East Anglia
Offshore Wind

VATTENFALL

SCOTTISHPOWER RENEWABLES

East Anglia THREE

Appendix 14.1

Commercial Fisheries

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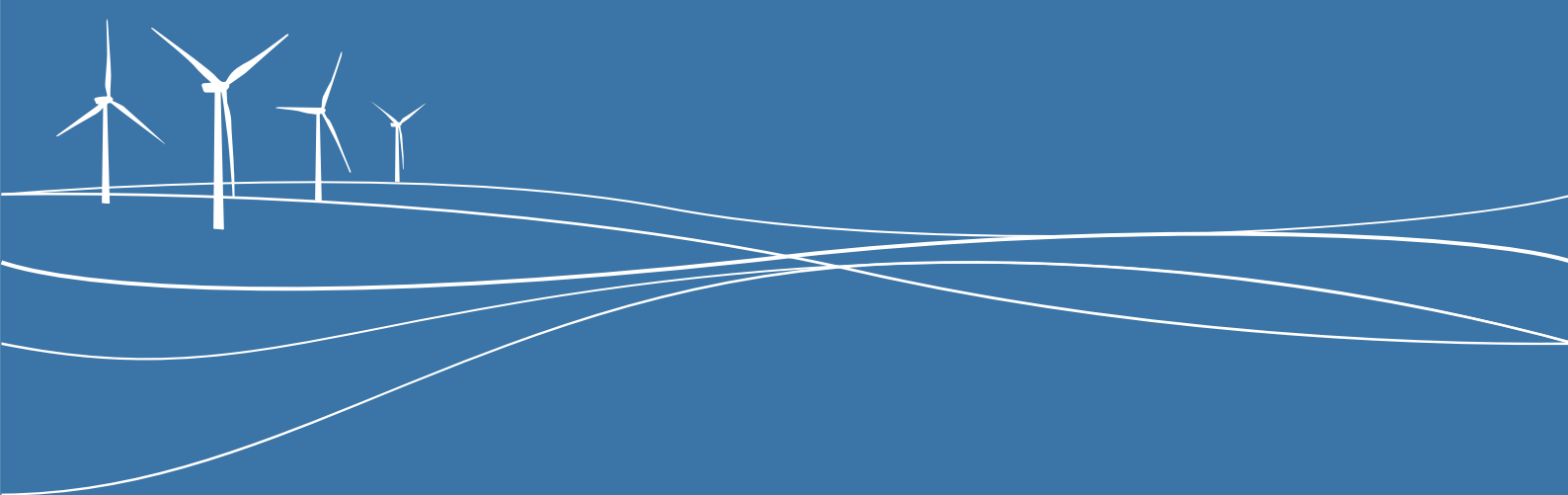

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14.1 COMMERCIAL FISHERIES

14.1.1 Introduction

1. This appendix has been prepared by Brown and May Marine Ltd (BMM) and describes the current commercial fisheries baseline in relation to the proposed East Anglia THREE project being developed by East Anglia THREE Limited (EATL). Chapter 14 Commercial Fisheries of the Environmental Statement (ES) includes a summary of this baseline and also includes an assessment of potential impacts from the proposed East Anglia THREE project on commercial fisheries.

2. For the purpose of this report only commercial fishing activity is considered, which is defined as the activity by licensed fishing vessels undertaken for the legitimate capture and sale of finfish and shellfish. The following baseline focusses specifically on those fleets which are active in the vicinity of the proposed East Anglia THREE project. These include the local inshore fleet and larger vessels which operate further offshore and have homeports in the UK and elsewhere in Europe.

3. There is no single data source or recognised model for establishing commercial fisheries baselines within small, discrete sea areas such as offshore windfarms. The description of the baseline has therefore been derived using data and information from a number of sources. In addition to analysis of fisheries statistical datasets, additional emphasis has been placed on undertaking direct consultation with the relevant national fishermen's federations, regional producer organisations (POs), local associations and skippers whose fishing grounds are located within the vicinity of the proposed East Anglia THREE project.

14.1.2 Study Area

4. The overall study area for the assessment of commercial fishing is shown in *Figure 14.1*. The proposed East Anglia THREE project is located within International Council for the Exploration of the Sea (ICES) Division IVc (Southern North Sea). Pressure stocks[1] are managed by ICES Division and quota is also allocated at this scale. Fisheries data are recorded, collated and analysed by ICES rectangles within each division. ICES rectangles are the smallest spatial unit available for the collation of fisheries data and have therefore been used to define the analysis areas for the proposed East Anglia THREE project.

5. For the purposes of assessment, the offshore cable corridor has been divided into the offshore and inshore areas. This is due to distinct differences in fishing patterns

[1] Stocks identified as under pressure from fishing mortality (e.g. overfishing) and therefore requiring management at the EU level through a system of Total Allowable Catches (TACs) and Quota (described further in section 1414.4.1.3.1).

between inshore and offshore areas and the type and manner in which fisheries statistics are collected from vessels in the over-15m and under-15m fleets (for detail see section 14.1.3.1.3). Typically vessels under 15m in length (and especially those in the under 10m category) target grounds within the 12nm limit as they have a limited operational range and a reduced capability to endure adverse weather when at sea. In comparison, larger vessels have a wider operational range and can endure more adverse sea conditions enabling them to undertake longer trips further offshore. There is overlap between these categories which relate to factors such as weather, fuel costs and the location of productive grounds. The analysis areas are based on the following ICES rectangles:

- Windfarm (East Anglia THREE site) Analysis Area - ICES rectangle 34F2;
- Offshore Cable Analysis Area - ICES rectangle 33F2; and
- Inshore Cable Analysis Area - ICES rectangle 33F1.

6. Small percentages of the proposed East Anglia THREE project are located outside these analysis areas. For example, the north-eastern corner of the East Anglia THREE site is located within ICES rectangle 34F3 and a small section of the offshore cable corridor, close to the landfall location, is located in ICES rectangle 32F1. Due to the small proportion of these rectangles occupied by the proposed East Anglia THREE project, annual and seasonal variation have not been described at the scale of individual ICES rectangles. These areas are however included in the assessment of surveillance sightings and Vessel Monitoring System (VMS) datasets which allow the levels of activity occurring in discrete areas of ICES rectangles to be assessed with a higher degree of accuracy.

14.1.3 Data and Information Sources

7. There is currently no single data source or recognised model for establishing commercial fisheries baselines. It is therefore necessary to use an approach that incorporates a number of relevant data and information sources, each subject to varying sensitivities and limitations, as described below. The relevant fisheries, methods and associated effort are described in progressive detail by building upon the sources and analysis outlined below.

8. The key data sources used to characterise the baseline and assess the potential impacts of the proposed East Anglia THREE project on commercial fisheries receptors are summarised in Table 14.1.

14.1.3.1.1 ICES Rectangles

9. ICES rectangles are the smallest spatial unit used for the collation of fisheries data by Member States. The boundaries of offshore ICES rectangles cover approximately

900nm^2 and align to 1˚ of longitude and 30' of latitude. It is however unlikely that fishing activity is evenly distributed throughout the sea area covered by an ICES rectangle.

10. Vessels of over-10m are required to submit daily European Commission (EC) log sheets, whereas those under-10m are not obliged to do so, although voluntary submissions can be made. In addition, local fisheries officers undertake dockside checks on the under-10m fleet, as well as allocating data collected from other sources, such as monthly shellfish returns, into specific ICES rectangles.

14.1.3.1.2 Marine Management Organisation (MMO) Surveillance Sightings

11. Fisheries surveillance sightings within the UK Exclusive Economic Zone (EEZ) are recorded by fishery protection aircraft and surface craft as a means of policing fisheries legislation. Fishing vessels of all sizes and nationalities are recorded. These data are used within this report to give an indication of the distribution of fishing activity by method and nationality: the data cannot be used for quantitative assessments of activity due to the low frequency of surveillance over-flights.

14.1.3.1.3 Fisheries Statistics

12. Fisheries statistics and Vessel Monitoring System (VMS) data were requested from the relevant national fisheries agencies. Statistics were provided by all national agencies with the exception of France. Despite requests to Le Ministère de l'Agriculture, de l'Alimentation, de la Pêche, de la Ruralité et de l'Aménagement du Territoire, the requested fisheries statistics and VMS data have not been forthcoming. Reports produced by the Comité National des Pêches Maritime et des Elevages Marins (CNPMEM) and L'Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER) summarising French fishing vessel activity and values within Round 3 Zones and the East Anglia Zone were available and have been included in the baseline.

13. The principal datasets used relate to fishing values and effort (days fished) to evaluate:

- species targeted;
- fishing methods used;
- vessel categories (under-10m, 10m-15m, over-15m);
- annual variations;
- seasonal variations; and
- landings values and effort by port.

14. Two schemes which apply to under-10m vessels have been introduced since 2004 the Shellfish Entitlement Scheme (2004) and the 'Registration of Buyers and Sellers of First Sale Fish and the Designation Auction Site Scheme' (2005). It is probable that data for the under-10m fleet in the years preceding the implementation of these measures may underestimate the true landings of these vessels.

15. Under the 'Registration of Buyers and Sellers of First Sale Fish and the Designation Auction Site Scheme', fishermen are required to provide the identity of the ICES sub-area within which the catch was taken and not the specific ICES rectangle. Local MMO officers then allocate catches, effort and values into ICES rectangles on the basis of best estimates.

16. Consultation with the MMO has highlighted that although the system of monthly returns under the Shellfish Entitlement Scheme was introduced in 2004, it was not formally incorporated into the MMO landings statistics until 2006. Subsequently, in 2009 the MMO reverted to using only the buyers and sellers data within fisheries statistics.

17. Data from each country include landings recorded by vessels registered to that country, regardless of whether or not they are flagged vessels owned by another nationality. The majority of UK beam trawlers operating in the Southern and Central North Sea, whilst registered as UK vessels fishing UK quotas, are considered to be Dutch owned and operated vessels landing into Dutch ports. By virtue of their registration and quota allocations, the daily logbook declarations of these Anglo-Dutch vessels are tabulated into the UK fisheries statistics as opposed to the Netherlands statistics.

14.1.3.1.4 Satellite Tracking (VMS) Data

18. VMS data are currently the most comprehensive fisheries data available for identifying the fishing intensity of over-15m fishing vessel activity in European waters. Since January 2005, all EC vessels over-15m have been fitted with equipment which transmits the vessels' position to the relevant Member States' fisheries authority at a minimum of every two hours.

14.3.1.4.1 UK Data

19. The MMO monitors all UK vessels and all foreign vessels within the UK EEZ. Information regarding non-UK vessels cannot be disclosed by the MMO without prior permission from the vessels national regulating body.

20. The disclosure by the MMO of vessels' VMS identities is restricted under the Data Protection Act (1998). As a result of this the MMO has not been able to provide the same high definition VMS data for UK registered vessels as that provided, for

example, by the Dutch authorities. The MMO has therefore only provided the aggregated number of position plots in a grid of rectangles of approximately 5.3nm² for the years 2009 to 2013. These data have been cross-referenced with landings values. The data have also been filtered by speed with vessels travelling at speeds from between one to six knots assumed to be fishing (Lee et al. 2010).

21. In addition to the MMO, Marine Scotland has provided VMS data (2007 to 2011) to BMM. The data were produced by applying VMS records to the Fisheries Information Network (FIN), which is the Scottish Government's sea fisheries database. FIN holds information on voyages (catches gear and mesh size) and landings (weight, price at sale). Logtime (the date and time of each VMS transmission) identifies each vessel's voyage and enables the location of a vessel during each trip to be linked to the gear used and the weight of the landings (Holmes et al. 2011). The data are separated into groups representing key sectors such as crab, lobster, squid, *Nephrops* (mobile and static), demersal (mobile and static), scallop and pelagic fisheries (mackerel and herring) (Kafas et al. 2012).

22. As with the MMO dataset, the Marine Scotland data have been filtered by speed with vessels travelling at speeds of between one and six knots presumed to be fishing. As previously stated, VMS records do not capture vessels under-15m and therefore may not fully represent the true extent of fishing activities within a given area.

14.3.1.4.2 Dutch Data

23. Landbouw Econmisch Instituut (LEI) and the Institute for Marine Resources and Ecosystem Studies (IMARES) have provided comprehensive VMS datasets from 2010 to 2014. The grid used in this dataset is larger than that utilised by the MMO. A grid is defined based on 1/16th of an ICES rectangle. IMARES have combined VMS with logbook data and information on fish value. Logbook data are added to VMS records to indicate those records that are associated with fishing activity. The data have also been filtered by speed.

14.3.1.4.3 Belgian Data

24. The Belgian Institute for Agricultural and Fisheries Research (ILVO) VMS charts for Belgian vessels were provided by ILVO for 2010 to 2014. The data have been filtered by speed with all speeds of zero removed and the VMS data only applies to vessels over-15m in length.

