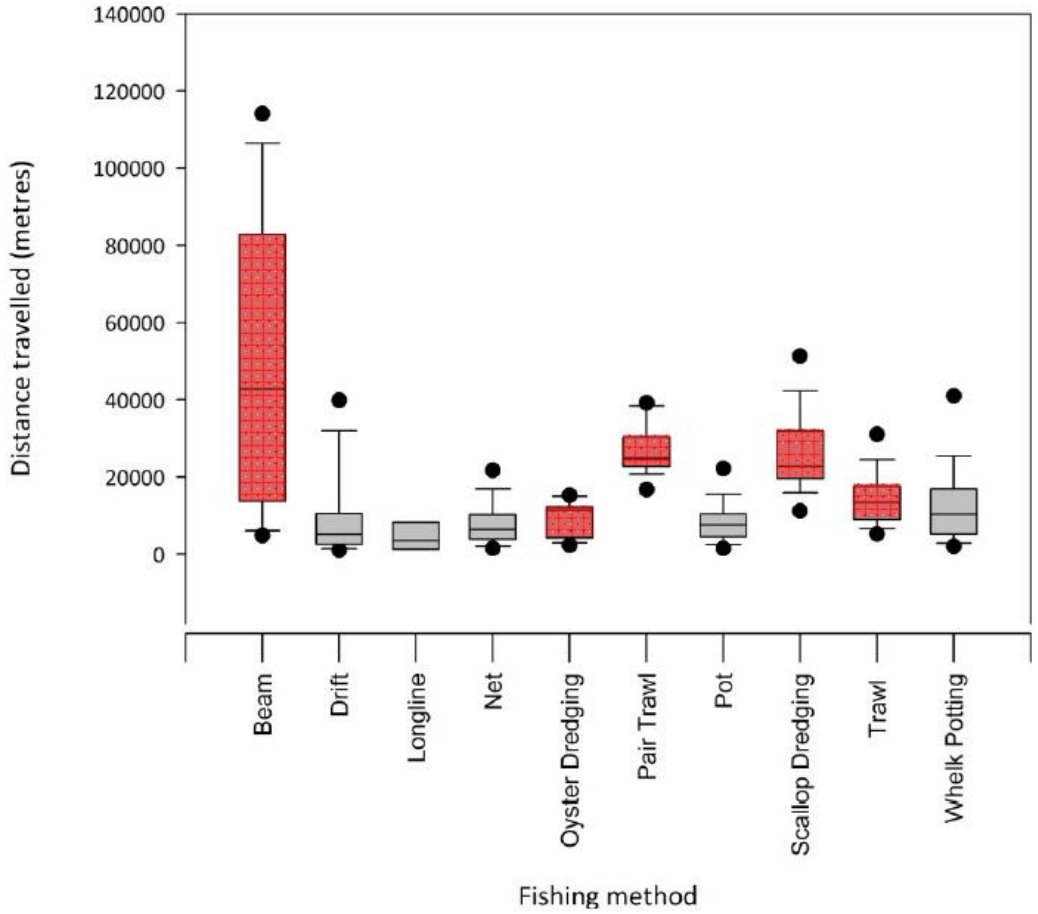



**Figure 18.22 Box Plot of Distance travelled (Metres) from Home Ports by Sectors (Red represents Mobile Gear, Grey represents Static Gear)(Source: Vanstaen et al. 2010)**