14.3.1.4.4 French Data

25. French VMS information in the vicinity of the proposed East Anglia THREE project has been provided in chart format for all French vessels by number of vessels, effort and value by IFREMER (2008 and 2009).

14.3.1.4.5 German, Danish and Norwegian Data

26. The German (Federal Office for Agriculture and Food), Danish (Ministry of Food, Agriculture and Fisheries) and Norwegian (Fisheries Monitoring Centre) authorities have provided VMS data for vessels over-15m in length, in the North Sea. Between 2009 and 2013, for Danish and German Vessels and 2010-2014 for Norwegian Vessels. VMS data have been provided by ping density.

14.1.3.1.5 Other Data

14.3.1.5.1 French Effort Data

27. In February 2014, the CRPMEM of Nord-Pas-de-Calais Picardie provided 2012 effort data for French vessels in the vicinity of the East Anglia THREE development area. This data is derived from the VALPENA project launched by the French fishing sector to map their fishing activity in inshore and offshore areas and is based on the consultation with 89% of the fleet.

Table 14.1 Key Data Source Features

Data	Year	Coverage	Confidence	Notes
UK MMO Fisheries Statistics (landings values and fishing effort data)	2009 to 2013	UK vessels landing into UK and European ports. Non-UK vessels landing into UK ports.	High	Landings data provided by value (£).
UK MMO Surveillance Sightings	2010 to 2014	Sightings of vessels by gear type (all nationalities) recorded in UK waters on weekly surveillance fly overs during daylight hours.	Medium to high	May underestimate total extent of fishing activity due to flyover frequency and timing.
UK MMO Satellite Tracking (VMS) Data	2009 to 2013	Aggregated VMS pings recorded in 0.05° by 0.05° grids from UK vessels only in European waters.	High	VMS provided by value (£).
Marine Scotland VMS data	2007 to 2011	Aggregated VMS separated by gear type or fishery to show relative value.	High	VMS provided on a sliding scale of relative value. No actual financial figures are given.
Belgian ILVO fisheries statistics (landings value and effort data)	2010 to 2014	All over-10m Belgian vessels recorded as actively fishing, irrespective of location.	High	Landings data provided by value (€).
Belgian ILVO VMS Data	2010 to 2014	VMS data combined with logbook data by Belgian vessels were provided for all sea areas. The data has been filtered by speed.	High	VMS is provided by value (€), effort (days at sea) and by gear type
Netherlands, IMARES and LEI VMS and integrated Landings	2010 to 2014 (VMS) 2010 to 2014 (Landings	VMS data combined with logbook data by Dutch vessels in the North Sea. A grid is defined based on 1/16th of	High	VMS is provided by value (€), effort (days at sea) and weight. Fisheries statistics

Data	Year	Coverage	Confidence	Notes
data. Fisheries statistics (landings value and effort data)	value and effort data)	an ICES rectangle. The data is filtered by speed.		(landings values and effort) available from 2010 to 2014 for method only.
French IFREMER VMS data	2008 to 2009	VMS charts provided by value and effort for Central (IVb) and Southern North Sea (IVc) only.	High	VMS provided by effort (days) and value (€).
CRPMEM Nord-Pas-de-Calais Picardie Effort Data	2012	Nord-Pas-de-Calais Picardie fleet.	Medium to High	Based on consultation with 89% of the fleet
German Federal Office for Agriculture and Food fisheries statistics (landings value)	2007 to 2011	Landings values for German vessels in the North Sea.	High	Landings data provided by value (€).
German Federal Office for Agriculture and Food VMS data	2009 to 2013	VMS provided by density in the North Sea.	High	VMS provided by density.
Danish Ministeriet for Fødevarer, Landbrug og Fiskeri VMS data	2009 to 2013	VMS provided for all UK waters by density and can be split into gear categories.	High	VMS provided by density.
Danish, Ministeriet for Fødevarer, Landbrug og Fiskeri, fisheries	2009 to 2013	Landings values for Danish vessels operating in the North Sea.	High	Landings data provided by value (Kr).

Data	Year	Coverage	Confidence	Notes
statistics (landings values)				
Norway Fisheries Monitoring Centre fisheries statistics	2008 to 2012	The data is collected in a similar way to the UK data, however it is provided by Norwegian Sea Area, as opposed to ICES sea areas. However the data is compatible as these correspond with ICES rectangles.	High	Landings data provided by value (Kr).
Norway, Fisheries Monitoring Centre VMS data	2010 to 2014	VMS for over-15m Norwegian vessels in the North Sea.	High	VMS is provided by density.

14.1.3.1.6 Information obtained through consultation

28. Consultation meetings were organized with fisheries stakeholders in order to obtain information on fishing patterns and operating practices and discuss any potential concerns relating to the proposed East Anglia THREE project. Fishermen were provided with questionnaires and charts of the area in order to indicate vessel and gear specifications and depict the location of their fishing grounds with reference to the proposed East Anglia THREE project. A list of consultees, along with dates of meetings, is provided in *Table 14.2*. A summary of key information gathered during consultation is given in *Table 14.1* of the Chapter 14 Commercial Fisheries.

Table 14.2 Consultation Meetings

Consultee	Date/Agenda
Pim Visser, (VisNed) Andries de Boer, (Chairman CPO, Urk, UA) Maarten Drijver (Chairman, CPO & Beheergroep Texel UA) Jan van der Vis (Skipper of Jan Van Toon TX36)	11.05.2013 East Anglia THREE Commercial Fisheries Data Gathering (Dutch Fleet)
Antony Viera, AV (CRPMEM NORD) Isil Karayalim, IK (OP FROM NORD) Alexiane Brefort, AB (OP CME)	21.06.2013 East Anglia THREE Commercial Fisheries Data Gathering (French Fleet)
Steve Wightman (Lowestoft) on behalf of Wightman Fishing company.	29.7.2013. East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Felixstowe Ferry Fishermens Association (James White, Chris Hockley, Ivan Redditt, Charlie Honeywood, Roy Porter, Andrew Moore, Stephen Crawford, Allan Crawford, David Lee- Amies, Jamie Lee-Amies, EIFCA representative- Alan Garnham)	30.7.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Felixstowe Ferry Fishermens Association (Edward and Robert Butters)	30.7.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Southwold Fishermens Association (Richard Burrell)	30.7.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Orford and District Inshore Fishermen's Association (Roger Hipwell, Neil Macro, Bill Pinney, Stuart Moss, Peter Benstead, Jamie Potts)	31.7.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Orford and District Inshore Fishermens	02.08.2013

Consultee	Date/Agenda
Association (Philip Smy)	East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Rederscentrale (Belgian Fishermens Association/Producer Organisation) (Sander Meyns, (Rederscentrale) Davy Demeester, (Skipper, MFV 'Stephanie') Guillame Lebleu, (Skipper, MFV 'Flamingo') Dany Vletinck, (Skipper, MFV 'Jasmine') Rudy Neyts, (Skipper, MFV 'Marie Louise')	05.08.2013 East Anglia THREE Commercial Fisheries Data Gathering (Belgian Fleet)
Southwold Fishermens Association (Simon Drake, Andrew Hale, Paul Klyne, Colin Clarke, Nigel Hayter, Paul Tyack, Chris Dyer, Jerry Hilder)	09.08.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Harwich Fishermens Association (Trevor Armstrong, Ray Lovett, Arthur Bennett, Rob Osborne, Stephen Pells, Tony Marvan, V. Scott, Kevin Smith, Gary Hambling, P. Smith, Dean Caunter, Peter Caunter)	29.08.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)
Lowestoft Fishermen (Richard Kean-Cockburn George Tovell Malcolm Tubby Trevor Elliott Marc Connolly Paul Mears Paul Lines	25.09.2013 East Anglia THREE Commercial Fisheries Data Gathering (UK Fleet)

Consultee	Date/Agenda
Andrew Wood Melvin Robinson Ove Jenkinson)	

14.1.4 Existing Environment

14.1.4.1 Fisheries Control and Legislation

29. Commercial fishing in European Union (EU) waters is subject to numerous controls and regulations at European, national and local levels. The majority of such measures have a direct impact on fishing effort, landings weights and values and therefore the baseline. Furthermore, many are implemented at short notice with limited consultation, which limits confidence in predicting future trends. The main bodies regulating fisheries relevant to the proposed East Anglia THREE project through such measures are the EU through the Common Fisheries Policy (CFP), the MMO through national and regional regulations and Inshore Fisheries and Conservation Authorities (IFCAs) (out to 6nm) through local byelaws and Regulating Orders.

14.1.4.1.1 The Common Fisheries Policy

30. Since its ratification in 1983, the EU CFP has been one of the main factors determining the structure and capacity of European fishing fleets. The primary responsibility of the CFP is the long term conservation of fish stocks in EU waters. The CFP policy to protect pressure stocks (species identified as requiring management) is mainly through a system of quotas by ICES Area and Sub-area. A quota is the quantity of a species that can be legally retained on board and landed as opposed to the quantity actually caught.

31. The CFP has been widely criticised as it is considered that the system of quotas encourages the discarding of either undersized or over quota fish at sea. In 2007, the EU Court of Auditors judged that the CFP has failed to achieve its objective and a new review was launched in 2008. Changes to the Policy came into legislation in 2013. The changes were wide ranging and covered all aspects of fisheries management and objectives, including (EC, 2012):

- Transferable fishing concessions make it obligatory for EU member states to introduce individual transferable fishing rights for all vessels over-12m and towed gear vessels under-12m.
- Discards - introduction of a gradual discards ban: pelagic species in 2015, with a further ban on discards in other fisheries starting from January 2016.

- Conservation of fish stocks - apply the precautionary approach to fisheries management and aim to set fishing levels so that they restore and maintain fish populations above levels which can produce maximum sustainable yield (MSY) by 2015.
- Regionalisation of decision making - to decrease the dependency for fine detailed decision making taken in Brussels, to allow for more flexibility in local and regional involvement in fisheries management.
- Social sustainability - to ensure the viability of the fisheries sector and particularly coastal communities by promoting economic growth and jobs.

32. The implementation of these policy changes is likely to significantly alter various aspects of commercial fishing such as operating practices and fleet size in the future. At this stage the precise nature of the impact of such changes on the fishing industry is hard to predict.

14.1.4.1.2 Territorial Fishing Limits

33. The territorial fishing limits of EU member states extend out to 12nm, within which only the vessels of a state or vessels from other states with historical rights are entitled to legally fish. Vessels from EU member states are entitled to fish EU waters providing they have quota to do so.

34. Historic fishing rights between the UK's 6 and 12nm limits are held by Belgium for demersal species from Cromer to Lowestoft and from Lowestoft to North Foreland, whilst France has rights for all species from Lowestoft to North Foreland (*Figure 14.2*).

14.1.4.1.3 Stock Conservation Measures

35. There are currently five principal measures that form the basis of EU and national stock conservation policies and that directly affect the fisheries baseline:

- minimum landings size restrictions;
- species quotas;
- days at sea allocations;
- sea area restrictions; and
- vessel and gear restrictions.

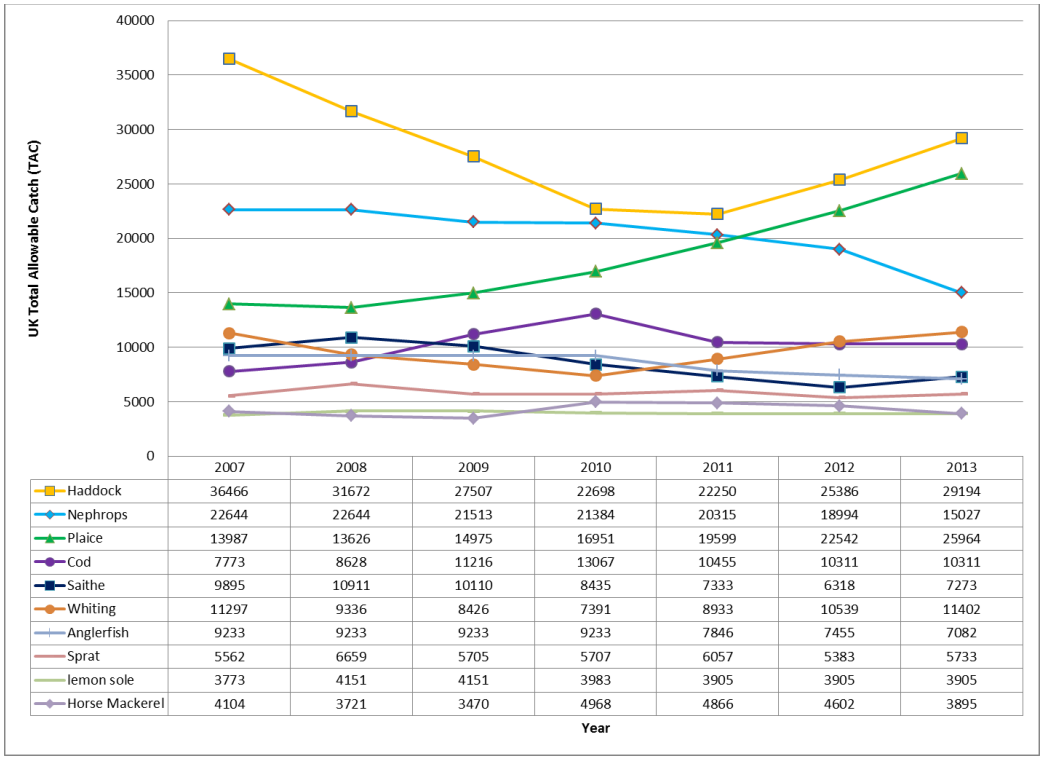
14.4.1.3.1 Quota Allocations

36. National quotas are allocated annually by the European Union from the Total Allowable Catches (TACs) set for pressure stock species. The national quotas allocated (in tonnes) from the TACs over the past five years to the UK, Netherlands,

Belgium and France are shown in *Diagram 14.1* to *Diagram 14.4,* respectively. As shown, with the exception of plaice (and to a lesser extent, herring) for which there have been increases in TACs, the majority of quotas have remained either stable or have been reduced over the past seven years. It is worth noting that these national quotas may apply to a number of sea areas, not only the North Sea (ICES Area IV).