### *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.

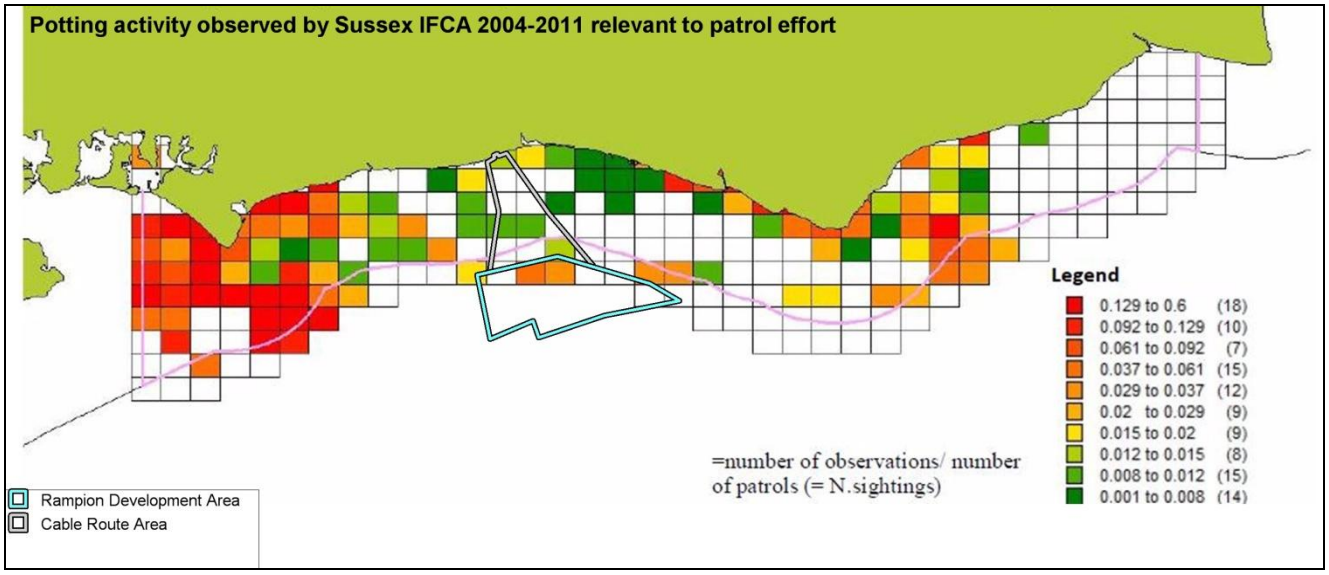



**Figure 18.23 Potting Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

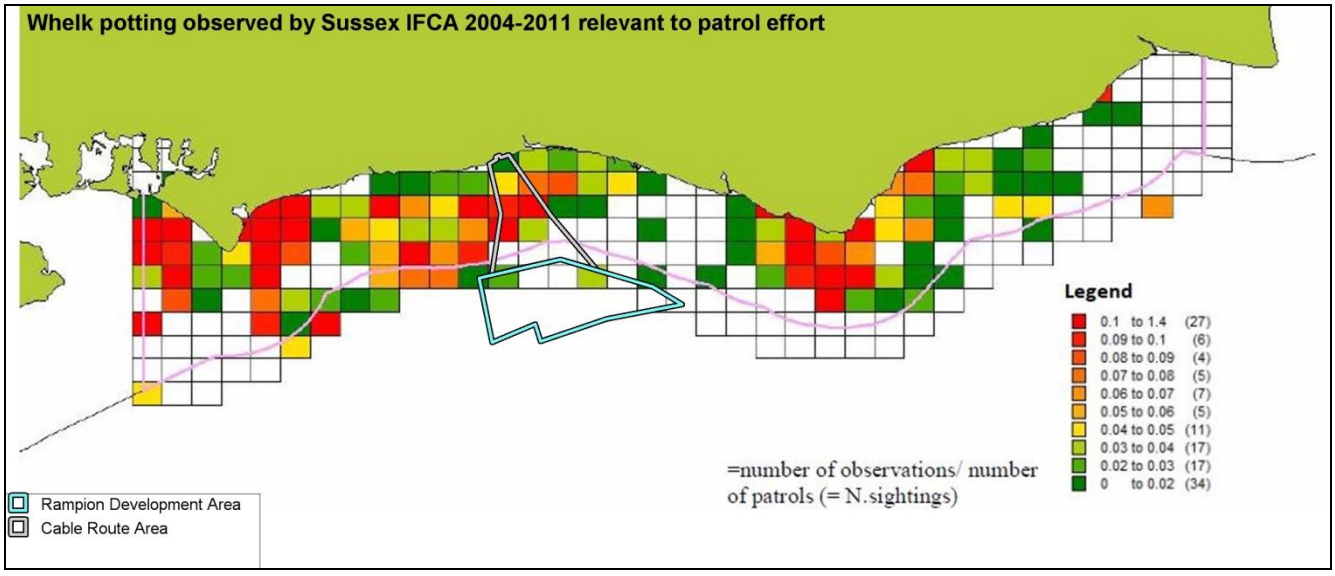



**Figure 18.24 Whelk Potting Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

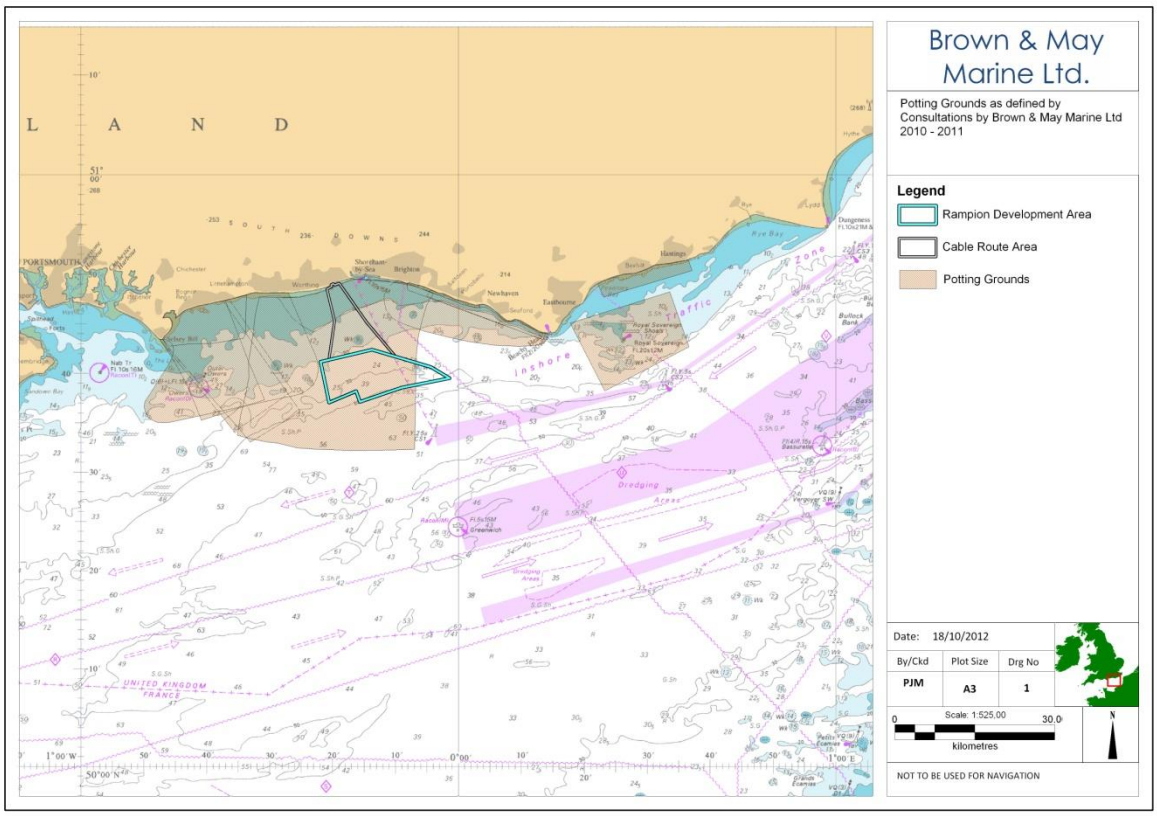



**Figure 18.25 Crab and Lobster Potting Grounds as Defined from Consultation 2010-2011 (Source: BMM)**

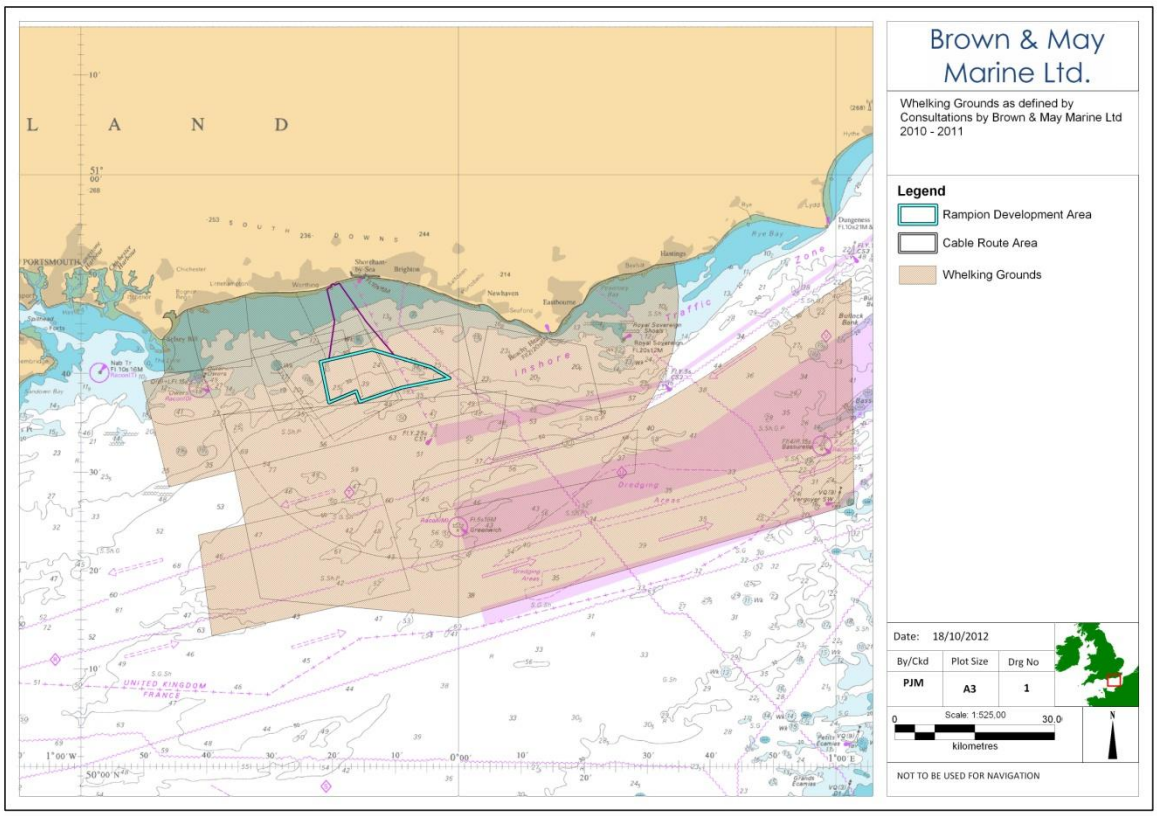



**Figure 18.26 Whelk Fishing Grounds as Defined from Consultation 2010-2011 (Source: BMM)**

### *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).

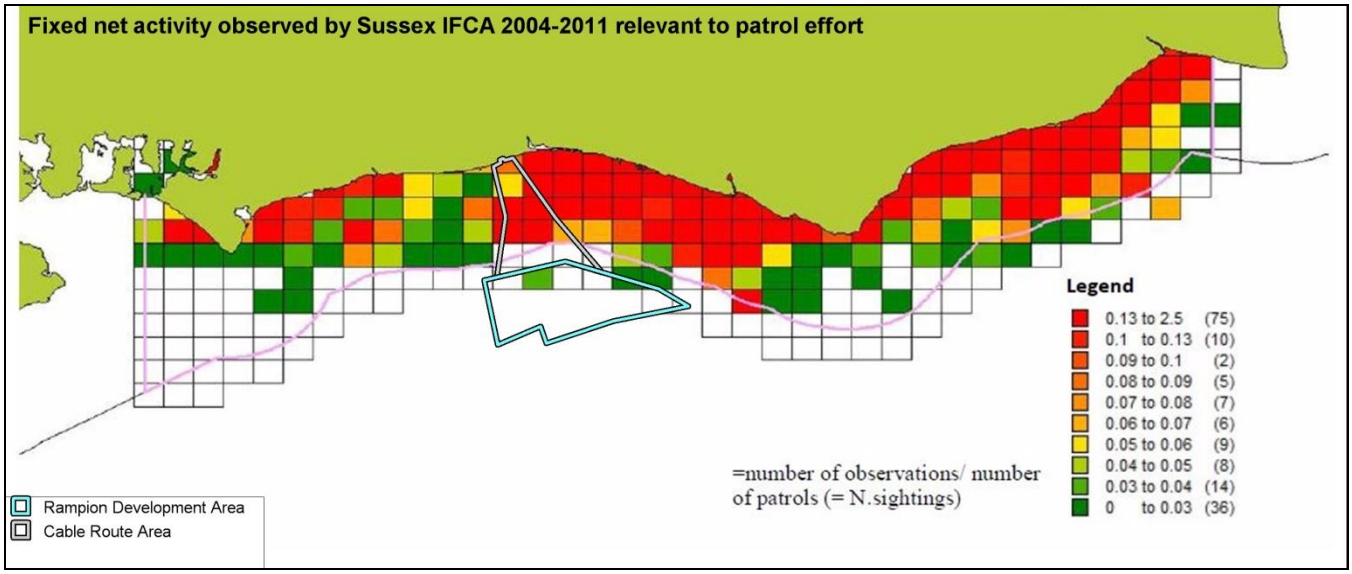



**Figure 18.27 Fixed Netting Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

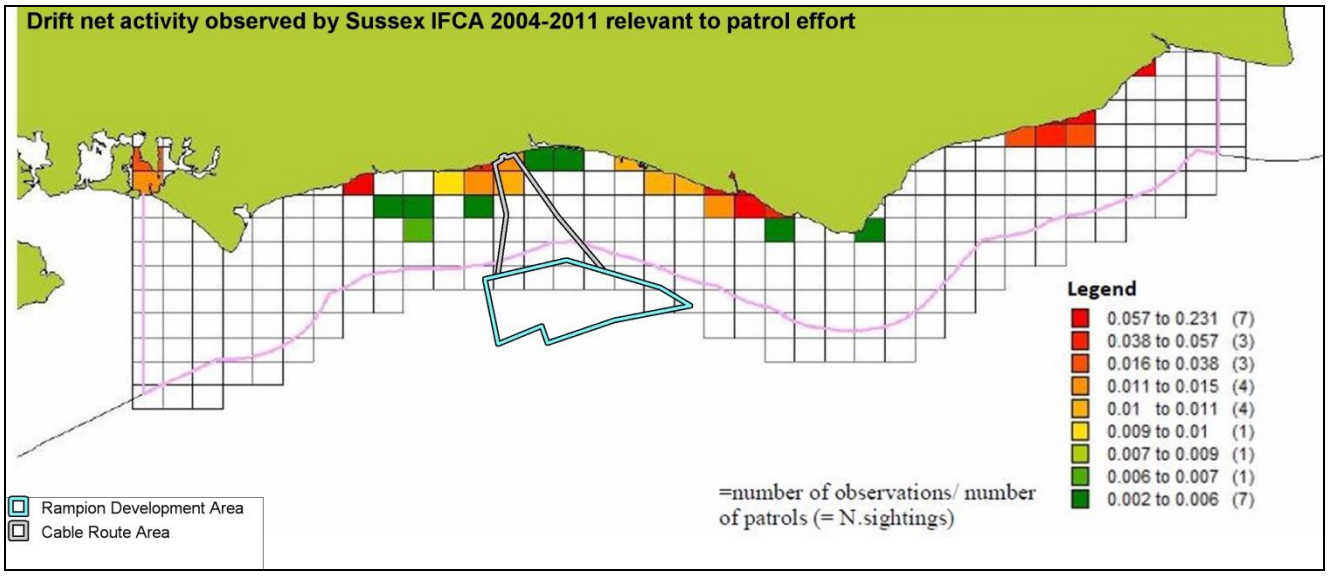



**Figure 18.28 Drift Netting Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

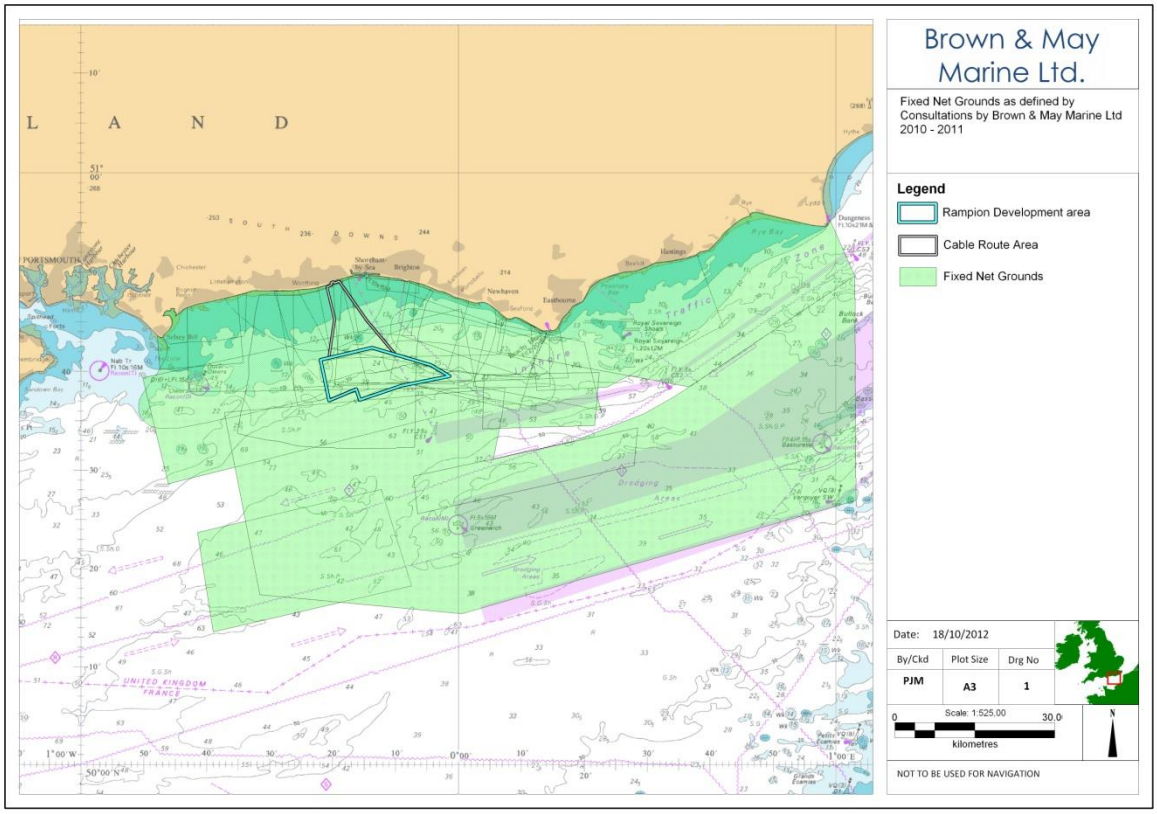



**Figure 18.29 Principal Fixed Net Grounds as defined through Consultation 2010-2011 (Source: BMM)**

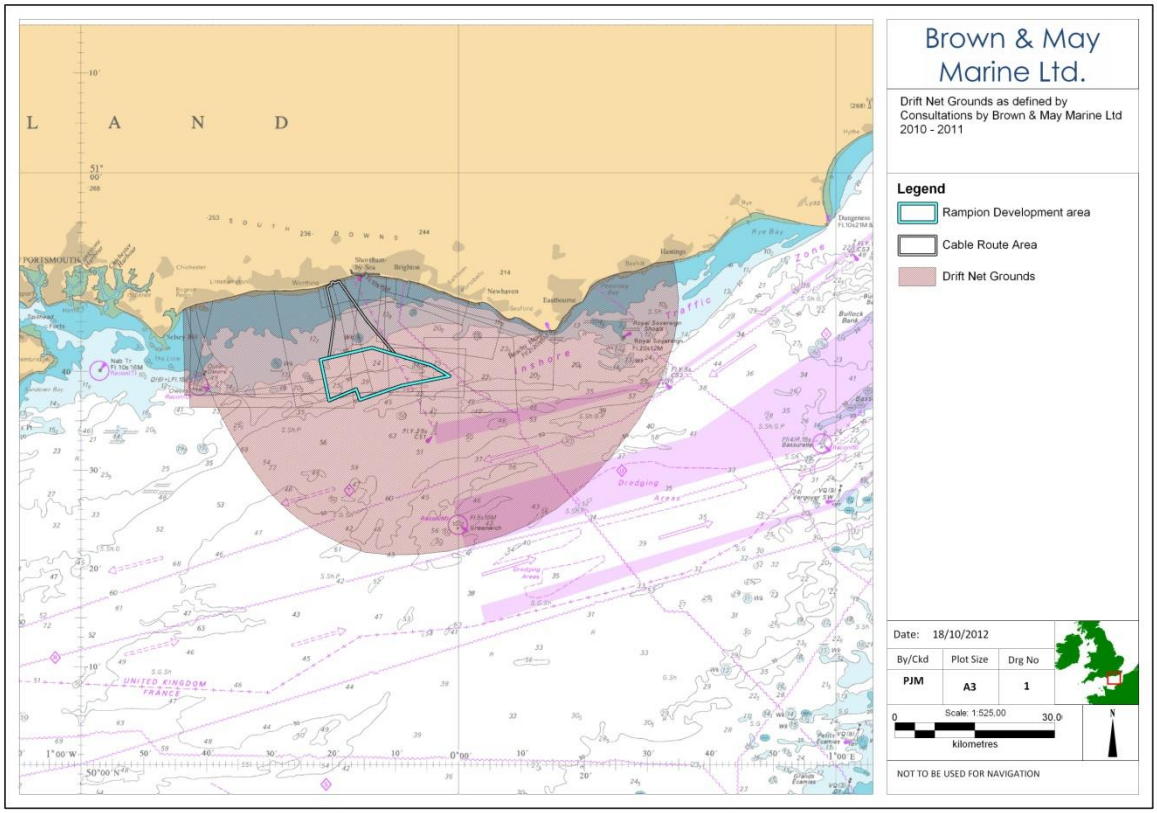



**Figure 18.30 Principal Drift Net Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)**

### *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.

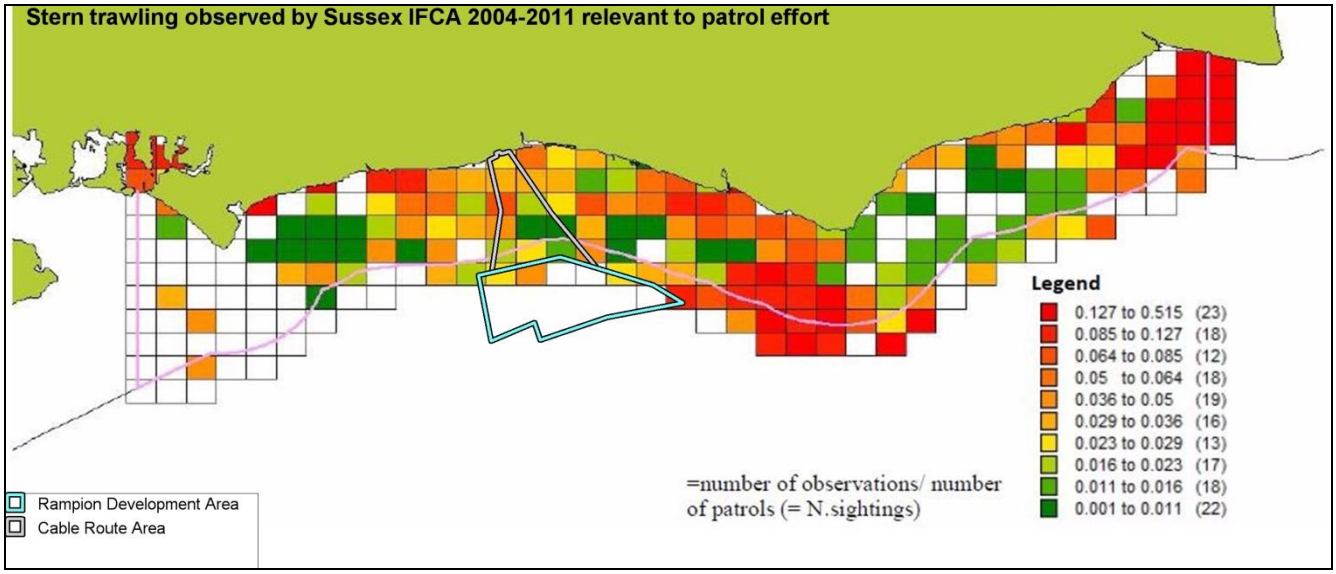



**Figure 18.31 Otter Trawling Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

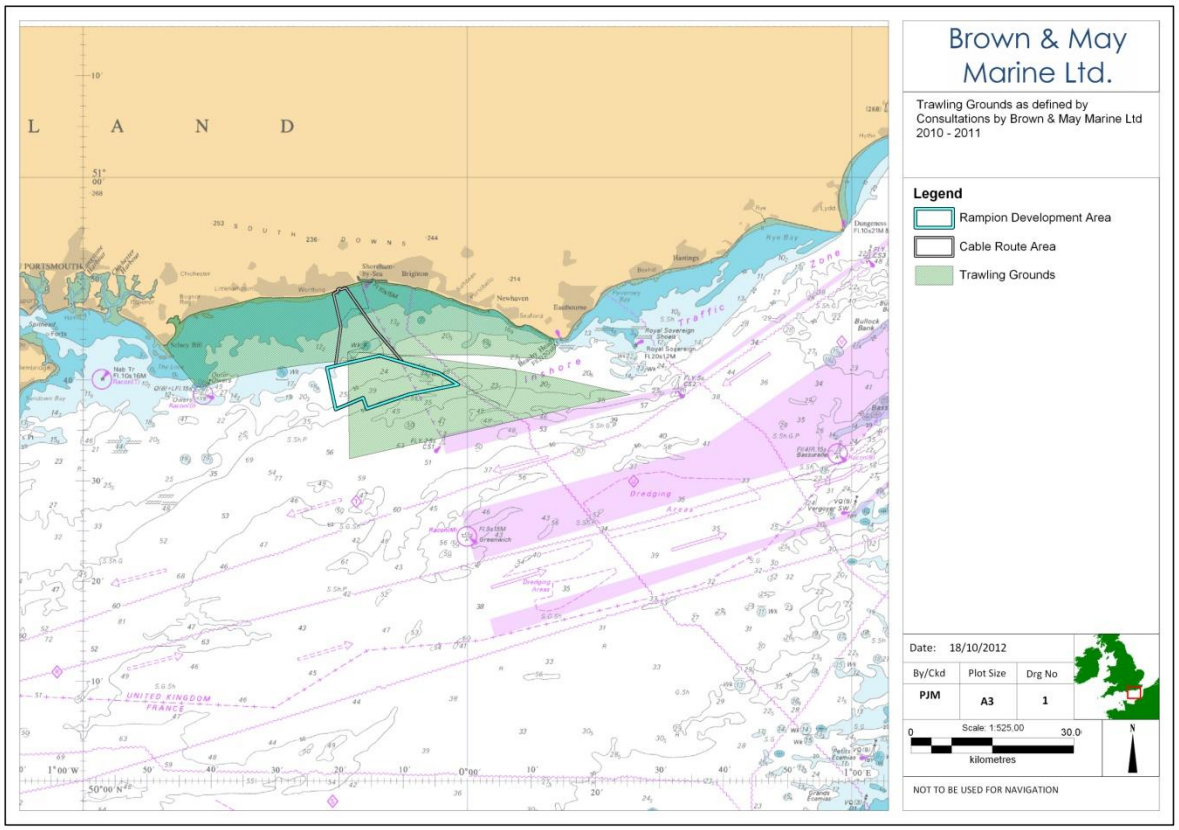



**Figure 18.32 Otter Trawling Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)**

### *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 in shown in Figure 18.35, which has been produced from observation of the GPS plotter of the Shoreham based trawler/scalloper “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.