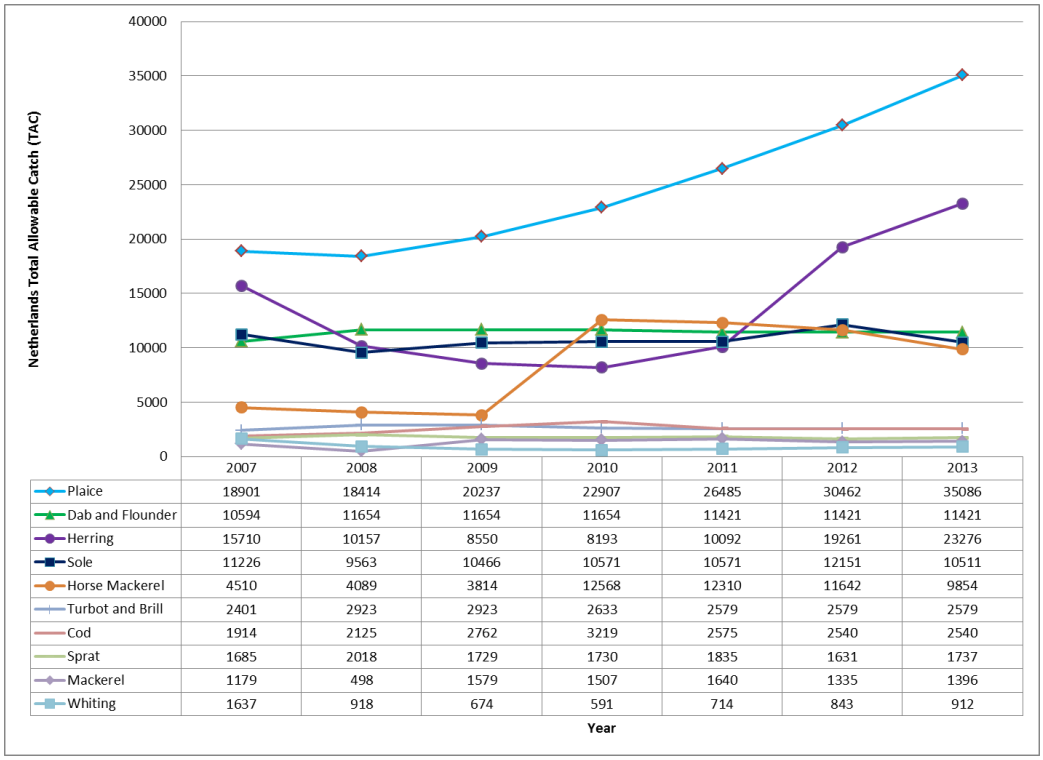
37. In the UK, quotas are distributed between producer organisations (POs), the inshore under-10m fleet and non-sector vessels (those that are over-10m in length, but do not belong to a PO). The percentage share each receives depends on the fixed quota allocation units (FQAs) held by the individual vessels in each group. FQAs are based on vessels historic landings during a fixed reference period (1994 to 1996 for most stocks). Quotas are effectively tangible assets with a commercial value and they can be and are traded, swapped or leased.

38. In July 2013 the high court ruled in favour of a proposal by Defra to reallocate FQAs unused for more than three years by larger vessels belonging to POs, to a pool to be made available to the under 10m fleet. This will result in a total increase of around 800 tonnes of quota being made available to non-sector, under 10m vessels.



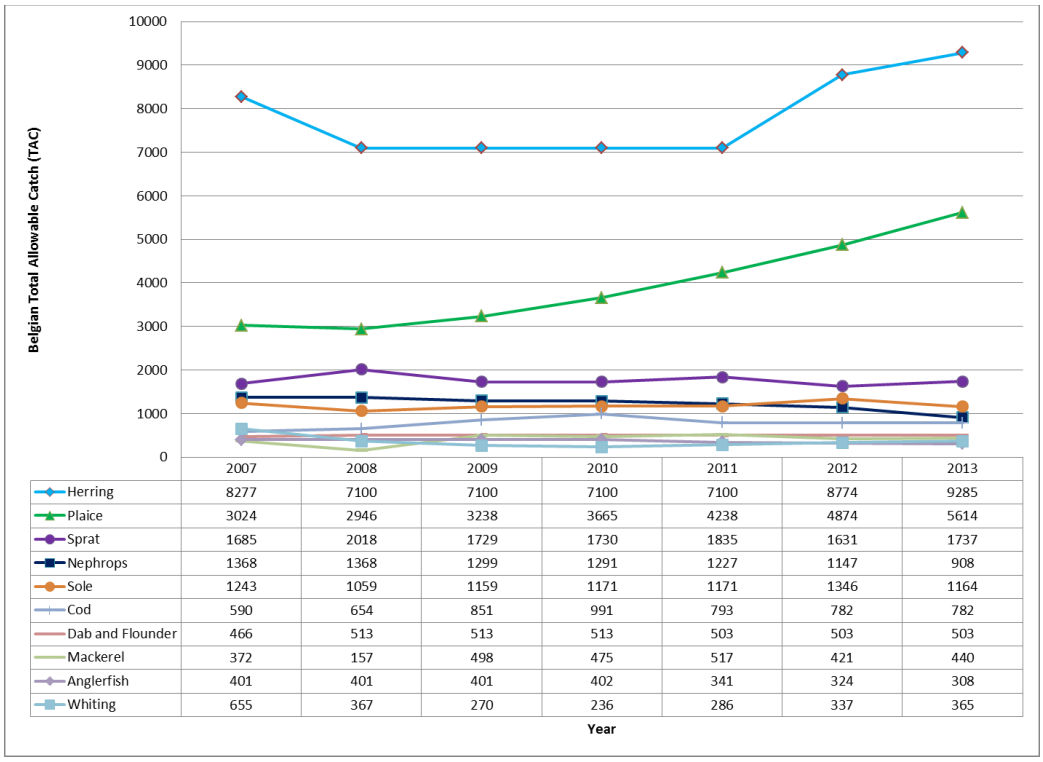
	2007	2008	2009	2010	2011	2012	2013
Haddock	36466	31672	27507	22698	22250	25386	29194
Nephrops	22644	22644	21513	21384	20315	18994	15027
Plaice	13987	13626	14975	16951	19599	22542	25964
Cod	7773	8628	11216	13067	10455	10311	10311
Saithe	9895	10911	10110	8435	7333	6318	7273
Whiting	11297	9336	8426	7391	8933	10539	11402
Anglerfish	9233	9233	9233	9233	7846	7455	7082
Sprat	5562	6659	5705	5707	6057	5383	5733
lemon sole	3773	4151	4151	3983	3905	3905	3905
Horse Mackerel	4104	3721	3470	4968	4866	4602	3895

Diagram 14.1 UK Species Quotas 2007 to 2013 (Source: Europa, 2013)



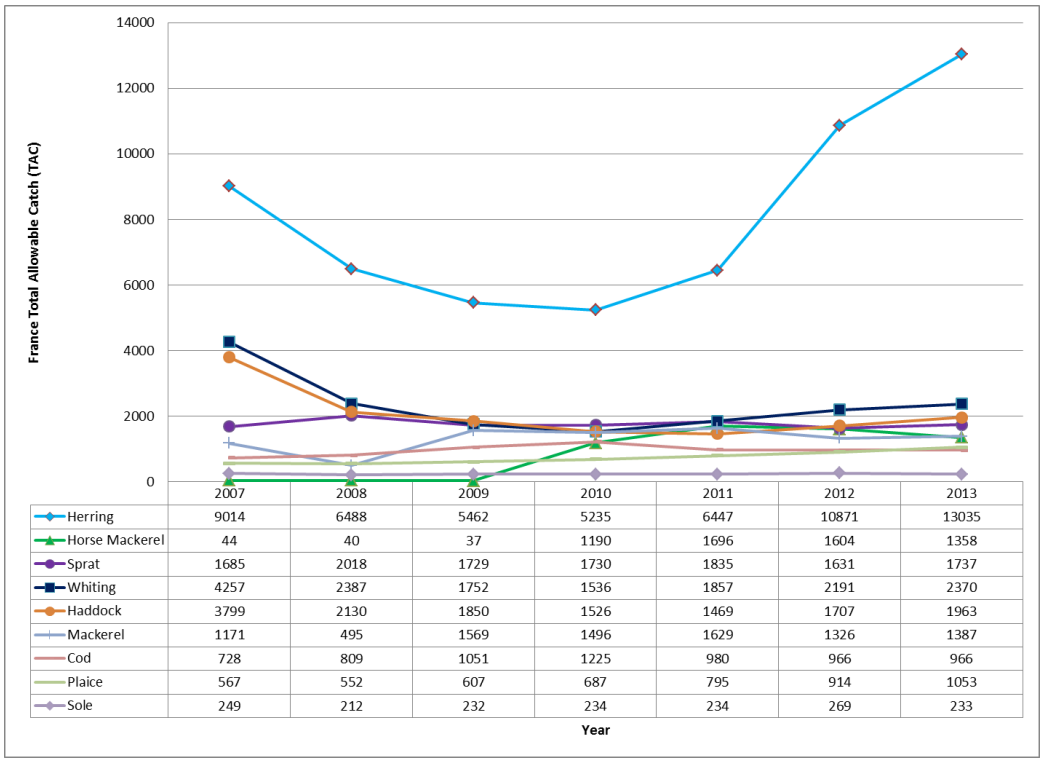
	2007	2008	2009	2010	2011	2012	2013
Plaice	18901	18414	20237	22907	26485	30462	35086
Dab and Flounder	10594	11654	11654	11654	11421	11421	11421
Herring	15710	10157	8550	8193	10092	19261	23276
Sole	11226	9563	10466	10571	10571	12151	10511
Horse Mackerel	4510	4089	3814	12568	12310	11642	9854
Turbot and Brill	2401	2923	2923	2633	2579	2579	2579
Cod	1914	2125	2762	3219	2575	2540	2540
Sprat	1685	2018	1729	1730	1835	1631	1737
Mackerel	1179	498	1579	1507	1640	1335	1396
Whiting	1637	918	674	591	714	843	912

Diagram 14.2 Netherlands Species Quotas 2007 to 2013 (Source: Europa, 2013)



	2007	2008	2009	2010	2011	2012	2013
Herring	8277	7100	7100	7100	7100	8774	9285
Plaice	3024	2946	3238	3665	4238	4874	5614
Sprat	1685	2018	1729	1730	1835	1631	1737
Nephrops	1368	1368	1299	1291	1227	1147	908
Sole	1243	1059	1159	1171	1171	1346	1164
Cod	590	654	851	991	793	782	782
Dab and Flounder	466	513	513	513	503	503	503
Mackerel	372	157	498	475	517	421	440
Anglerfish	401	401	401	402	341	324	308
Whiting	655	367	270	236	286	337	365

Diagram 14.3 Belgium Species Quotas 2007 to 2013 (Source: Europa, 2013)



	2007	2008	2009	2010	2011	2012	2013
Herring	9014	6488	5462	5235	6447	10871	13035
Horse Mackerel	44	40	37	1190	1696	1604	1358
Sprat	1685	2018	1729	1730	1835	1631	1737
Whiting	4257	2387	1752	1536	1857	2191	2370
Haddock	3799	2130	1850	1526	1469	1707	1963
Mackerel	1171	495	1569	1496	1629	1326	1387
Cod	728	809	1051	1225	980	966	966
Plaice	567	552	607	687	795	914	1053
Sole	249	212	232	234	234	269	233

Diagram 14.4 France Species Quotas 2007 to 2013 (Source: Europa, 2013)

14.4.1.3.2 Fishing Vessel Licenses and Vessel Capacity Units

39. Fishing vessels registered in the EU can only legally fish commercially and land catches for profit if the vessel holds a valid fishing license authorising it to fish in specific sea areas and target specific species.