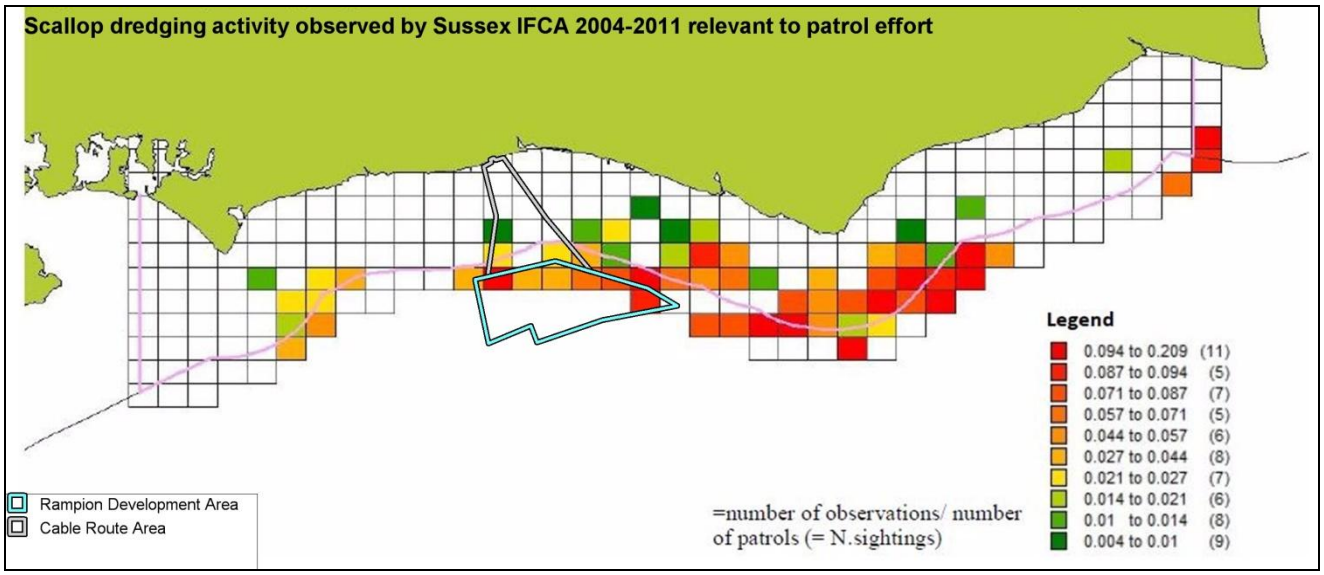



**Figure 18.33 Scallop Dredging Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

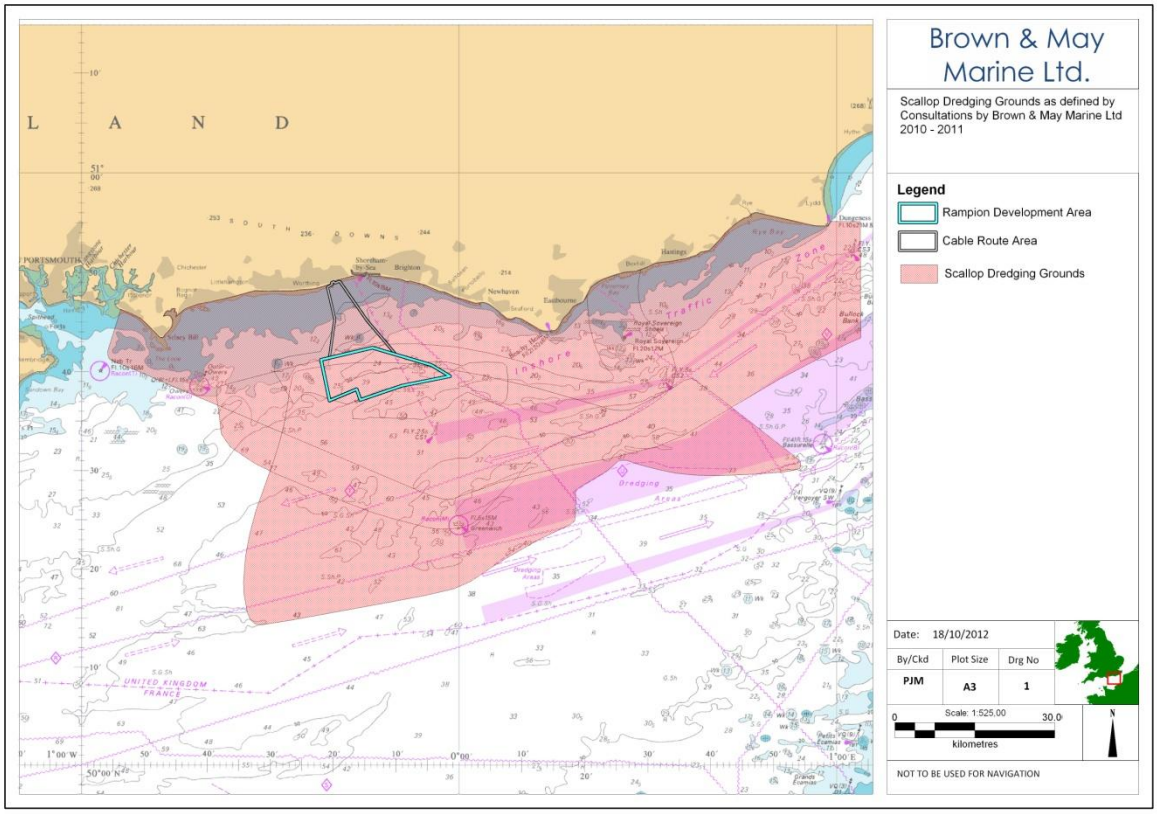



**Figure 18.34 Local Scallop Dredging Grounds as Defined through Consultation 2010-2011 (Source: BMM)**

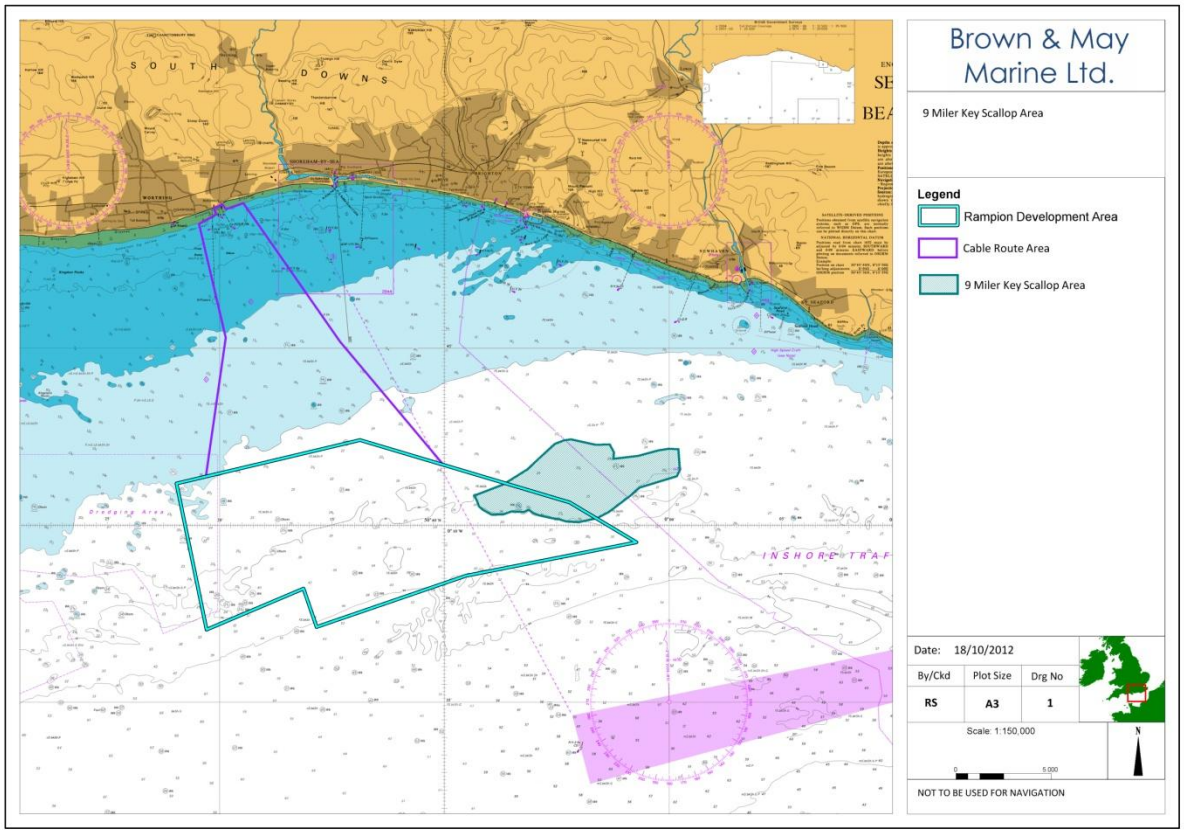



**Figure 18.35 Location of the "9-Miler" Scallop Dredging Ground (Source: Leech Fishing Ltd, 2012)**

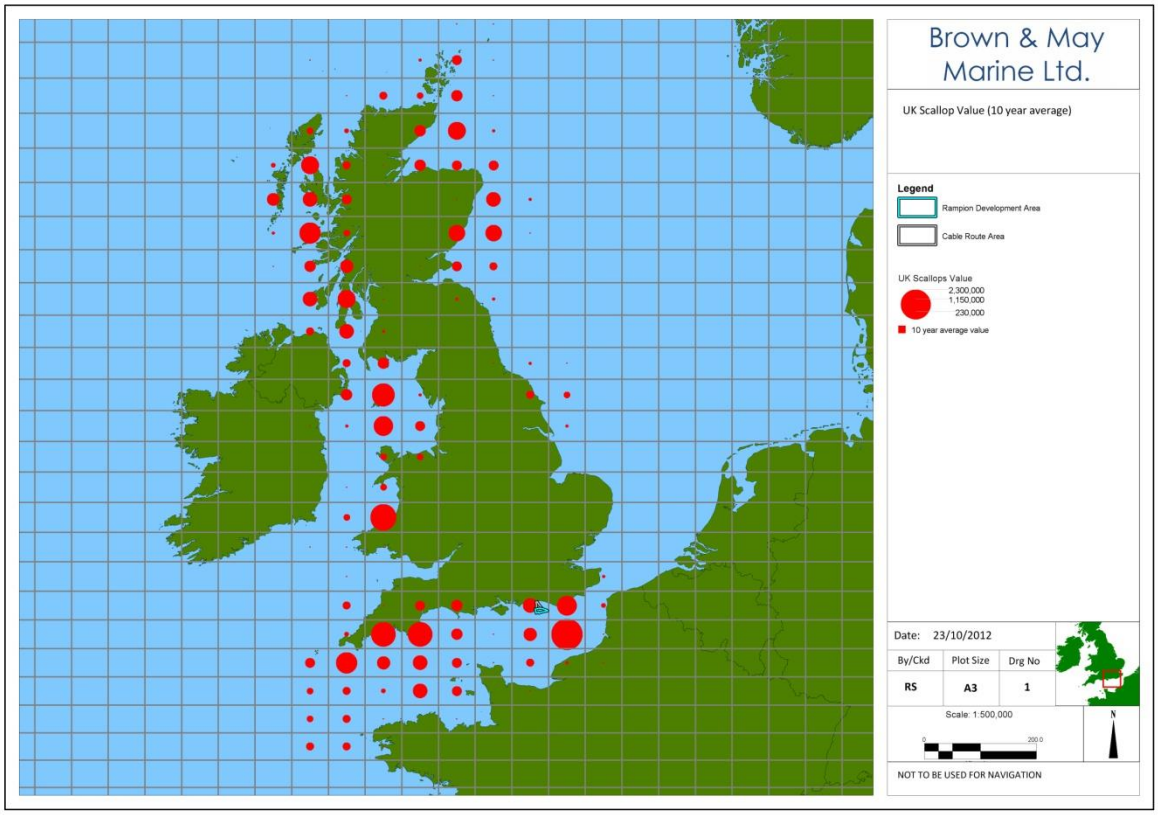



**Figure 18.36 National Scallop Dredging Values -10 yr average (MMO 2012)**

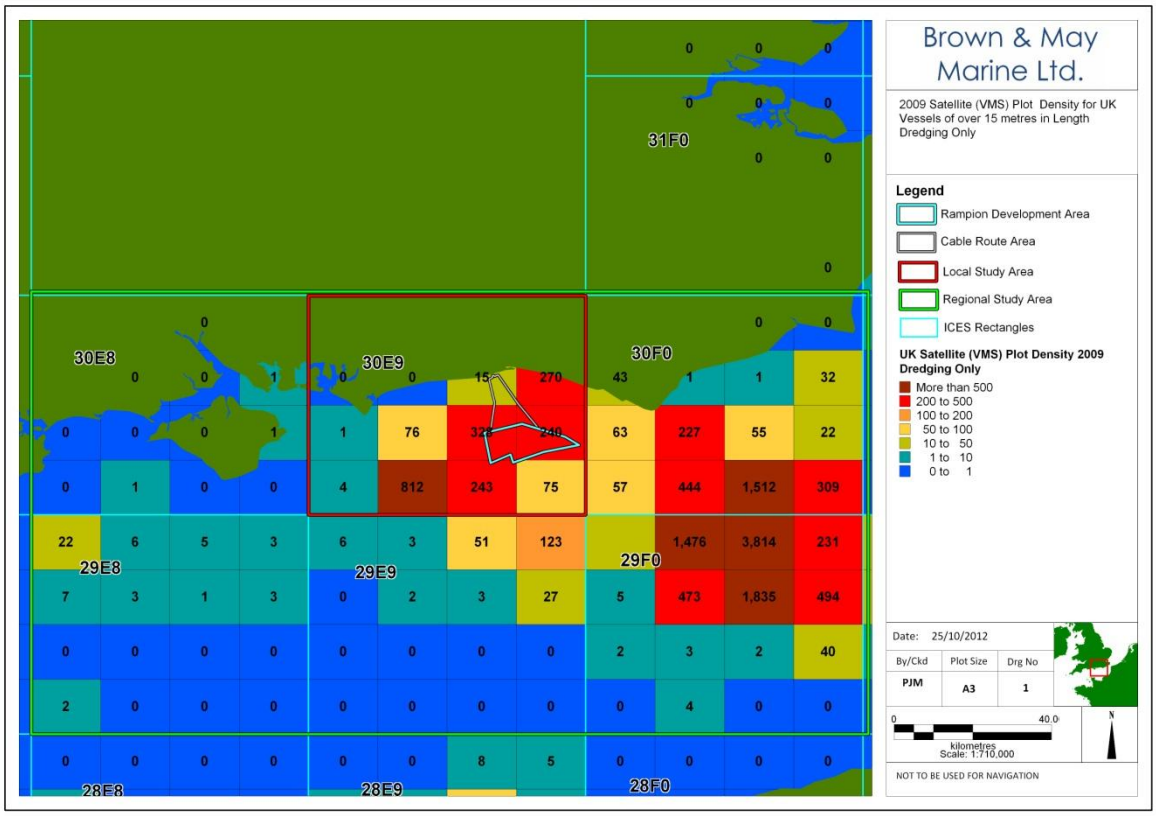



**Figure 18.37 VMS Position Plot Densities of UK Over-15m Scallop Dredgers in 2009 in the Regional Study Area (Source: MMO, 2011)**

### *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.

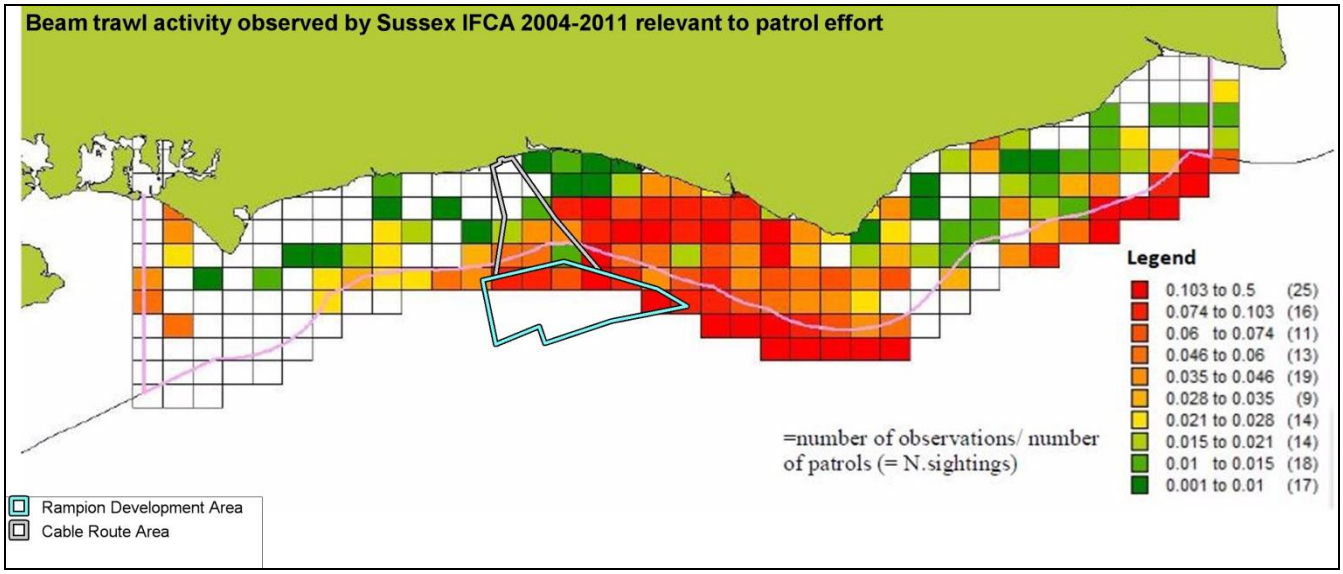



**Figure 18.38 Beam Trawl Activity Observed by SIFCA between 2004 and 2011 (Source: SIFCA, 2012)**

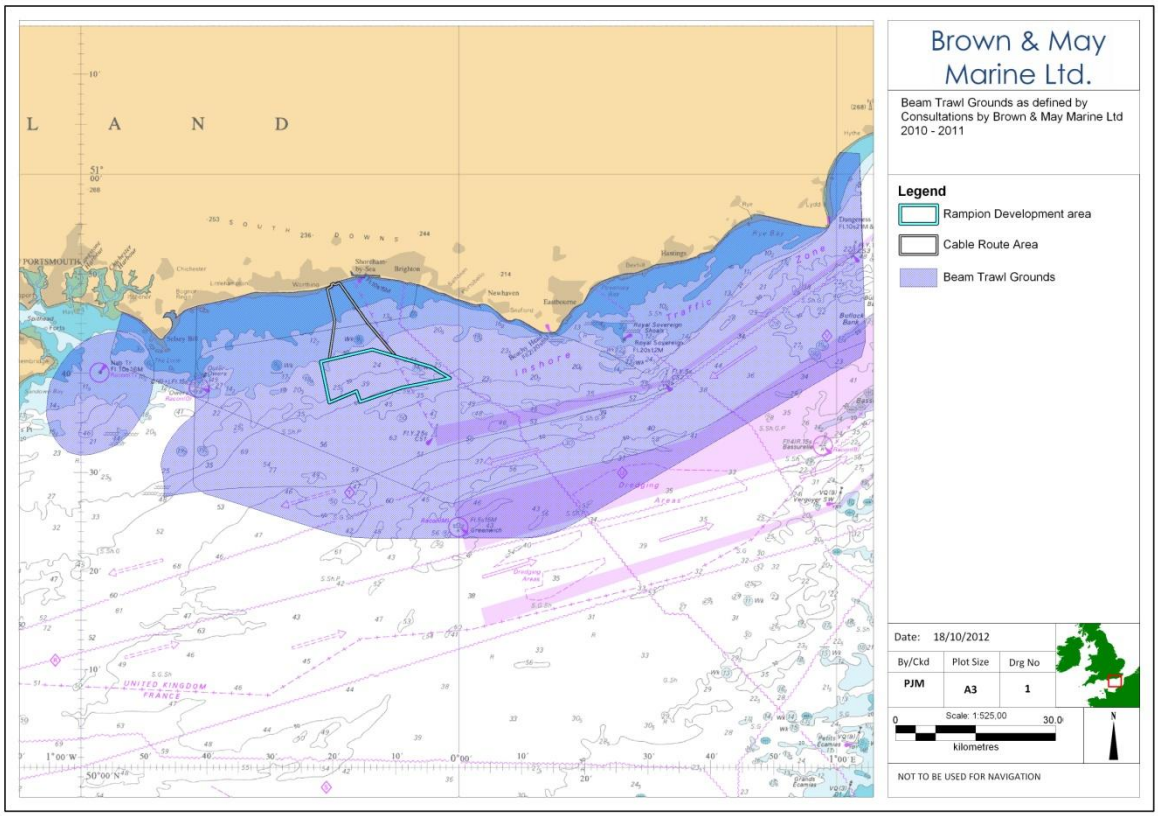



**Figure 18.39 Beam Trawl Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)**

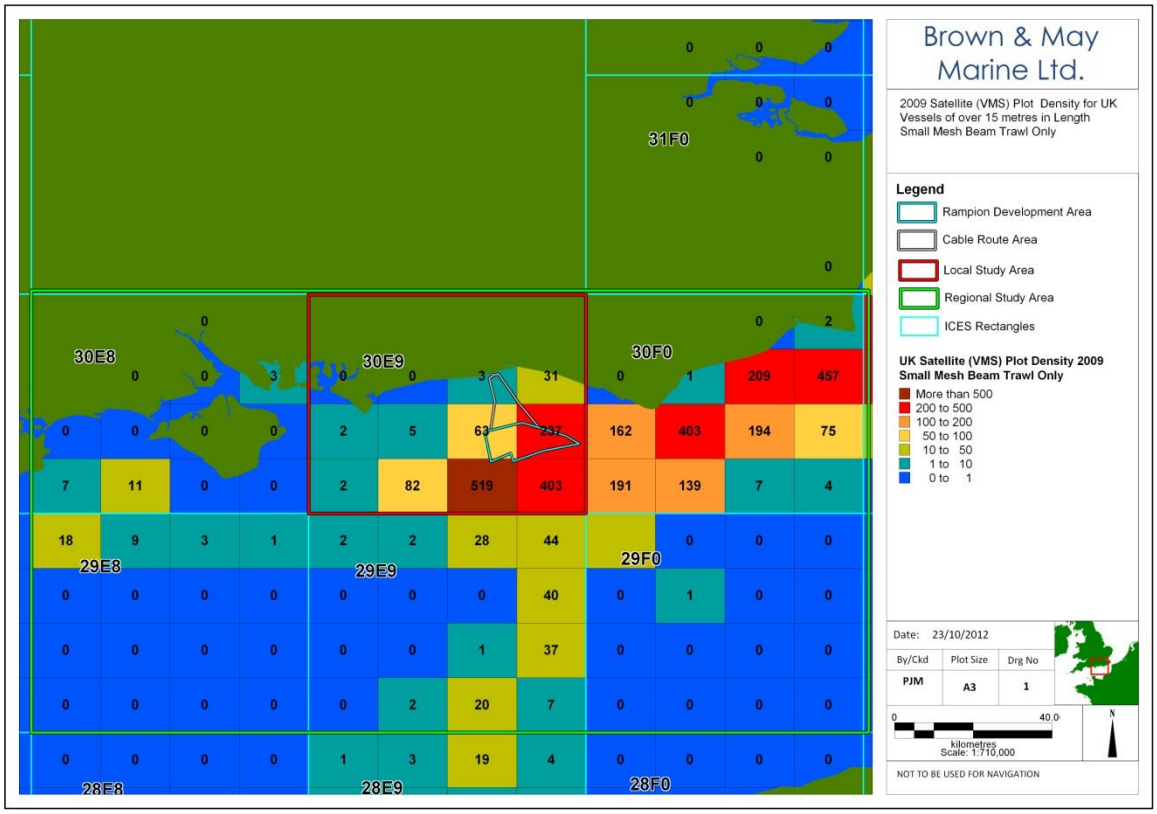



**Figure 18.40 Satellite Densities of UK Over-15m Beam Trawlers in 2009 in the Regional Study Area (Source: MMO, 2010)**

### *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.

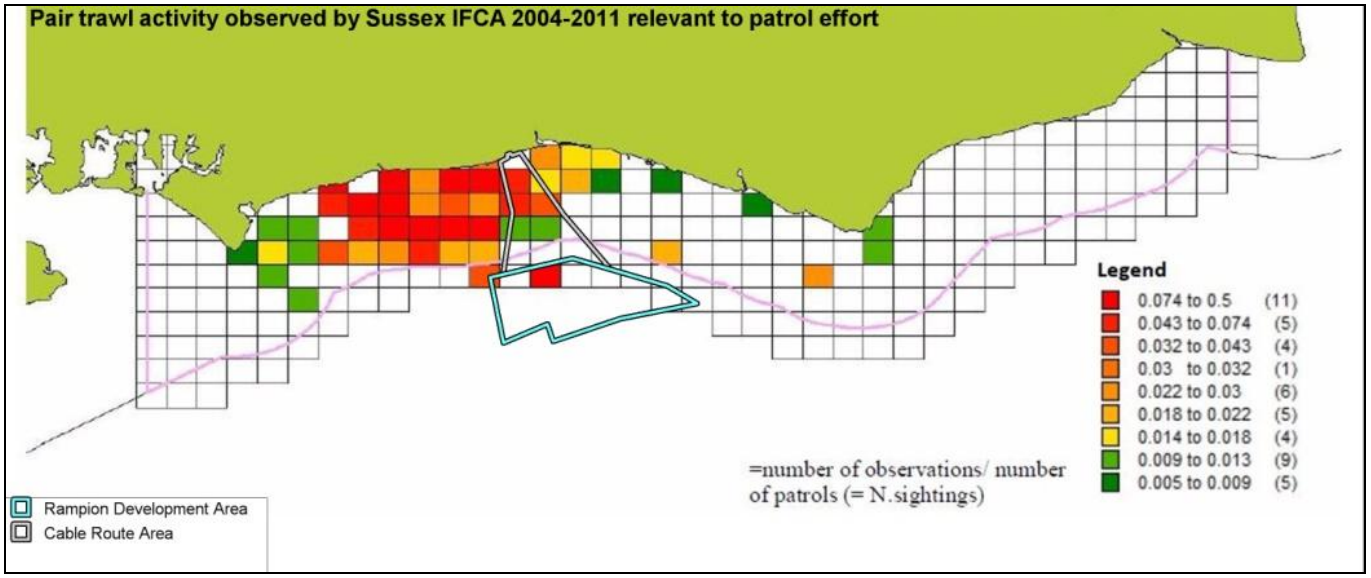



**Figure 18.41 Pair Trawling Activity Observed by SIFCA between 2004 and 2011 relative to Patrol Effort (Source: SIFCA, 2012)**

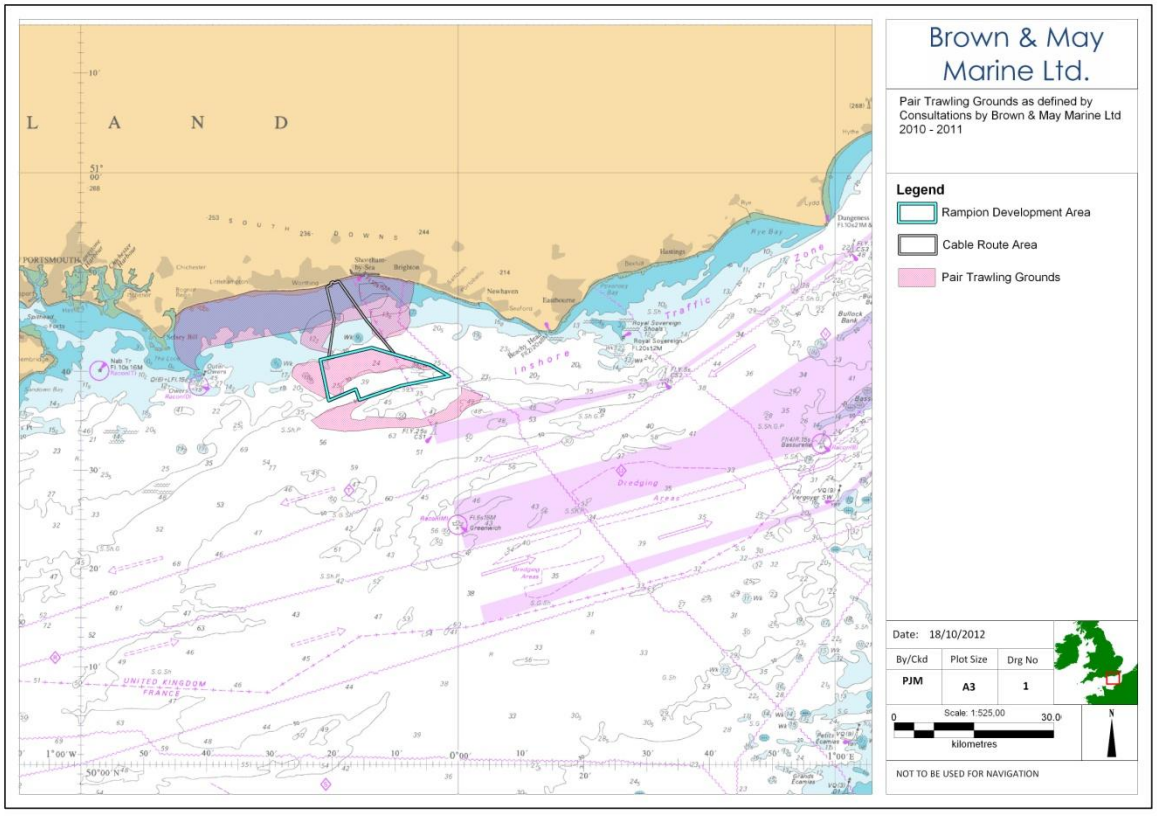



**Figure 18.42 Pair Trawling Fishing Grounds as defined through Consultation 2010-2011 (Source: BMM)**

### *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.

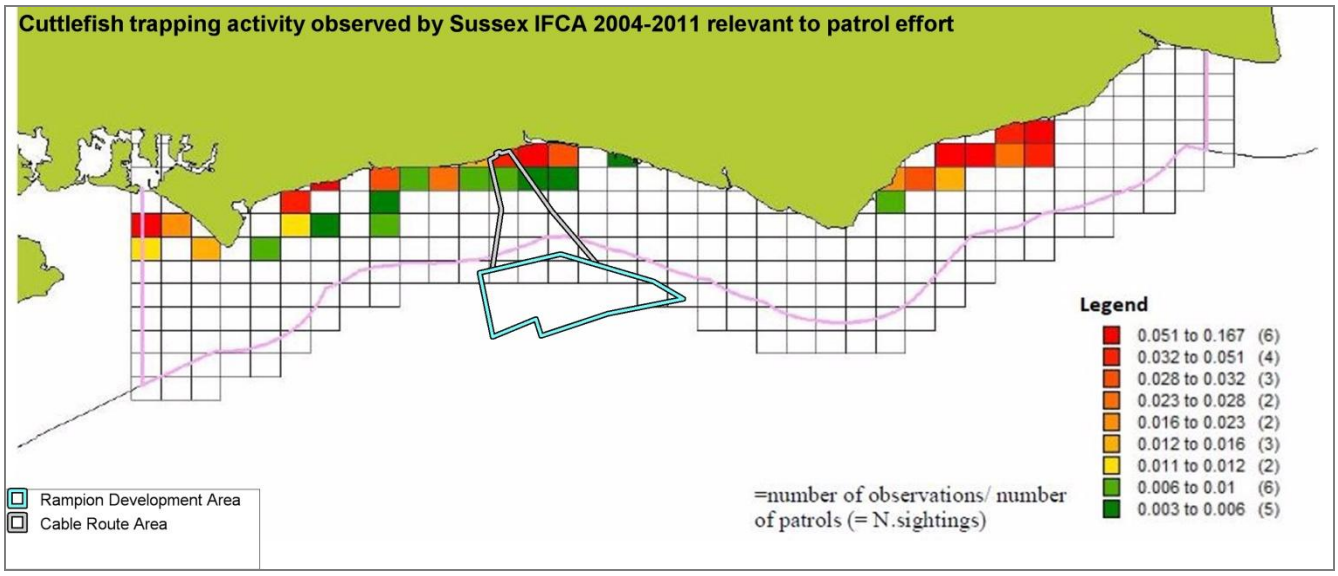



**Figure 18.43 Cuttlefish Trapping Activity Observed by SIFCA between 2004 and 2011 relative to Patrol Effort (Source: SIFCA, 2012)**

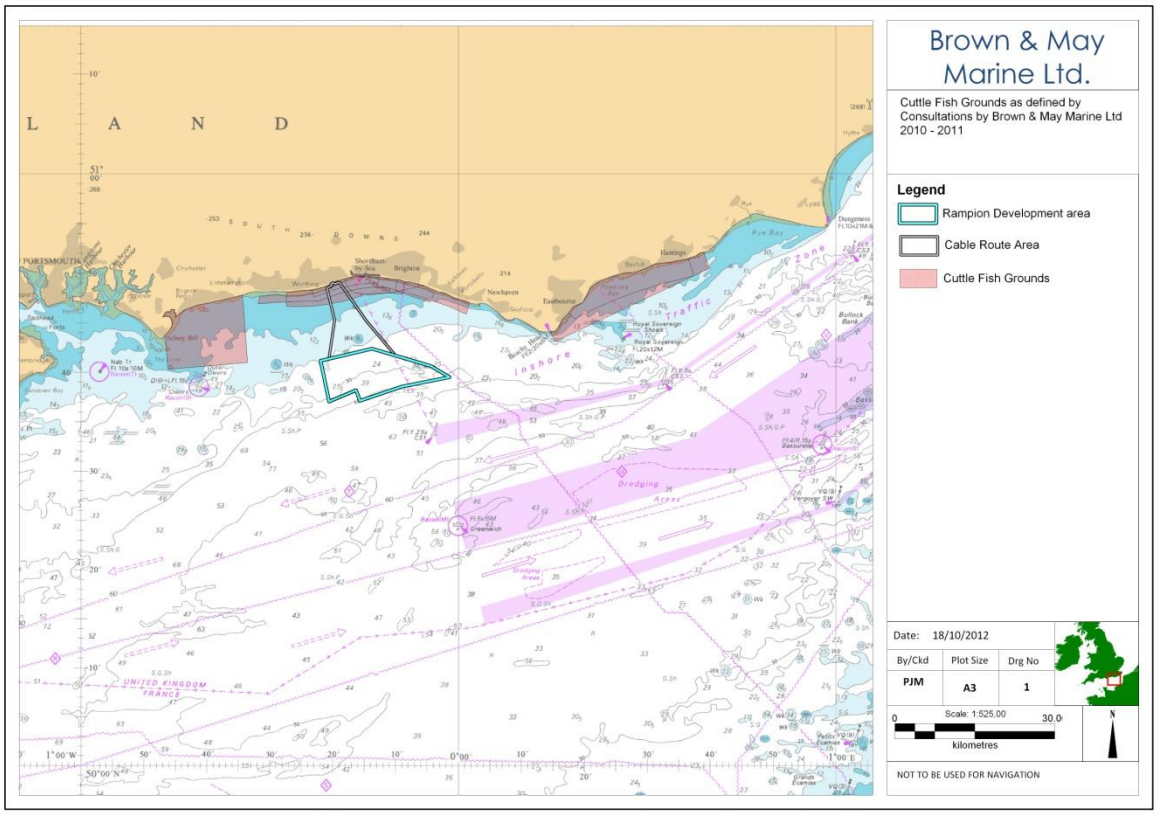



**Figure 18.44 Principal Cuttlefish Trapping Grounds as defined through Consultation 2010-2011 (Source: BMM)**

## 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).

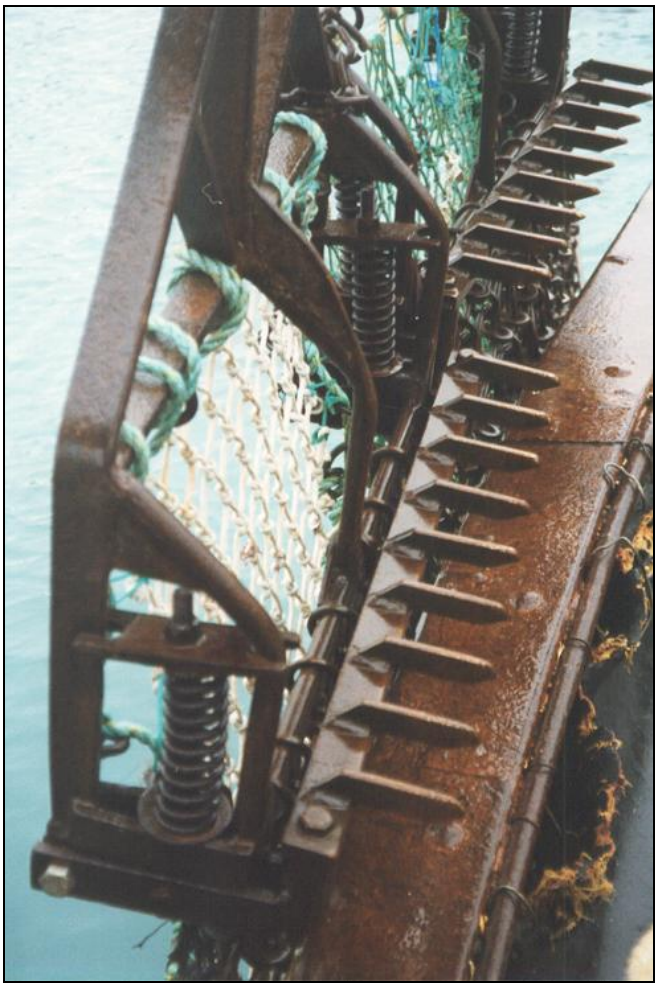


**Figure 18.49 A Springer dredge illustrating the Spring Retained Tooth Bars**

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.

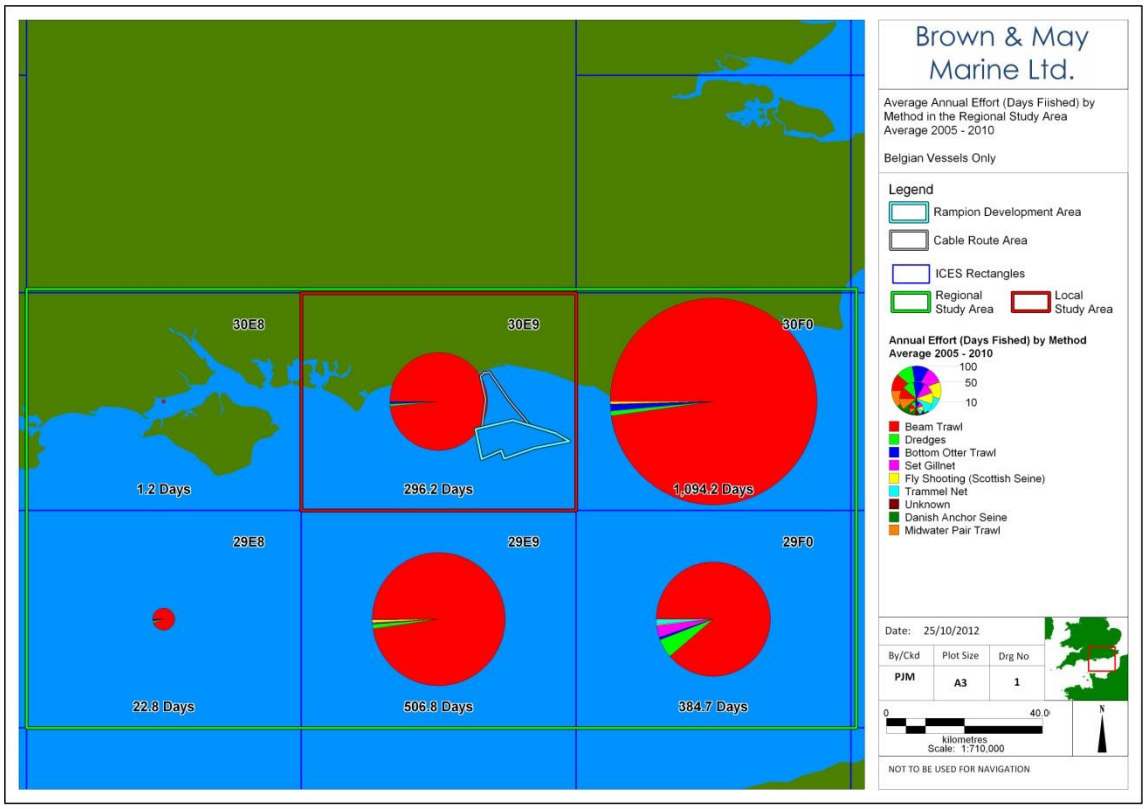



**Figure 18.51 Average Annual Effort (Days Fished) by Fishing Methods (2005-2009) in the Regional Area (Source: ILVO, 2010)**