40. The current licensing system is also designed to prevent increases in fleet numbers and catching capacities through the use of vessel capacity units (VCUs). The aim is to prevent increases in the catching capacities of Member State fleets. New vessels can only enter a fleet when an equivalent vessel has been removed.

41. To further reduce fishing capacity, a number of decommissioning schemes have been introduced over the past 20 years with significant numbers of both UK and other EU Member State's vessels accepting the proposal. The decommissioning schemes in 2001 / 2002 and 2003 / 2004 removed 165 vessels and their licences from the UK demersal fleet.

14.4.1.3.3 Days at Sea Restrictions

42. In addition to quota restrictions, over-10m vessels are subject to days at sea restrictions as part of the EC policy of reducing fishing effort in EU waters. The regulation controlling days at sea (Annex V, EU Regulation 2287/2003) is somewhat complex, relating to species targeted, gear type, mesh size and elected management periods. In essence, vessels using demersal whitefish gears can be restricted to as little as equivalent of 13 to 14 days at sea a month. Pelagic vessel and static gear vessels are currently not effort restricted. As with the system of quotas, the review of the CFP may alter the current effort restrictions.

14.4.1.3.4 Sea Area Restrictions

43. Sea area closures and restrictions were introduced in 2008 and are administered by the MMO. These include Real Time Closures (RTCs) and Seasonal Closures which, for example, support the aims of the cod recovery plan by reducing cod mortality through the reduction of juvenile discards and by avoiding spawning aggregations.

44. Prohibited gears in RTCs and seasonal closed areas include demersal trawls and seines, beam trawls, gill and trammel nets and longlines. Scallop dredges, pots, pelagic gears, driftnets and purse seines are however permitted within RTCs and seasonal closed areas.

45. Annual seasonal cod closures are in operation in two areas to the east and south east of the East Anglia THREE site, outside the East Anglia Zone boundary. These closures are enforced between 1st of January and 30th April each year.

14.4.1.3.5 Shellfish Entitlements

46. Since 2004, vessels landing more than 25 crabs or five lobsters per day must hold a shellfish entitlement. Under these arrangements, shellfish entitlements allowing unrestricted amounts of crabs and lobsters to continue to be caught were issued to owners of licensed vessels that have the required track records of landings. It is a requirement for vessels of under-10m with shellfish entitlements to submit log sheets for crab and lobster landings to their local fishery office. The implementation of this measure has increased the accuracy of MMO fisheries statistics from 2006 onwards for under-10m vessels targeting shellfish.

14.4.1.3.6 IFCA Byelaws

47. The Eastern IFCA is responsible for the management of fisheries within the 6nm limit. Byelaws are implemented by the IFCA to manage the fisheries within their jurisdiction. Byelaws impacting the vessels fishing in the vicinity of the offshore cable corridor include the following:

- Shellfish fisheries can be closed by the committee, following suitably qualified scientific advice; and
- No one shall trawl fish within 3nm if the vessel is more than 15.24m in length.

14.1.4.1.4 Marine Protected Areas

48. In the UK, Marine Protected Areas (MPAs) have been proposed with the stated objective of conserving marine biodiversity, in particular species and habitats of European and national importance. Marine Conservation Zones (MCZs) are a type of MPA designed to protect habitats, species and geology of national importance.

49. Special Areas of Conservation (SACs) are also a type of MPA, which are implemented to protect habitats and species listed under the Habitats Directive. In the UK, there are currently 107 SACs with marine components for marine habitats or species.

50. The UK is in the process of establishing MCZs. There are 18 recommended MCZ's in the North Sea. MPA's including MCZ's and SACs have the possibility to restrict or prohibit certain types of fishing activities.

14.1.4.2 Overview of Fishing Activity (All Nationalities)

51. *Figure 14.3* shows the distribution of surveillance sightings of fishing vessels recorded in the area of the proposed East Anglia THREE project by nationality. The number and respective proportion of total observations each nationality represents in ICES rectangles occupied by the East Anglia Zone and the proposed East Anglia THREE project is shown in *Table 14.3.*

52. Sightings within the vicinity of the proposed East Anglia THREE project are comprised principally of UK, Dutch and Belgian vessels. Observations of German and French vessels are also recorded but in considerably lower numbers (2010 to 2014).

53. Dutch vessels are the dominant fleet recorded within the East Anglia Zone and are most active within the northern half. The highest densities of Dutch vessel sightings are recorded outside of the East Anglia THREE project area, in the north west of the zone. Over 80% of all observations within the windfarm analysis area are of Dutch vessels and this fleet is also the most frequently observed within the East Anglia THREE site. Sightings of Belgian vessels represent 7.7% of observations in the windfarm analysis area, although none of these originate from within the East Anglia THREE site. UK and German vessels have been recorded only infrequently in this area (22 and eight observations, respectively). In both cases only a single observation was from within East Anglia THREE site. Activity by vessels of other nationalities has been negligible.

54. Recorded Belgian activity is greatest within the offshore cable analysis area, where vessels of this fleet represent almost half all sightings (173; 41.2%). Significantly fewer Dutch registered vessels are recorded from this rectangle (132; 31.4%) compared to the windfarm analysis area, although activity is still considerably higher than that recorded by both the UK (45; 10.7%) and German (39; 9.3%) fleets. French and Danish vessels are recorded less frequently, respectively accounting for 3.1% and 2.9% of observations in this area.

55. Vessels of UK registration represent the majority of sightings in the inshore area of the cable corridor (352; 80.5%). As a considerable proportion of this ICES rectangle is inside the 6nm limit, sightings of non-UK vessels are considerably lower than in other areas. As a small area lies within the 6 to 12nm limit, however, Belgian vessels (44; 10.1%) are more active than the Dutch (6; 1.4%).

Table 14.3 Breakdown of Vessel Sightings by Nationality in the proposed East Anglia THREE Project (2010 to 2014) (Source: MMO, 2015)

Area	Nationality	No. of sightings	% of total sightings
Windfarm analysis area (34F2)	Netherlands	459	83.8%
	Belgium	42	7.7%
	United Kingdom	22	4.0%
	Germany	8	1.5%
	Denmark	7	1.3%
	France	7	1.3%
	China	2	0.4%
	Ireland	1	0.2%
	Total	548	100.0%
Offshore cable analysis area (33F2)	Belgium	173	41.2%
	Netherlands	132	31.4%
	United Kingdom	45	10.7%
	Germany	39	9.3%
	France	13	3.1%
	Denmark	12	2.9%
	China	2	0.5%
	Norway	2	0.5%
	Unknown	2	0.5%
	Total	420	100.0%
Inshore cable analysis area (33F1)	United Kingdom	352	80.5%
	Belgium	44	10.1%
	France	34	7.8%
	Netherlands	6	1.4%
	Denmark	1	0.2%
	Total	437	100.0%

14.1.4.3 Dutch Fishing Activity - Overview

56. MMO surveillance sightings of Dutch registered vessels identified in the vicinity of the proposed East Anglia THREE project are shown in *Figure 14.4.* The principal gear types employed are as follows:

- beam trawling;
- trawling (unspecified);

- demersal trawling; and
- seine netting.

14.1.4.3.1 Beam Trawling[2]

57. *Figure 14.5* shows the distribution of Dutch of beam trawl landings in the North Sea. Activity by the fleet is widely distributed throughout all areas although values in the south exceed those recorded in the north substantially. Both the East Anglia THREE site and the offshore cable corridor are also situated in the proximity of high value beam trawling grounds. Exceptionally high landings are recorded immediately south of the East Anglia Zone.

14.1.4.3.2 Demersal Otter Trawling[3]

58. The distribution of Dutch demersal otter trawling is shown in *Figure 14.6.* Similar to the beam trawl fleet, activity is widely distributed throughout the North Sea. Landings values from the East Anglia THREE zone are low compared to those from grounds located to the east and further north in the central North Sea.

14.1.4.4 Dutch Fishing Activity - Regional

14.1.4.4.1 Surveillance Sightings

59. *Figure 14.4* shows that the majority of Dutch vessel observations within the vicinity of the proposed East Anglia THREE project are of beam trawlers. Sightings are densest in an area to the west of the East Anglia THREE site; those within the site itself are somewhat lower. In addition to beam trawlers, unspecified trawlers have also been recorded within the East Anglia THREE site, albeit in significantly lower numbers.

60. Sightings of Dutch vessels in the offshore cable corridor are generally low but increase in the eastern section. Increased beam trawling activity is recorded immediately south of the offshore cable corridor. Demersal trawlers have been recorded in low numbers inside the East Anglia Zone. It is likely that a significant number of 'unspecified' trawler sightings were in fact of demersal trawlers, though

[2] Beam trawl is a towed gear comprised of steel beams held off the seabed by shoes or rollers at each end, onto which a net is attached. This principal has been progressed further by the development of 'sum wing' trawl where the net and chains are attached to a hydrofoil rather than a beam. Further information on gear specification and operational practices are provided in *section 14.1.4.5.2*.

[3] Demersal otter trawl is a towed gear comprised of a funnel shaped net held open by trawl doors. The ground lines of nets are weighted to maintain contact with the seabed and can vary in design depending on the type of ground fished. Further information on gear specification and operational practices are provided in *section 14.1.4.5.2*.

this is not possible to quantify as vessels also deploying pelagic trawls may also be included within this category

14.1.4.4.2 Landings Values

61. *Figure 14.7* shows that in all three analysis areas, the majority of landings values are for sole, followed by plaice. In the windfarm analysis area (34F2), sole landings values represent up to two thirds of the total value.

62. *Figure 14.8* shows that in all three analysis areas the majority of landings values originate from the beam trawl fleet, which is consistent with the distribution by species described above. In the windfarm analysis area, beam trawl landings represent in excess of 90% of the total. The remainder of landings originate from demersal trawlers and fly seiners[4].

63. A similar pattern is evident in the offshore cable analysis area, although total annual landings are reduced by approximately 50%. In this area midwater pair trawlers[5] (likely targeting either sprat or horse mackerel) record the remainder of landings values. Although landings by species category have not been provided, consultation with Dutch fisheries stakeholders has indicated that sole and, to a lesser extent, plaice are the main target species for the beam trawl fishery in the vicinity of the proposed East Anglia THREE project. Smaller amounts of brill and turbot quota are allocated to the Dutch fleet in ICES Area IVc.

64. *Figure 14.9* shows that almost all Dutch activity in the vicinity of the proposed East Anglia THREE project is by the over-15m fleet. Based on information gathered during consultation, the majority of vessels fishing these grounds are in excess of 38m in length.

[4] Fly seining (also called Scottish seining) is an encircling gear derived of traditional anchor seining whereby the vessel does not anchor during hauling of the encircling net, instead holding position using the vessels propeller.

[5] Midwater trawl is a towed gear comprised of a funnel shaped net held open by trawl doors and operated above the sea bed.

14.1.4.4.3 Fishing Effort

65. Dutch Fishing effort by method and vessel category is shown in *Figure 14.10* and *14.11* respectively. It can be seen that patterns broadly reflect landings values and the majority of effort is by beam trawlers. With the exception of several rectangles off the Dutch coast and closer to UK shores, all effort is recorded by vessels from the over-15m fleet.

14.1.4.4.4 VMS Data

66. Dutch VMS integrated landings values and effort by method provided by IMARES are shown in *Figure 14.12* to *Figure 14.21*. As the majority of the Dutch fleet active in offshore areas of the Southern North Sea is over-15m, this data is considered to accurately represent levels of fishing activity in the vicinity of the proposed East Anglia THREE project and is also the most up to date data source provided by IMARES. This dataset does not, however, include any activity by the Anglo-Dutch fleet, landings and effort data from which is held by the UK MMO. Analyses of these datasets are included within the relevant sections detailing UK fishing activity.

67. *Figure 14.12* shows the spatial distribution of VMS integrated landing values from the beam trawl fleet. The highest levels of landings values (over €1,500,000) by the beam trawl fleet originate from an area along the coast of the Netherlands and Belgium. Landings from the vicinity of the proposed East Anglia THREE project are of high value and are generally higher in the north- of the East Anglia Zone. It is evident that the highest value landings from this fishery originate from outside the East Anglia THREE site in the western central part of the windfarm analysis area. Landings from within the East Anglia THREE site itself are somewhat lower. Those from the immediate vicinity of the offshore cable corridor range from less than €50,000 to €250,000 in the south-western and central areas increasing to €500,000 to €1,000,000 closer to the East Anglia THREE site.

68. VMS values from the Dutch demersal trawl fleet are shown in *Figure 14.13.* The highest landings values (over €50,000) originate from central and eastern North Sea as well as along the Dutch and Belgian coast. As far fewer vessels use demersal otter gear, however, by comparison landings are much lower throughout most of the area under consideration. The highest value areas are situated in two grid locations to the east of the windfarm analysis area. Lower VMS values are recorded in the offshore cable corridor increasing within the East Anglia THREE site.