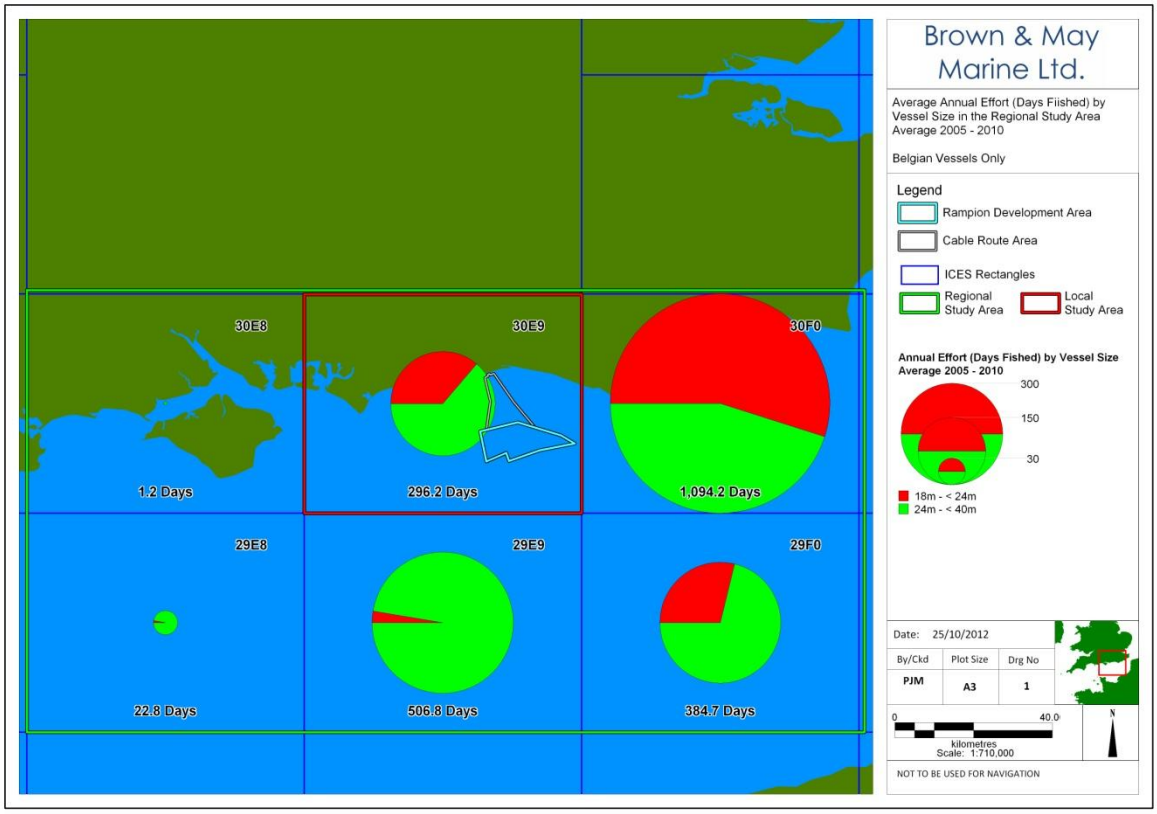



**Figure 18.52 Average Annual Effort (Days Fished) by Vessel Length Category (2005-2009) in the Regional Area (Source ILVO 2010)**

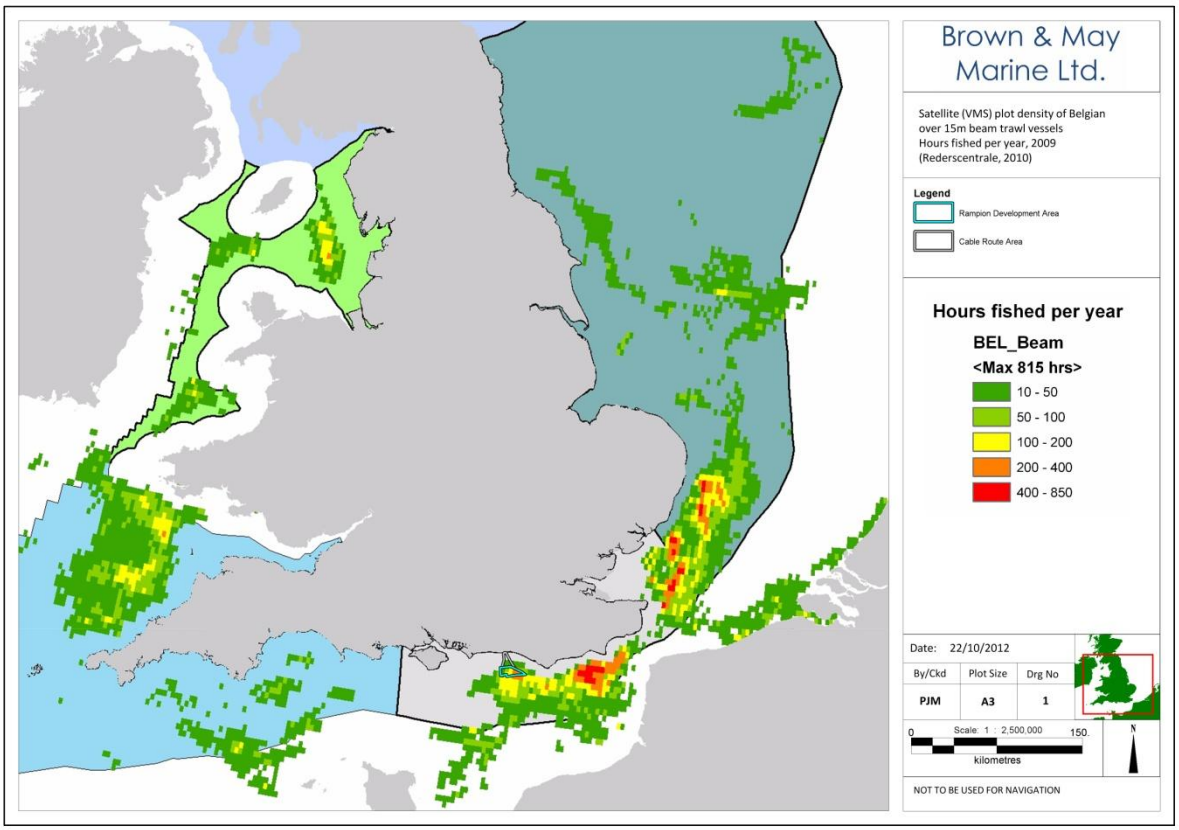



**Figure 18.53 Belgian Beam Trawl VMS Data (2009) around the English Coast (Source: ILVO, 2010)**

### *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.

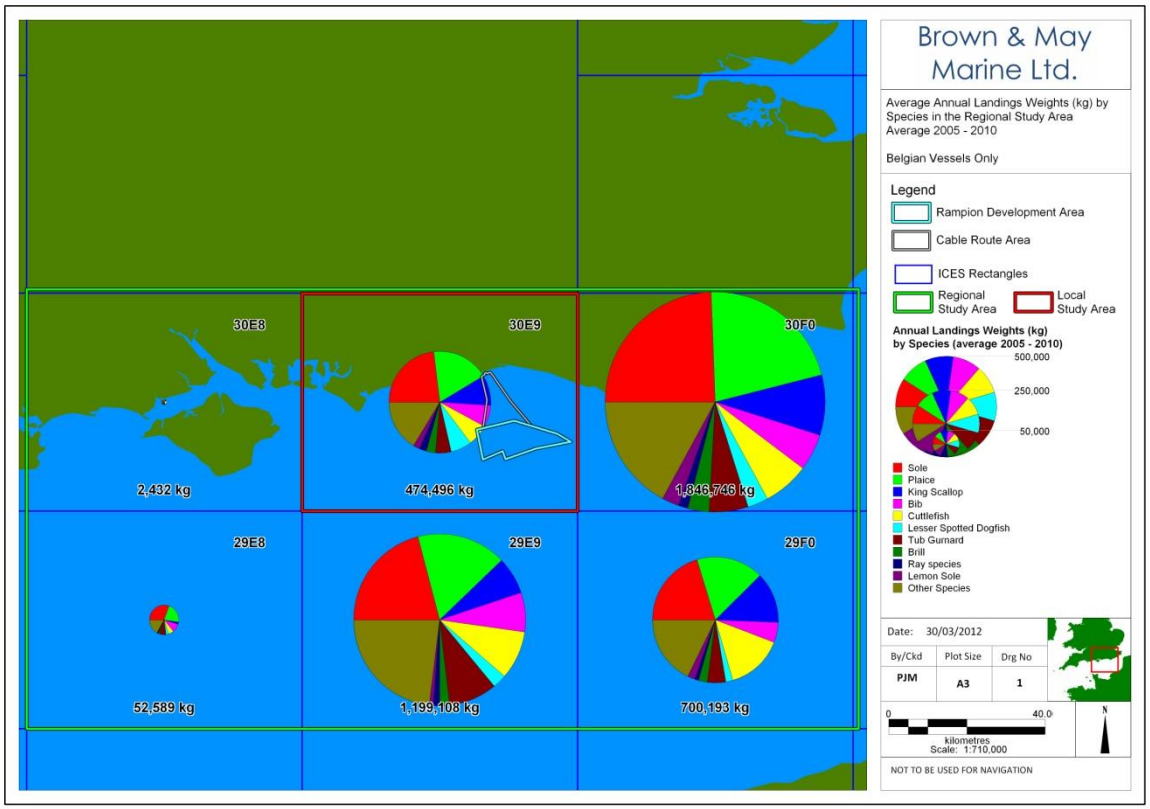
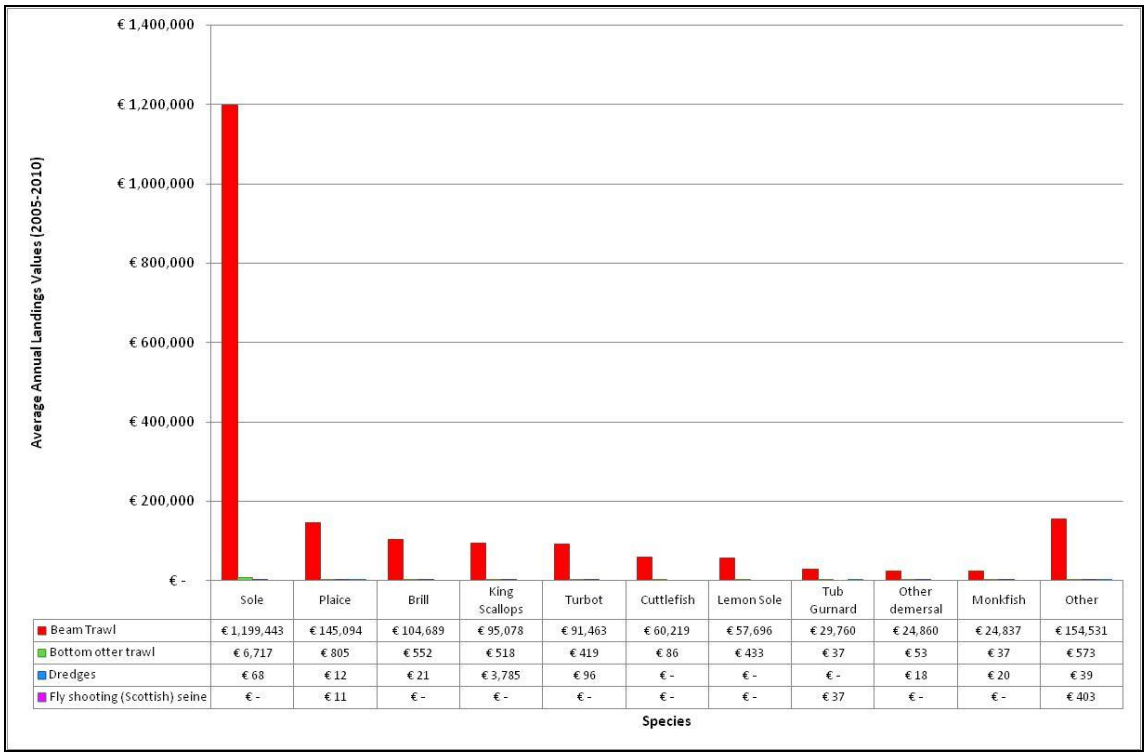



**Figure 18.54 Annual Landings Weights (kg) (Average 2005-2010) for by Species in the Regional Area (Source: ILVO, 2011)**

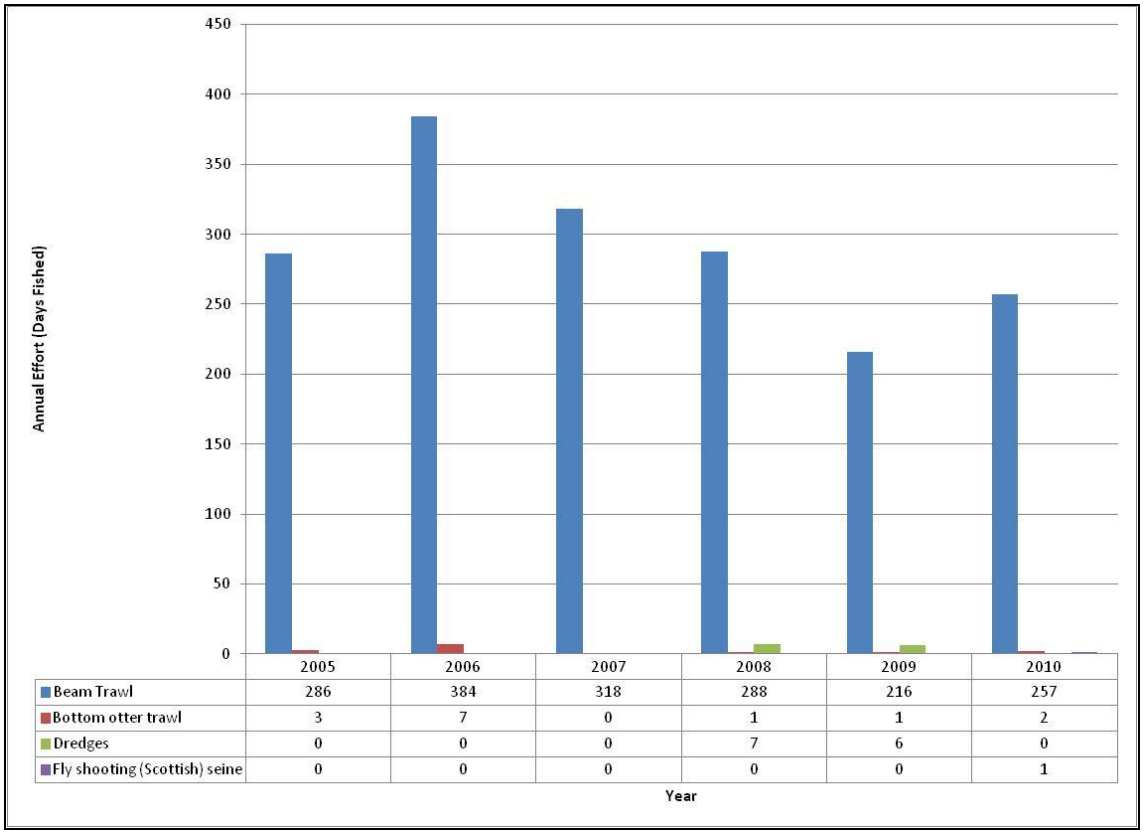



| | Sole | Plaice | Brill | King Scallops | Turbot | Cuttlefish | Lemon Sole | Tub Gurnard | Other demersal | Monkfish | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Beam Trawl | € 1,199,443 | € 145,094 | € 104,689 | € 95,078 | € 91,463 | € 60,219 | € 57,696 | € 29,760 | € 24,860 | € 24,837 | € 154,531 |
| Bottom otter trawl | € 6,717 | € 805 | € 552 | € 518 | € 419 | € 86 | € 433 | € 37 | € 53 | € 37 | € 573 |
| Dredges | € 68 | € 12 | € 21 | € 3,785 | € 96 | € - | € - | € - | € 18 | € 20 | € 39 |
| Fly shooting (Scottish) seine | € - | € 11 | € - | € - | € - | € - | € - | € 37 | € - | € - | € 403 |

**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.

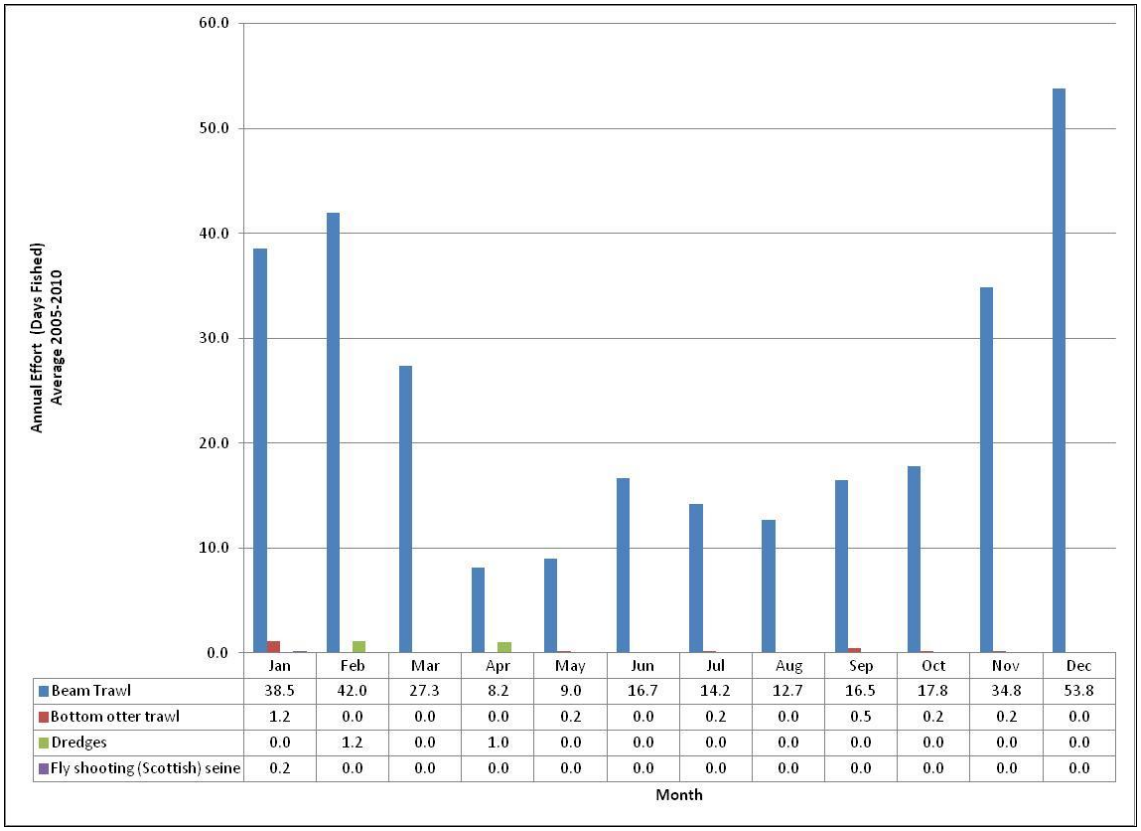



| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| Beam Trawl | 286 | 384 | 318 | 288 | 216 | 257 |
| Bottom otter trawl | 3 | 7 | 0 | 1 | 1 | 2 |
| Dredges | 0 | 0 | 0 | 7 | 6 | 0 |
| Fly shooting (Scottish) seine | 0 | 0 | 0 | 0 | 0 | 1 |

**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.




| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beam Trawl | 38.5 | 42.0 | 27.3 | 8.2 | 9.0 | 16.7 | 14.2 | 12.7 | 16.5 | 17.8 | 34.8 | 53.8 |
| Bottom otter trawl | 1.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 0.0 | 0.5 | 0.2 | 0.2 | 0.0 |
| Dredges | 0.0 | 1.2 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fly shooting (Scottish) seine | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

**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.

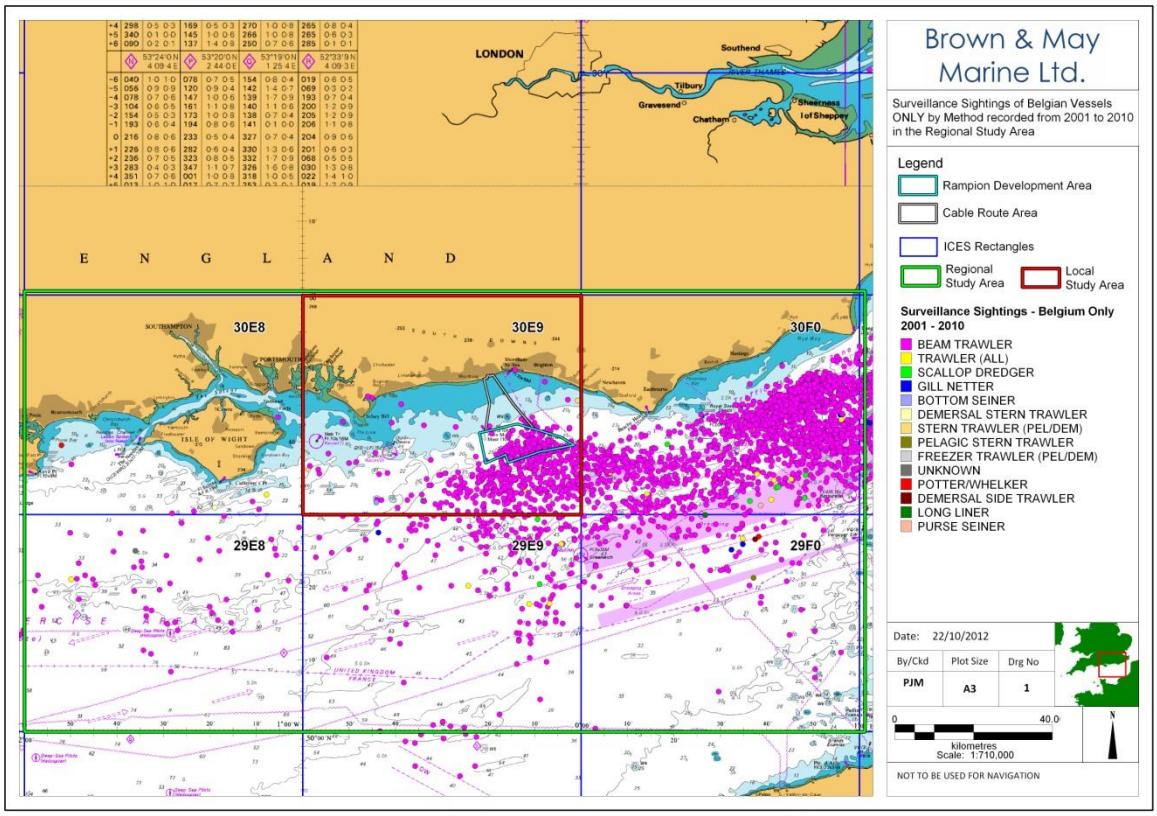



**Figure 18.58 Surveillance Sightings of Belgian Vessels by Method (2001-2010) in the Regional Area (Source: MMO, 2011)**

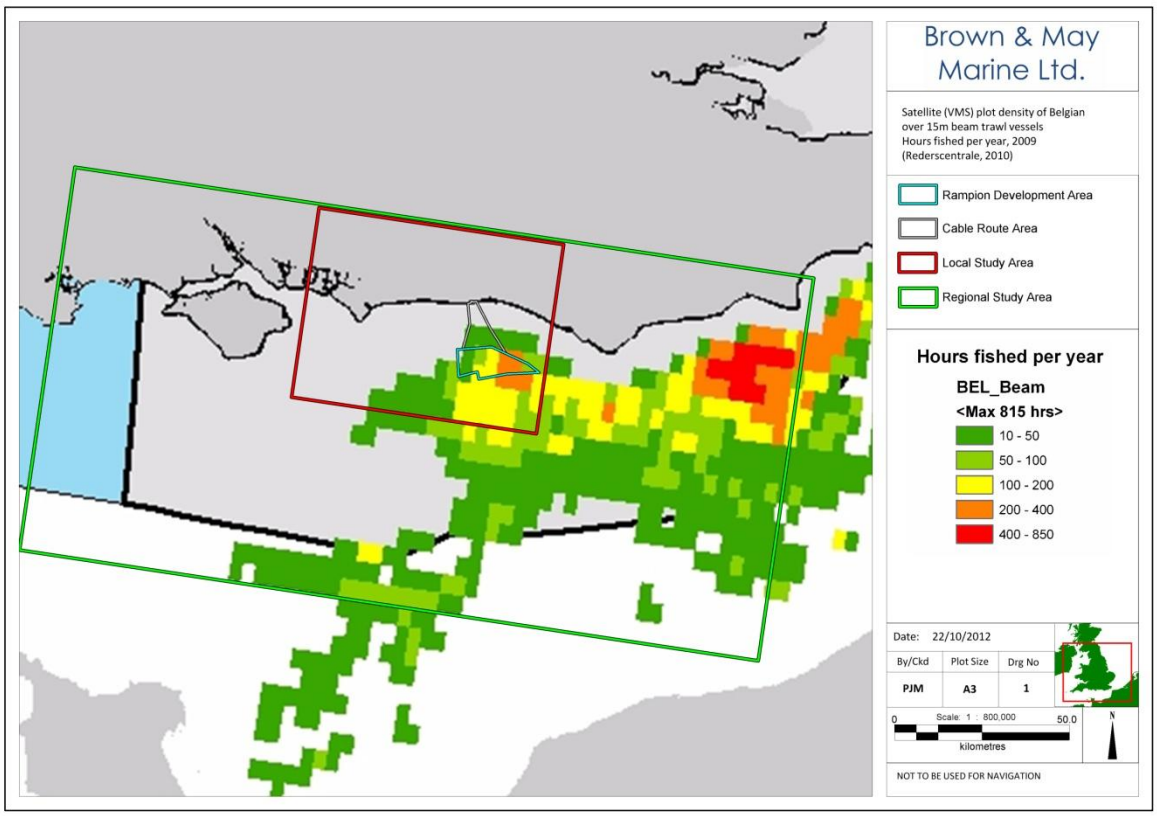



**Figure 18.59 Belgian Beam Trawl VMS Data (2009) (Source: ILVO)**

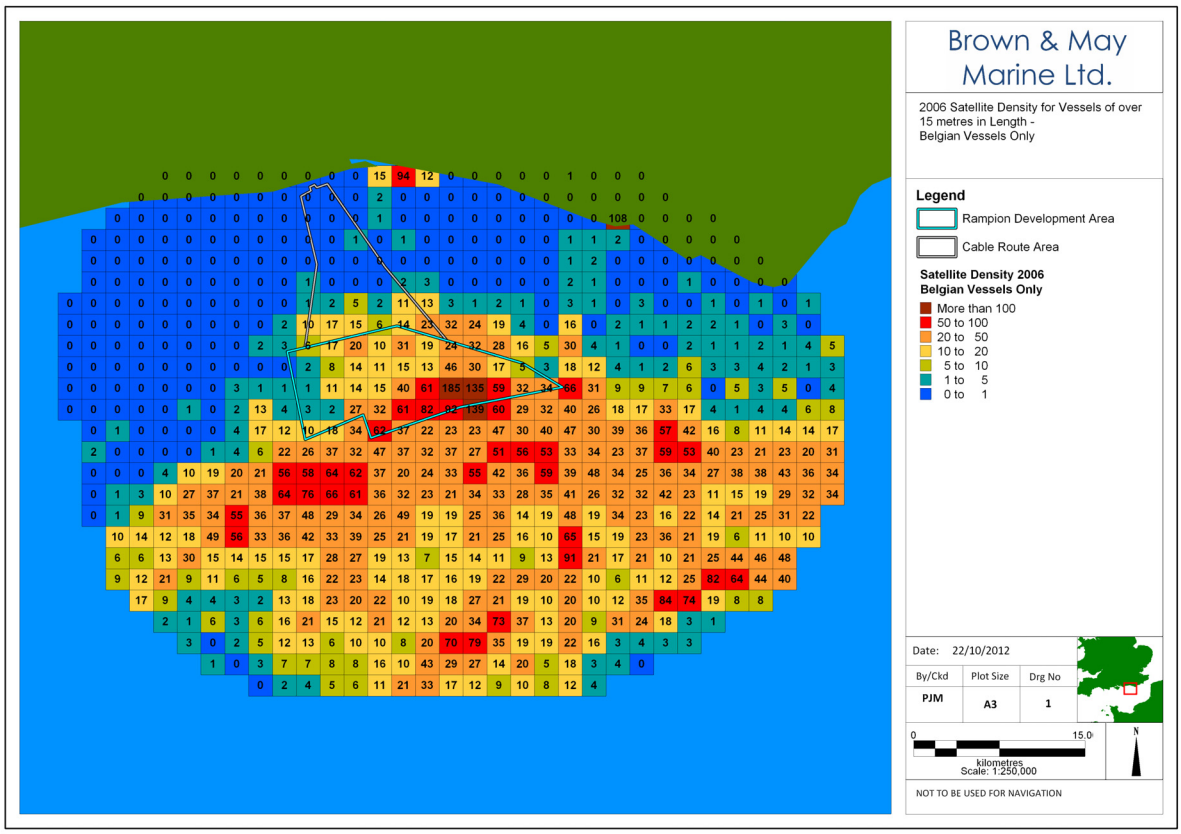



**Figure 18.60 VMS Position Plot Densities of Belgian Over-15m Vessels in 2006 (Source: MMO, 2006)**

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.