69. *Figure 14.14* shows the distribution of VMS by values from vessels operating seine nets. The data shows that the highest landings values from the seine netting fleet originate from central and western English Channel as well as central and north-east North Sea. The East Anglia THREE site is located in an area of moderate to high value

whilst values are considerably lower in the vicinity of the offshore cable corridor. It was stated during consultation that low numbers of vessels currently operate in this fishery.

70. The distribution of VMS density by value for Dutch vessels operating static nets is shown in *Figure 14.15*. The data shows that the highest levels of landings values (over €25,000) originate from the area off the Dutch coast. Very low values (less than €1,000) are recorded by this fleet within the East Anglia THREE site. Similarly low values are recorded immediately south in the eastern area of the offshore cable corridor.

71. *Figure 14.16* shows the distribution of pelagic vessel activity relative to the proposed East Anglia THREE project. The highest landings values in this fishery originate from the English Channel and the Northern part of the North Sea. With respect to the East Anglia Zone, high value landings are recorded to the north of the Zone whereas low to moderate landings values originate from the rest of the zone. The East Anglia THREE project is located in area recording moderate landings values. Values recorded in the area of the offshore cable corridor show more variability.

72. *Figures 14.17 to Figure 14.21* show patterns of effort integrated VMS for Dutch vessels engaged in beam trawling, demersal trawling, seine netting, netting[6] and pelagic trawling, respectively. In general, the areas of highest effort correspond to those observed for value.

73. Effort by the beam trawl fleet is significantly higher than all gear types recording an average of between 50 and 100 days in the East Anglia THREE site (*Figure 14.17*). Effort by the same fleet is however higher in a discrete area to the west of the windfarm analysis area (100 to 150 days). In a regional context, areas recording the highest levels of effort by the Dutch beam trawl fleet are located along the coast of the Netherlands and Belgium (over 200 days).

74. The highest levels of effort by demersal trawl (over 50 days) are recorded in central and eastern North Sea and to a lower extent off the Dutch coast (*Figure 14.18*). Effort by demersal trawlers are low (less than five days) within the East Anglia THREE site and offshore cable corridor.

75. The highest levels of effort by the Seine netting fleet (over 20 days) are recorded in the English Channel and off the Dutch and Belgian coast (*Figure 14.19*). Low to moderate effort (less than 10 days) is recorded within the East Anglia THREE site and the offshore cable corridor.

[6] Nets, which can be either fixed or drifting, are a static gear operated in fleets which can be up to 1200m in length.

76. The netting and the pelagic trawling fleets record a maximum of two days on average targeting grounds within the East Anglia THREE site, confirming the existence of more intensely targeted grounds (*Figure 14.20* and *Figure 14.21* respectively). Interestingly pelagic trawlers record low effort but corresponding landings values are relatively high (e.g. one to two days for €25,000 to €50,000). This is because pelagic vessels have a high catching capacity and are capable of landing exceptionally high volumes of the target species (such as horse mackerel) in a single shot of the nets.

14.1.4.5 Dutch Fishing Activity – Project Specific

14.1.4.5.1 Annual Variation

77. Seasonal landings and effort datasets and annual statistics have been provided by the Dutch authorities up to 2014 for method and species. Therefore the following sections describe these statistics for each analysis area on an annual basis from 2010 to 2014.

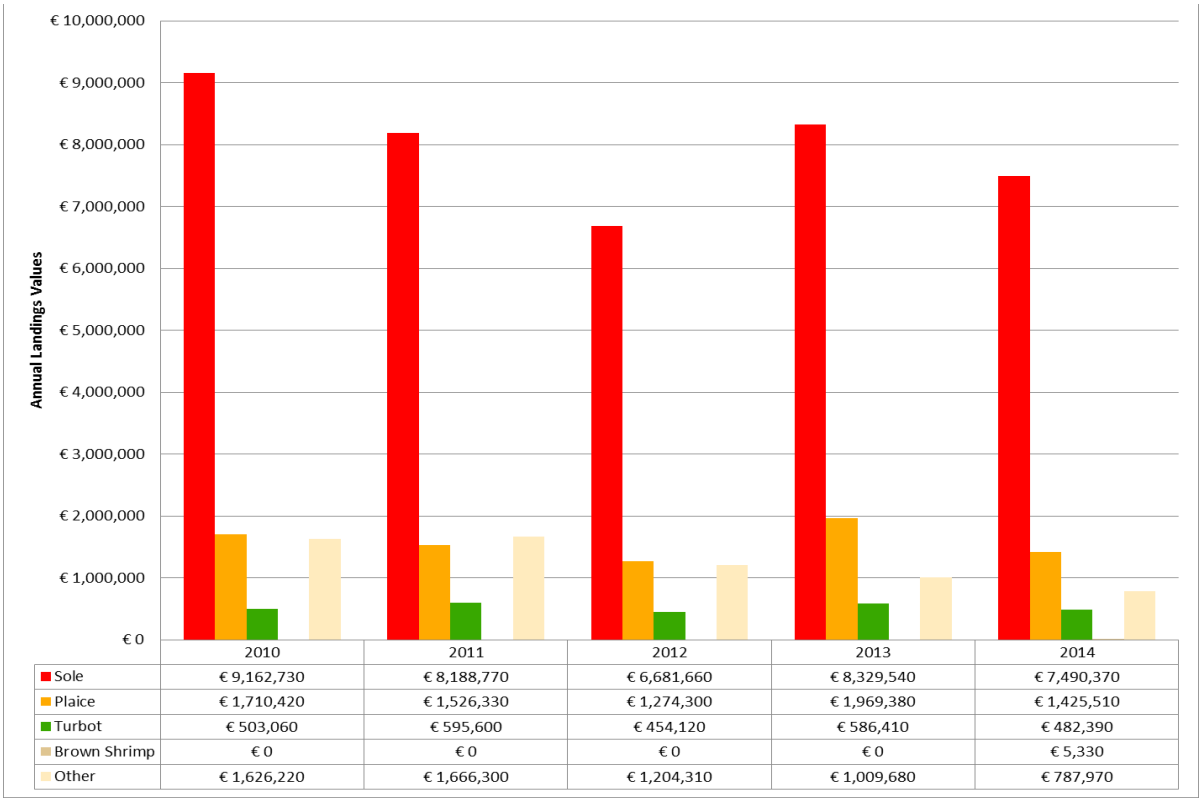
14.4.5.1.1 Windfarm Analysis Area (34F2)

78. *Diagram 14.5* and *Diagram 14.6* show the annual variations of landings from the Dutch fleet by species and method in the Windfarm Analysis Area. *Diagram 14.7* shows the annual variation of effort by method in the Windfarm Analysis Area.

79. As shown in *Diagram 14.5*, the highest landings values by the Dutch fleet are for sole, reflecting the activity of beam trawlers which is the main target species in this fishery. Landings values of sole have slightly decreased from 2010 (€9,162,730) to 2012 (€6,681,660) before increasing again in 2013 (€8,840,410). Plaice is the second most commercially important species for the Dutch fleet and the patterns of landings broadly follow those of sole although the values are much lower.

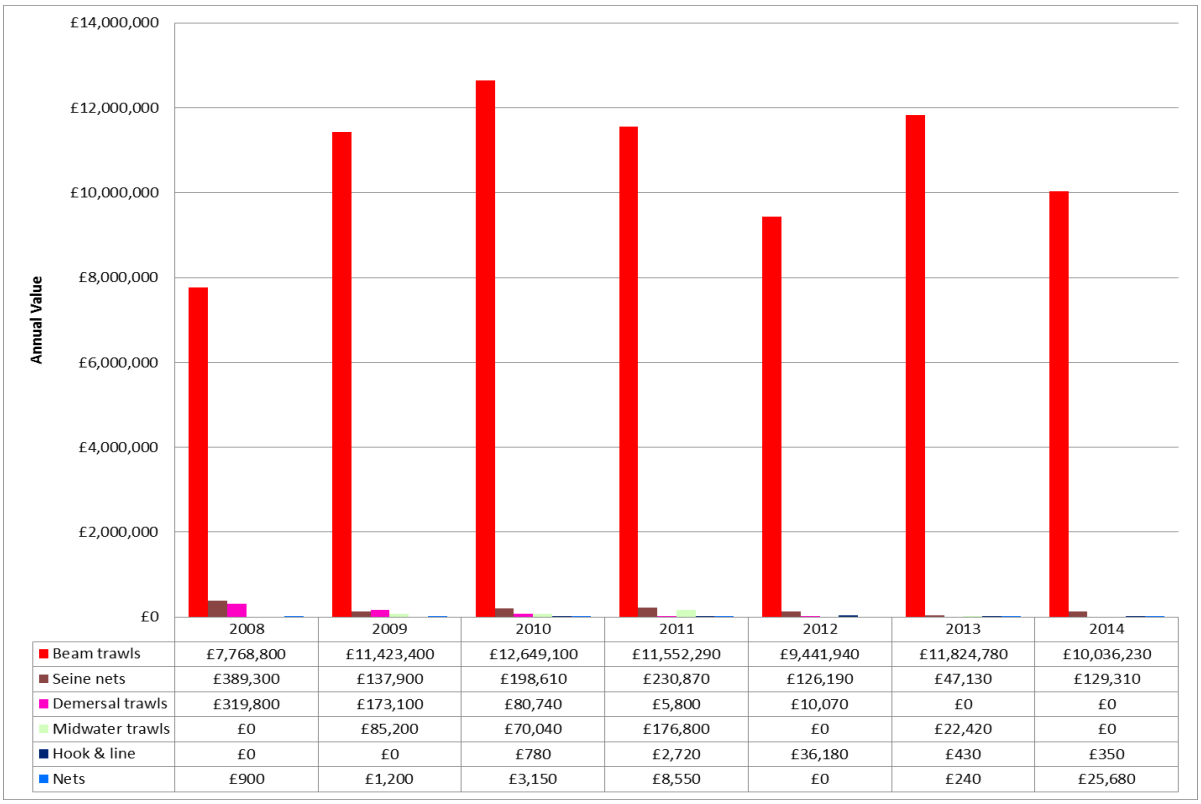
80. As shown in *Diagram 14.6* the distribution of landings values from the Dutch fleet in the Windfarm Analysis Area is similar to that observed in the offshore cable analysis areas with landings from the beam trawl fleet being significantly higher than all other methods, reflecting the high value of sole. Values recorded by beam trawlers in this rectangle have consistently exceeded €7,000,000 in all years. Landings in 2014 (€10,036,230) are approximately 50% greater than the corresponding value from the offshore cable analysis area.

81. *Diagram* 14.7 supports the predominance of Dutch beam trawlers in the windfarm analysis area and annual variations of effort broadly reflect landings values.



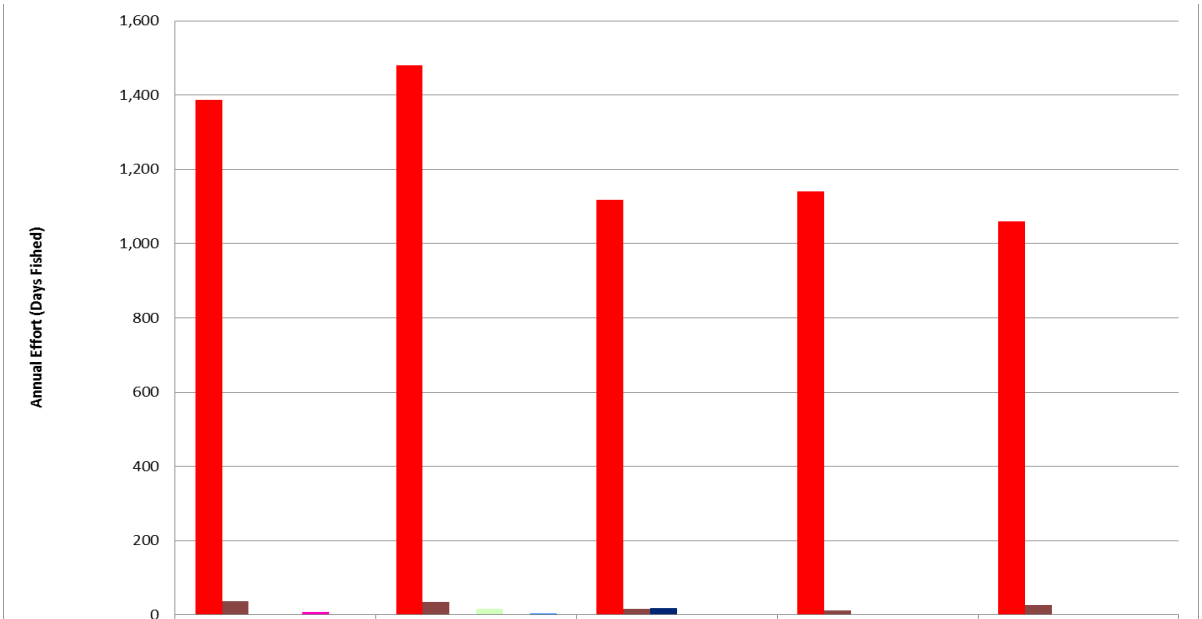
	2010	2011	2012	2013	2014
Sole	€ 9,162,730	€ 8,188,770	€ 6,681,660	€ 8,329,540	€ 7,490,370
Plaice	€ 1,710,420	€ 1,526,330	€ 1,274,300	€ 1,969,380	€ 1,425,510
Turbot	€ 503,060	€ 595,600	€ 454,120	€ 586,410	€ 482,390
Brown Shrimp	€ 0	€ 0	€ 0	€ 0	€ 5,330
Other	€ 1,626,220	€ 1,666,300	€ 1,204,310	€ 1,009,680	€ 787,970

Diagram 14.5 Netherlands Annual Landings Values (€) by Species in the Windfarm Analysis Area (34F2; Source: LEI, 2014)



	2008	2009	2010	2011	2012	2013	2014
Beam trawls	£7,768,800	£11,423,400	£12,649,100	£11,552,290	£9,441,940	£11,824,780	£10,036,230
Seine nets	£389,300	£137,900	£198,610	£230,870	£126,190	£47,130	£129,310
Demersal trawls	£319,800	£173,100	£80,740	£5,800	£10,070	£0	£0
Midwater trawls	£0	£85,200	£70,040	£176,800	£0	£22,420	£0
Hook & line	£0	£0	£780	£2,720	£36,180	£430	£350
Nets	£900	£1,200	£3,150	£8,550	£0	£240	£25,680

Diagram 14.6 Netherlands Annual Landings Values (€) by Method in the Windfarm Analysis Area (34F2; Source: LEI, 2015)



	2010	2011	2012	2013	2014
Beam trawl	1,388	1,481	1,117	1,140	1,060
Seine nets	36	34	16	12	27
Hook and line	2	2	18	1	1
Midwater trawls	1	16	0	2	0
Demersal Trawls	7	2	1	0	0
Nets	2	3	0	1	1

Diagram 14.7 Netherlands Annual Effort (Days Fished) by Method in the Windfarm Analysis Area (34F2; Source: LEI, 2014)

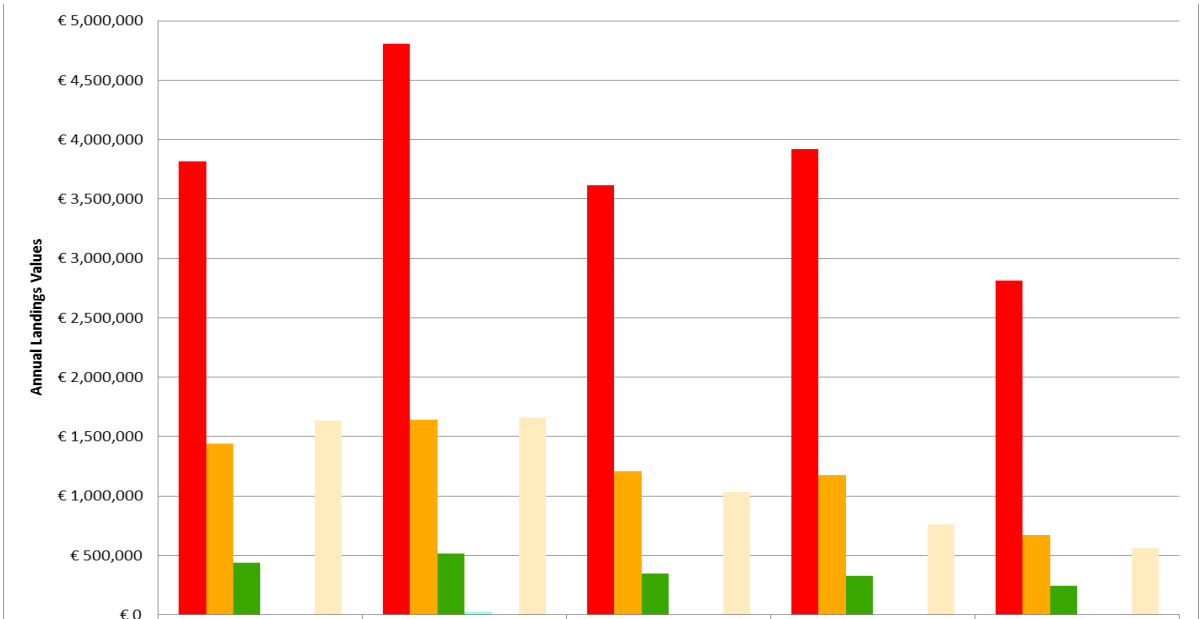
14.4.5.1.2 Offshore Cable Analysis Area

82. Diagram 14.8 and Diagram 14.9 show the annual variations of landings from the Dutch fleet by species and method in the Offshore Cable Analysis Area. *Diagram 14.10* shows the annual variation of effort by method in the Offshore Cable Analysis Area.

83. As observed in the windfarm analysis area, the highest landings values by the Dutch fleet has been for sole over the period, reflecting the activity of beam trawlers (*Diagram 14.8*). Landings values of sole peaked in 2011 (€4,809,250), and 2013 (€3,918,300) but were reduced in 2014 (€2,814,430). Plaice is again the second most commercially important species for the Dutch fleet where the annual distribution of landings follow similar patterns to sole but are of considerably lower value.

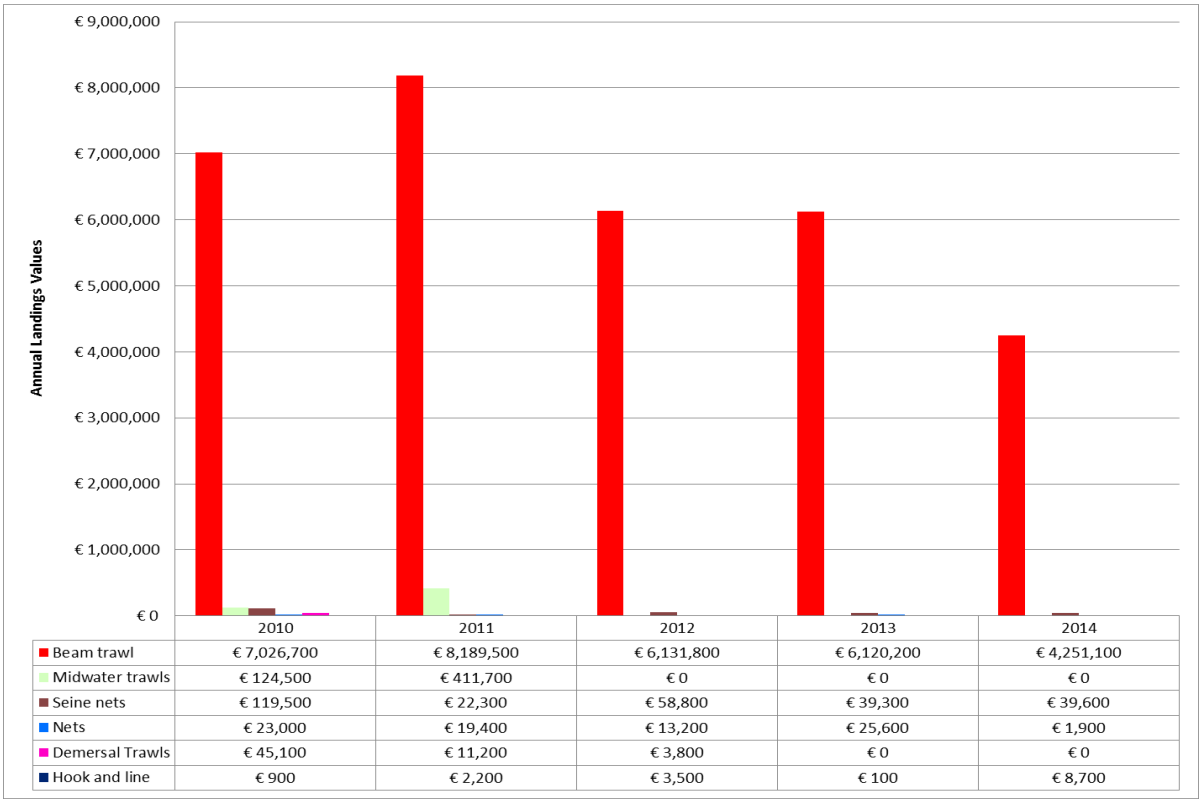
84. *Diagram 14.9* shows values in the offshore cable analysis area are dominated by landings from the beam trawl fleet. Values from this rectangle are considerably higher than for the inshore cable analysis area having remained consistently above €4,000,000 from 2008 to 2014. Landings recorded by other methods were at least an order of magnitude lower during the same period. Landings from midwater trawling vessels reached €411,700 in 2011 but have been considerably lower in other years.

85. As observed in the windfarm analysis area, effort data supports the predominance of Dutch beam trawlers in the offshore analysis area (*Diagram 14.10*). Annual variations of effort broadly reflect landings values, except in 2012 and 2013 when effort decreased from 623 days fished to 532 days fished whereas landings values by beam trawlers has increased over the period. This could be explained by high variability in sole market prices.



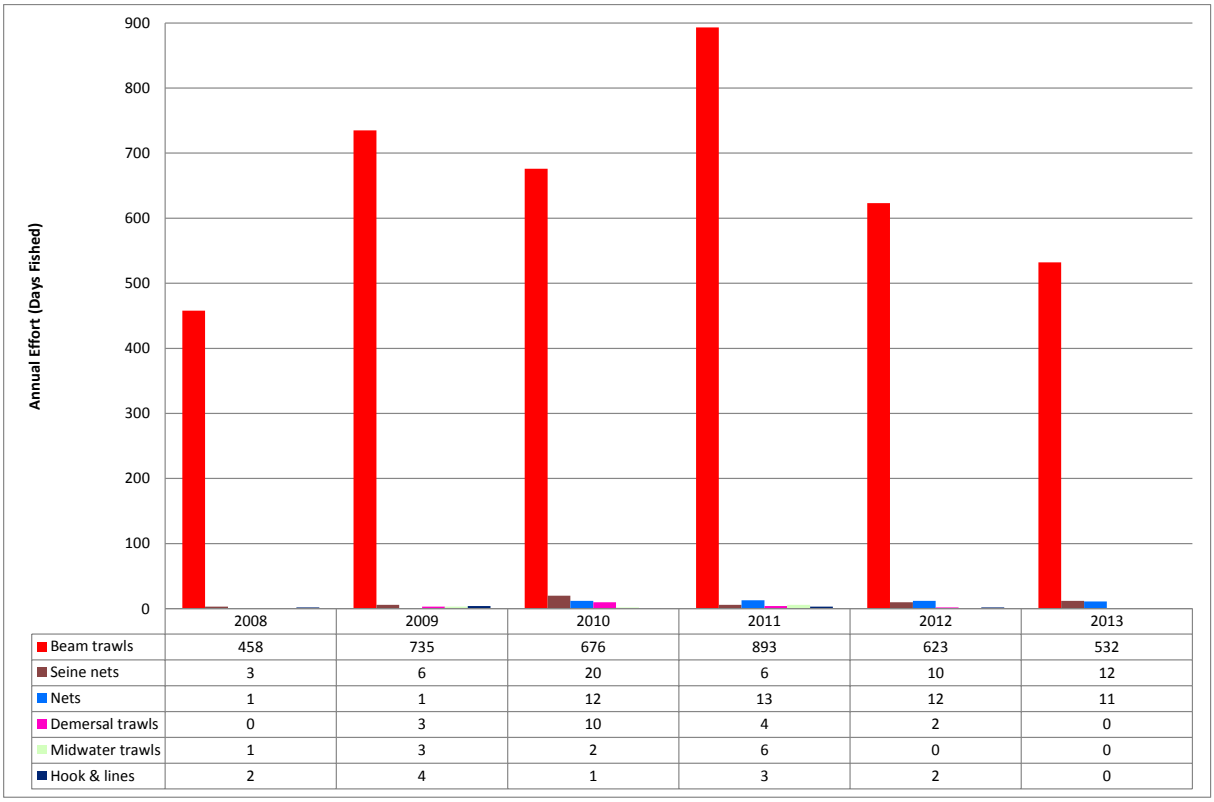
	2010	2011	2012	2013	2014
Sole	€ 3,816,760	€ 4,809,250	€ 3,615,810	€ 3,918,300	€ 2,814,430
Plaice	€ 1,442,320	€ 1,643,400	€ 1,211,690	€ 1,179,180	€ 671,620
Turbot	€ 441,350	€ 518,720	€ 350,040	€ 327,590	€ 247,480
Herring	€ 0	€ 21,550	€ 0	€ 0	€ 0
Brown Shrimp	€ 3,150	€ 0	€ 0	€ 0	€ 4,490
Other	€ 1,636,210	€ 1,663,440	€ 1,033,470	€ 760,070	€ 563,210