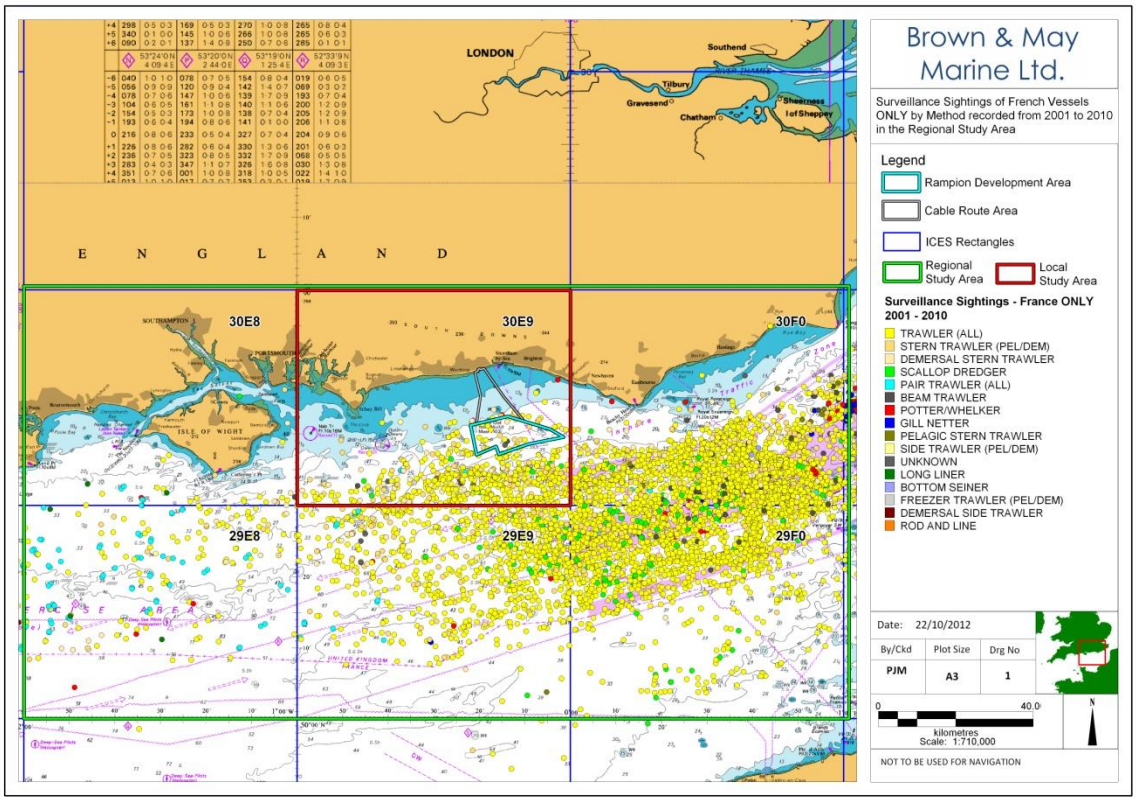



**Figure 18.64 Surveillance Sightings of French Vessels by Method (2001-2010) in the Regional Area (Source: MMO, 2011)**

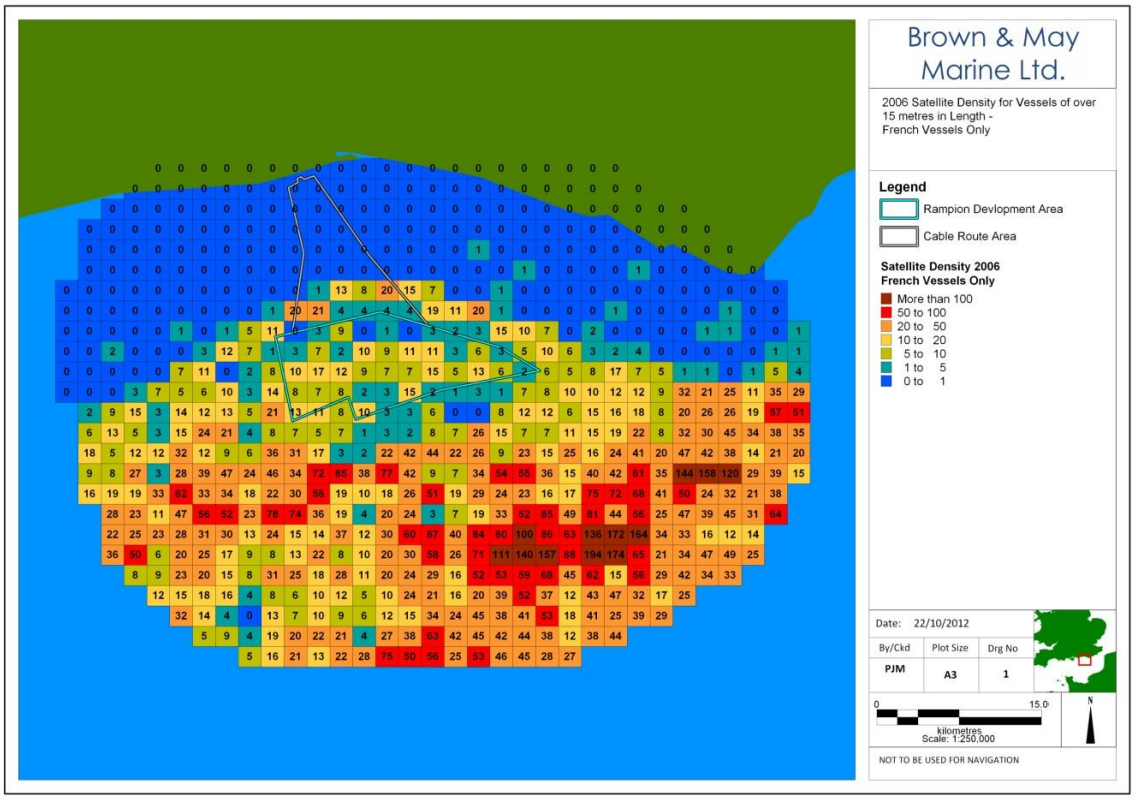



**Figure 18.65 VMS Position Plot Densities of French Over-15m Vessels in 2006 (Source: MMO, 2006)**

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, CNPMEM, in association with IFREMER, produced a report; “French Answer to the Consultation on Round 3 UK Windfarms Proposal 2009”.

The stated objective of the CNPMEM (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 CNPMEM (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 CNPMEM 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 CNPMEM report.

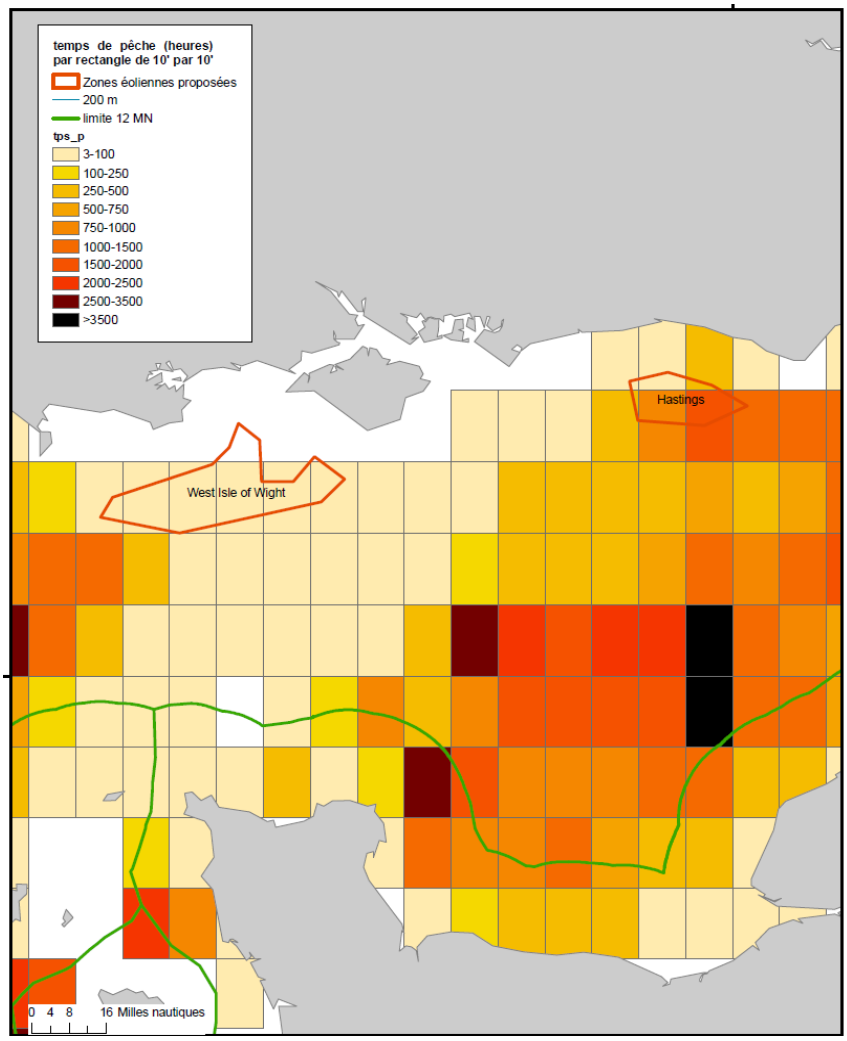



**Figure 18.66 Distribution of Bottom Trawlers' Effort (Hours) around the ROWF (Hastings) in 2008 (Source: CNPMEM, 2009)**

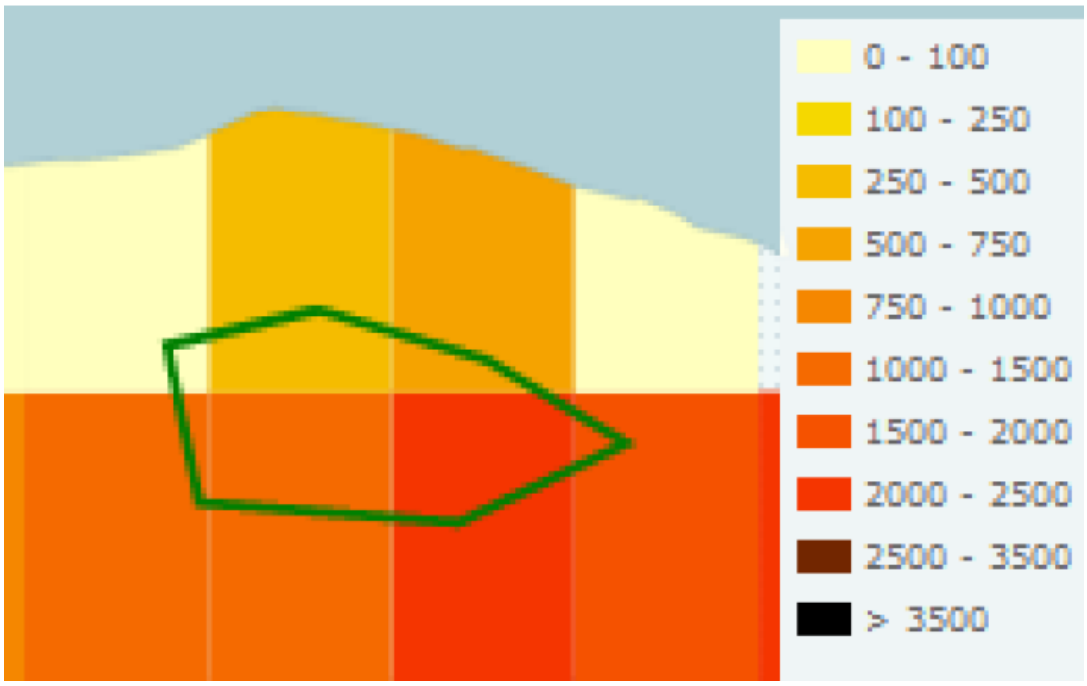



**Figure 18.67 Estimation of Total Fishing Time (Hours) of French Fishing Vessels (2009) (Source: IFREMER, 2012)**

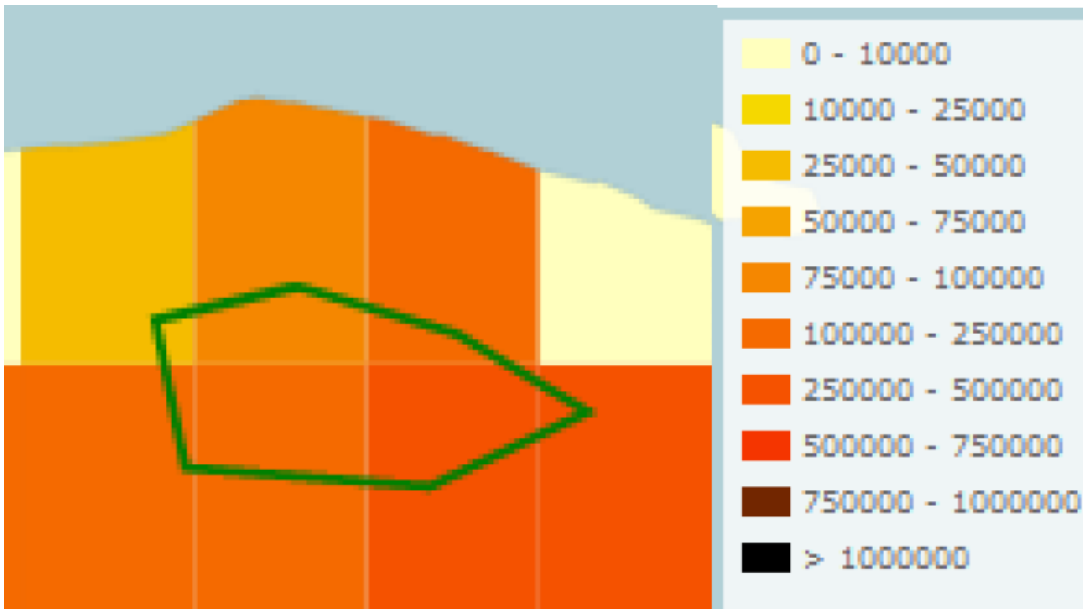



**Figure 18.68 Estimation of the Total Sale (Euros) of French Fishing Vessels (2009) (Source: IFREMER, 2012)**

### *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, CNPMEM, in association with IFREMER, produced “French Answer to the Consultation on Round 3 UK

Windfarms Proposal 2009". Further responses were recorded in a joint CNPMEM/ 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 CNPMEM (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 (CNPMEM 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 18.7below.

**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 | Buffs 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 | Buffs | 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 buffs | 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 | Monofil ament | 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 anchor ed | 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/Acros s 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/4.75" | 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 | Grapnal | 2 | 16 | Flag | 2 | E-W | Not Known | Not Known | 24 | Manual |

### *18.9.2.3 Trawling and Scallop Dredging*

| | | Trawl Winches | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Winch Pulling Power | | | | | |
| Vessel ID | MAIN METHODS | Manufacturer | Type | Drive Type | No. Trawl Winches | Length of Warp on Each Drum | Empty Drum | Mid Drum | Full Drum | Control System | Braking System |
| 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 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Winch Pulling Power | | | | | | | |
| Vessel ID | MAIN METHODS | Manufacturer | Type | Drive Type | No. Trawl Winches | Length of Warp on Each Drum | Empty Drum | Mid Drum | Full Drum | Control System | Braking System | Wire Type | Warp Diameter (mm) | Length Paid out Relevent to Depth (m) |
| 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 |

| Vessel ID | MAIN METHODS | Chain Bridles | | | |
|---|---|---|---|---|---|
| | | Type | No. Bridles | Chain Length (m) | Chain Link Size (mm) |
| 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 |

| Vessel ID | MAIN METHODS | 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) |
| 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 |
|---|---|---|---|

| 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 |

| | | Pair trawling | | |
|---|---|---|---|---|
| Vessel ID | MAIN METHODS | 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 |

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