Diagram 14.8 Netherlands Annual Landings Values (€) by Species in the Offshore Cable Analysis Area (33F2; Source: LEI, 2014)



	2010	2011	2012	2013	2014
Beam trawl	€ 7,026,700	€ 8,189,500	€ 6,131,800	€ 6,120,200	€ 4,251,100
Midwater trawls	€ 124,500	€ 411,700	€ 0	€ 0	€ 0
Seine nets	€ 119,500	€ 22,300	€ 58,800	€ 39,300	€ 39,600
Nets	€ 23,000	€ 19,400	€ 13,200	€ 25,600	€ 1,900
Demersal Trawls	€ 45,100	€ 11,200	€ 3,800	€ 0	€ 0
Hook and line	€ 900	€ 2,200	€ 3,500	€ 100	€ 8,700

Diagram 14.9 Netherlands Annual Landings Values (€) by Method in the Offshore Cable Analysis Area (33F2; Source: LEI, 2015)



	2008	2009	2010	2011	2012	2013
Beam trawls	458	735	676	893	623	532
Seine nets	3	6	20	6	10	12
Nets	1	1	12	13	12	11
Demersal trawls	0	3	10	4	2	0
Midwater trawls	1	3	2	6	0	0
Hook & lines	2	4	1	3	2	0

Diagram 0.1 Netherlands Annual Effort (Days Fished) by Method in the Offshore Cable Analysis (34F2; Source: LEI, 2014)

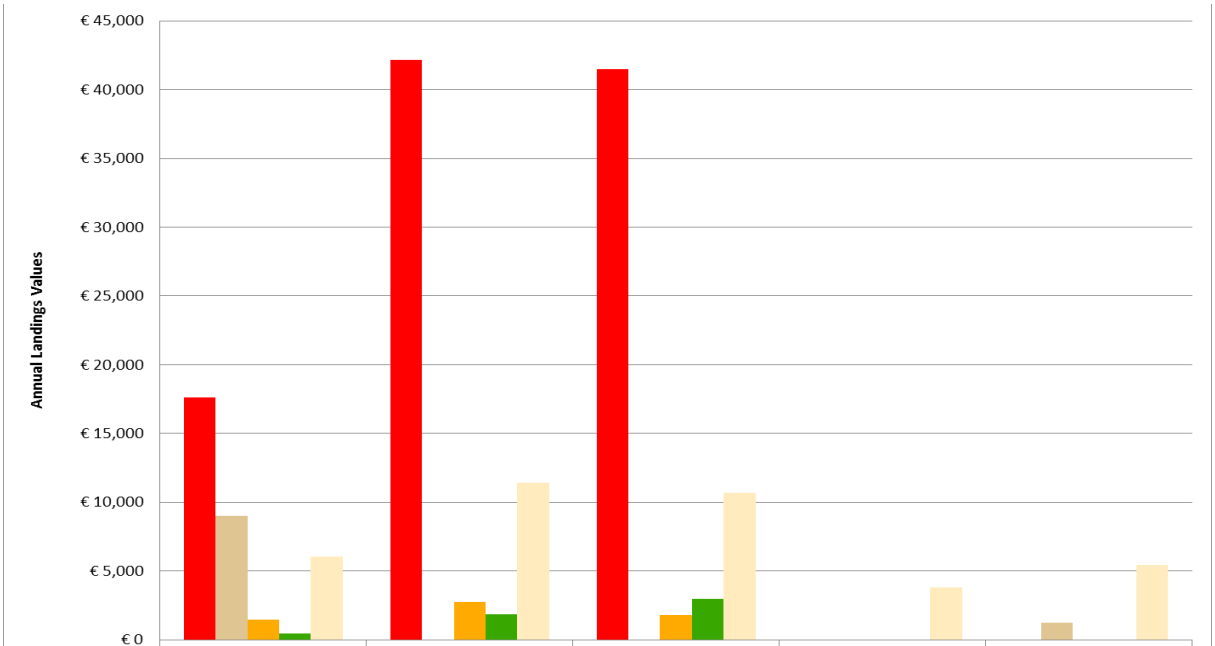
14.4.5.1.3 Inshore Cable Analysis Area

86. *Diagram 14.11* and *Diagram 14.12* show the annual variations of landings from the Dutch fleet by species and method in the inshore cable analysis area. *Diagram 14.13* shows the annual variation of effort by method in the inshore cable analysis area.

87. *Diagram* 14.11 shows more variability in landings values by species in the inshore cable analysis area. Sole has been the most commercially important species from 2009 and 2013, but landing values are of much lower ranges than in the windfarm analysis area. No landings of sole were recorded in 2013, which is directly reflected by the landings values by method and the effort data. The values recorded in 2013 are for mid-water trawled sprat.

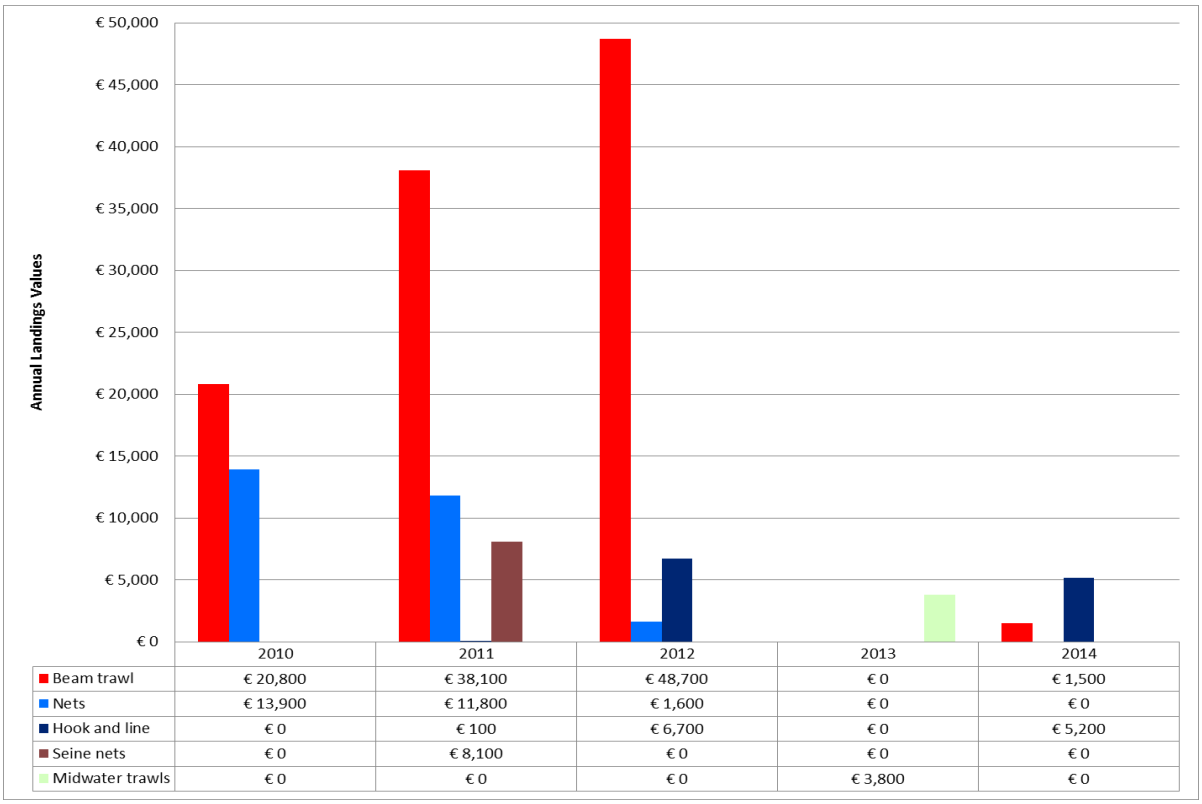
88. In addition to landings values being of much lower ranges in the inshore cable analysis area, there has been considerable fluctuation by all gear types over the period (*Diagram 14.12*), directly reflecting landings values by species. Indeed, landings values recorded by beam trawlers have exceeded all other gear types from 2008 to 2012, peaking in 2012 (€48,700) but were absent in 2013. Landings values recorded by netting vessels were recorded in 2010, 2011 and 2012 only, declining over the three years. Landing values by mid-water trawlers were recorded in 2013 only.

89. *Diagram 14.13* shows that effort broadly reflects patterns in landing values. It is interesting to note that the highest number of days at sea in 2010 and 2011 were by netters but the highest landings values for these years were by beam trawlers, which can be explained either by netters targeting less profitable species or having a lower catch per unit of effort (CPUE).



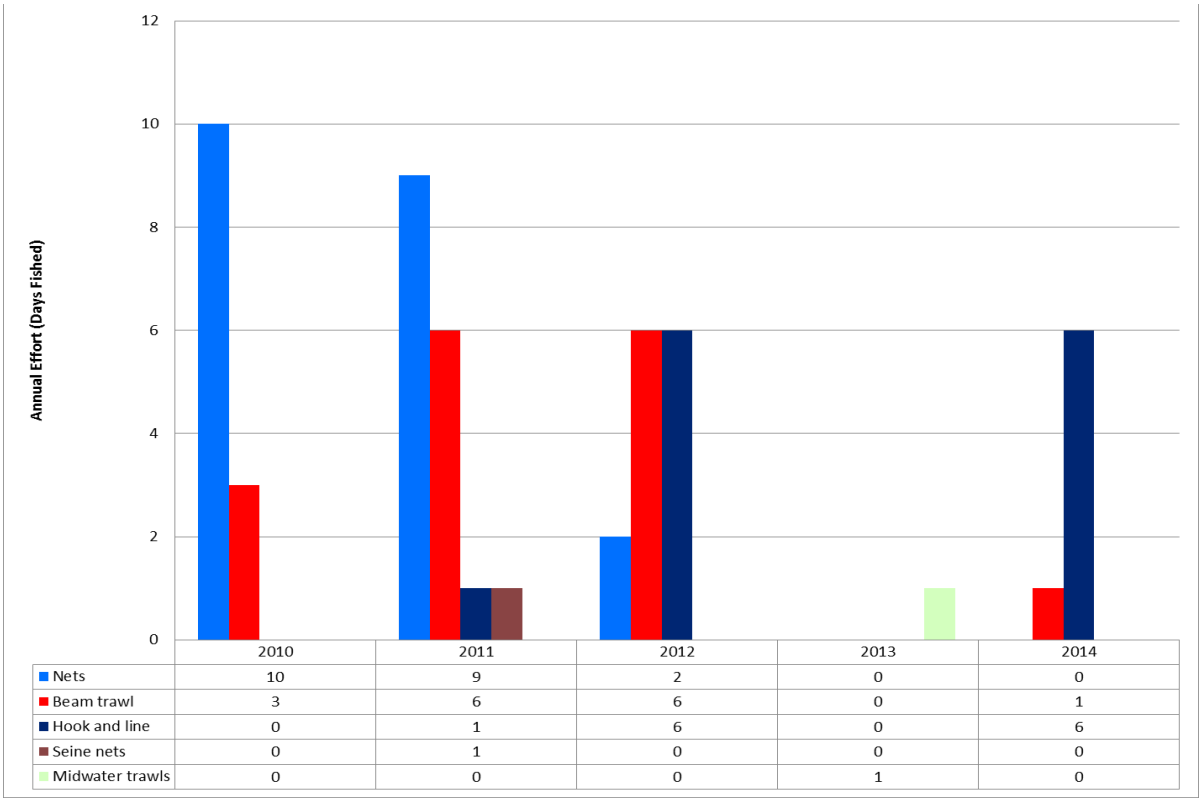
	2010	2011	2012	2013	2014
Sole	€ 17,640	€ 42,170	€ 41,510	€ 0	€ 0
Brown Shrimp	€ 9,040	€ 0	€ 0	€ 0	€ 1,260
Plaice	€ 1,480	€ 2,740	€ 1,790	€ 0	€ 0
Turbot	€ 470	€ 1,880	€ 2,990	€ 0	€ 0
Other	€ 6,060	€ 11,390	€ 10,680	€ 3,820	€ 5,430

Diagram 14.11 Netherlands Annual Landings Values (€) by Species in the Inshore Cable Analysis Area (33F1; Source: LEI, 2014)



	2010	2011	2012	2013	2014
Beam trawl	€ 20,800	€ 38,100	€ 48,700	€ 0	€ 1,500
Nets	€ 13,900	€ 11,800	€ 1,600	€ 0	€ 0
Hook and line	€ 0	€ 100	€ 6,700	€ 0	€ 5,200
Seine nets	€ 0	€ 8,100	€ 0	€ 0	€ 0
Midwater trawls	€ 0	€ 0	€ 0	€ 3,800	€ 0

Diagram 14.12 Netherlands Annual Landings Values (€) by Method in the Inshore Cable Analysis Area (33F1; Source: LEI, 2014)



	2010	2011	2012	2013	2014
Nets	10	9	2	0	0
Beam trawl	3	6	6	0	1
Hook and line	0	1	6	0	6
Seine nets	0	1	0	0	0
Midwater trawls	0	0	0	1	0

Diagram 14.13 Netherlands Annual Effort (Days Fished) by Method in the Inshore Cable Analysis (34F2; Source: LEI, 2014)

14.1.4.5.2 Dutch Vessels, Gears and Operating Practices

90. The Dutch fishing fleet is one of the largest in Europe. Vessels within the fleet employ diverse fishing methods including mussel dredging, shrimp trawling, pelagic trawling, single and twin rig trawling, demersal seine netting, netting and beam trawling. In terms of effort and the number of vessels involved, beam trawling is the predominant activity in the central and southern North Sea. In addition to those under Dutch registration, there are understood to be 40 Anglo-Dutch vessels, of which 24 are beam trawlers (P. Visser, pers. comm. 2013). As explained previously, these vessels are registered as UK fishing vessels, fishing UK quotas, but are Dutch owned and operated, normally landing into Dutch ports. It is also understood that a number of Belgian and German registered beam trawlers are also Dutch owned and operated.

91. The analysis of data in the preceding sections and information gathered through consultation with the Dutch Fishermen's Federation (VisNed, 2013) and its members indicates that Dutch fishing activity in the vicinity of the proposed East Anglia THREE project is predominantly by beam trawlers. During consultation it was stated that up to 57 of these vessels occasionally fish the East Anglia Zone, of which between 30 and 35 target grounds in the proposed East Anglia THREE project on a regular basis.

92. The vessels with a history of fishing the general area of the East Anglia THREE site are typically registered at the ports of Vlissingen, Scheveningen, IJmuiden and Harlingen and Stellendam. Grounds within the proposed East Anglia THREE project are of importance to the fleet from Texel and Den Helder which spends the majority of its fishing time in these areas. It was stated that the Anglo-Dutch fleet fishes the proposed East Anglia THREE project less regularly, targeting central North Sea grounds such as the Dogger Bank.

93. Most vessels fishing in the East Anglia THREE site are in the large category of beam trawlers with overall lengths of between 40 to 43m, displacements in the order of 800 tonnes and main engines of up to 2000hp (*Plate 14.1*). Principal ports of landing are Texel, Den Helder, Scheveningen, Ijmuiden, South Stellendam and Stellendam, although landings are also sold through the fish market at Urk.

Plate 14.1 Typical Dutch Beam Trawler with 'Sum Wing' Gear (Source: BMM, 2013)

94. The principal fisheries in the area of the proposed East Anglia THREE project are sole and plaice which are targeted throughout the year. It was stated during consultation that landings of plaice are highest toward the end and beginning of the year. Smaller amounts of quota are also allocated to Dutch vessels in the North Sea for turbot and brill although this has been fulfilled rapidly in the past year (M. Driijver, pers.

comm. 2013). Whilst fishing for sole had been good, unusually low prices had been experienced due to the high volume of landings coupled with other market forces. At the time of consultation, sole and plaice were achieving the following prices when landed into Dutch ports: small sized sole, approximately £5.00 per kg, larger sizes £8.00 to £10.00 per kg. The average price of plaice was reported to be around £1.10 for smaller sizes and £1.40 per kg for larger sizes.

95. Traditional Dutch 'open' beam gear comprises a cylindrical steel beam of up to 12m in length, supported at each end by steel shoes or high density rubber wheels up to 0.7m in height. The headline of the net is attached to the beam and the ground line to the inner corners of the sole plates of the shoes. Ahead of the groundline are rigged a series of heavy "tickler chains". Over rough ground and when fishing for sole, chain mats may also be fitted. The fully rigged (in air) weight of the gear varies from 5.2 to 8.2 tonnes.

96. Towing heavy gear incurs high fuel costs and recent increases in fuel prices have led to the development of new beam trawl technologies. The recently developed sum wing is one such innovation. This is effectively a hydrofoil of the same width as traditional beam trawls (e.g. 12m), onto which the net and chains are attached (see *Plate 14.1*). As the only part of the Sum Wing to make contact with the substrate is the guide on the centre of the wing, drag is greatly reduced. During previous consultation undertaken by BMM (2011, 2012) skippers stated that use of this gear can result in reductions of fuel costs by approximately 20%.

97. This principal has been progressed further by the development of Pulse Wing gear in which the tickler chains and chain mats are replaced by a series of trailed electrodes that emit low voltage pulses (*Plate 14.2*) that drive the fish out of the sediment into the approaching trawl. The absence of heavy tickler chains and reduced contact with the sea bed can reduce fuel consumption by up to 50% compared with traditional open beam gear and also results in less physical damage to the sea bed.

98. During consultation it was indicated that Pulse Wing gear targets sole more efficiently than plaice and that as a result a shift in the location of grounds fished had occurred as increasing numbers of vessels convert gear types. Specifically, activity is now higher west of the Brown Ridge; an area of ground located along the eastern boundary of the East Anglia Zone. Approximately 80% of vessels targeting grounds in the area of the proposed East Anglia THREE project now use Pulse Wings, with the remaining 20% using a mixture of open beam gear and Sum Wings. Electric fishing is currently prohibited under EU fisheries regulations and as such the use of a Pulse Wing requires EU derogation. A number of vessels which fish the proposed East Anglia THREE project area awaiting responses to applications for this derogation.

99. Vessels utilising traditional beam trawls generally tow at speeds of between five to six knots, occasionally towing up to seven knots. When using Pulse Wings, speeds are reduced, typically between 4 to 4.5 knots. Tow durations are generally between 2.5 and 3 hours, although this will vary in response to weather, tide, catch rate and area fished. During consultation in the Netherlands, coordinates of the East Anglia Zone (including the proposed East Anglia THREE project) were provided for input into vessel plotters in order to show the position and direction of tows relevant to the proposed East Anglia THREE project. At the time of writing this data has not yet been received, however based on previous consultation undertaken by BMM (2011) towing directions in the East Anglia Zone varied from east to west, north-west to south-east and north-north-west to south-south-east.

100. The majority of the fleet from ports such as Texel undertake five day trips, leaving for the fishing grounds on Sunday evening and landing the following Friday. It was reported during consultation that there are only four vessels operating in the vicinity of the proposed East Anglia THREE project which fish on a continuous cycle of crew changes. Specifications of a vessel from the Texel fleet which targets grounds in the vicinity of the proposed East Anglia THREE project are shown in *Table 14.4*.

Plate 14.2 Pulse Wing Gear (Source: BMM, 2013)

Table 14.4 Vessel and Gear Specifications of a Texel based Beam Trawler

Specifications of a Texel based Beam Trawler	
Homeport	Texel
Fishing Association	VisNed
Length	42.21m
Beam	8.5m
Draft	5.15m
Main engine HP	1,999bhp
Days at sea allocated in 2013	239 days
Average days at sea per year	200 days
Typical trip duration	Five days
Principal method	Pulse gear
Seasonality	12 months
Target species	Sole and plaice

101. As a consequence of the high fuel costs associated with beam trawling, a number of Dutch beam trawlers have been converted to demersal single or twin rigged otter trawls some of which also engage in fly seining (VisNed skippers pers. comm., May 2013). This type of seine netting is a derivation of traditional anchor seining whereby the vessel does not anchor during hauling of the net, instead holding position using the vessels propeller. It was stated during consultation that from five, to a maximum of ten of these vessels may target grounds within the proposed East Anglia THREE project during the summer months, before moving south in the winter to fish the English Channel.

102. The effective gear widths (from the port and starboard extremities of the gear when towed) were reported to be up to 40m for beam trawlers and up to 220m for the largest Dutch twin rigged trawlers.

103. With respect to potential future changes to the Dutch fleet it was stated the size of the fleet may decrease slightly in the future, although generally it remains stable with few vessels dropping out. It was reported by skippers that Pulse Wing gear is more efficient at catching sole compared to plaice. As grounds in the region of the East Anglia THREE site are considered to be better for sole than plaice, the number of vessels fishing these grounds is expected to increase as more vessels are fitted with Pulse Wings (VisNed skippers pers. comm., May 2013). It was also suggested that the average size and engine power of vessels in the fleet may decrease slightly as the more fuel efficient, lighter Pulse Wings become prevalent. It was reported that the size of vessels targeting these grounds is however unlikely to fall below 38m as the associated stability is required to efficiently work 12m Pulse Wing gear (VisNed skippers pers. comm., May 2013).

14.1.4.6 Belgian Fishing Activity – Overview

104. *Figure 14.22* shows the surveillance sightings of Belgian registered vessels identified in the vicinity of the proposed East Anglia THREE project. Only beam trawling has been identified as occurring in the area.

14.1.4.6.1 Beam Trawling

105. From a national perspective, *Figure 14.23* shows that activity by the Belgian beam trawl fleet is widely distributed, occurring in the North Sea, English Channel, Western Approaches, Celtic Sea and Irish Sea. With respect to the proposed East Anglia THREE project, landings from the offshore cable analysis area are of moderate to high value in the national context. Those from the windfarm and inshore cable analysis areas are much lower. In all areas, other than the central North Sea, landings are dominated by sole. The ICES rectangles recording the highest value landings are located in the Celtic Sea, eastern English Channel.

14.1.4.6.2 Demersal Otter Trawling

106. Landings values originating from Belgian registered demersal otter trawlers are shown in the national context *Figure 14.24*. The pattern of activity is broadly similar to the beam trawl fleet, although somewhat reduced in the English Channel and off the coast of East Anglia. Overall, landings from this fleet are of significantly lower value than from beam trawlers, particularly in the vicinity of the proposed East Anglia THREE project. With the exception of the central North Sea, where lemon sole and plaice are important, landings values from other areas are represented principally by sole.

14.1.4.7 Belgian Fishing Activity – Regional

14.1.4.7.1 Surveillance Sightings

107. MMO surveillance sightings of Belgian registered vessels identified in the vicinity of the proposed East Anglia THREE project are shown in *Figure 14.22*. Overall, beam trawlers represent the majority of vessel sightings, with the highest concentrations recorded immediately south-west of the East Anglia Zone. Most observations of unspecified trawlers (most likely demersal otter trawlers / fly seiners) and demersal trawlers are located in a similar area, although these are concentrated in a more discrete area between the 6 to 12nm limit.

14.1.4.7.2 Landings Values

108. *Figure 14.25* illustrates the distribution of landings values in the vicinity of the proposed East Anglia THREE project by species. Total values are comparatively low from within the windfarm analysis area (€715,539) and the inshore cable analysis area (€236,429) compared to total values from the offshore cable analysis area (€1,870,393). *Figure 14.26* shows that landings values in these areas originate entirely from the beam trawl fleet; demersal otter trawlers record higher proportions of landings values in those rectangles which are partially located within the 6 to 12nm limit (e.g. inshore cable analysis area). Approximately two thirds to three quarters of total values in these areas are characterised by sole landings. The remainder are formed by varying degrees of plaice, turbot, lemon sole and skates and rays.

109. With respect to vessel size, *Figure 14.27* shows that over 90% of the beam trawl fleet targeting grounds in the offshore cable and windfarm analysis areas are between 24m and 40m in length. In contrast, landings values in the inshore cable analysis area are split approximately one third to two thirds between the 20m and 40m and 18 and 24m vessel categories respectively.

14.1.4.7.3 Fishing Effort

110. Patterns of effort distribution are shown in *Figure 14.28* and *Figure 14.29* for method and vessel size, respectively. Effort generally reflects landings; days at sea tend to be increased in high value rectangles. It should be noted however that there is not always a direct relationship.

14.1.4.7.4 VMS Data

111. *Figure 14.30* shows that activity by Belgian vessels (all gear types) is widely distributed around the UK coast with high levels recorded in the southern North Sea, central English Channel, the Celtic Sea and central and eastern Irish Sea

112. The distribution of effort by the beam trawl fleet (the principle gear type used in the proposed East Anglia THREE project analysis areas) is shown in *Figure 14.31*. The distribution of beam trawling activity is widespread with the highest value areas occurring the Celtic Sea and Eastern Channel. Landings recorded from in the East Anglia THREE site and offshore section of the cable corridor range from €50,000 to a maximum of €500,000. By comparison landings recorded by other gear types within the area of the proposed East Anglia THREE project are much lower or absent entirely (*Figure 31a* to *Figure 31c*).

113. *Figure 31d* to *Figure 31h* show that effort by the various gear types in the Belgian fleet is broadly reflective of value. With specific reference to beam trawlers (the most active fleet in the vicinity of the proposed East Anglia THREE project) effort by these vessels in the analysis areas ranges from five to 100 days.

14.1.4.8 Belgian Fishing Activity – Project Specific

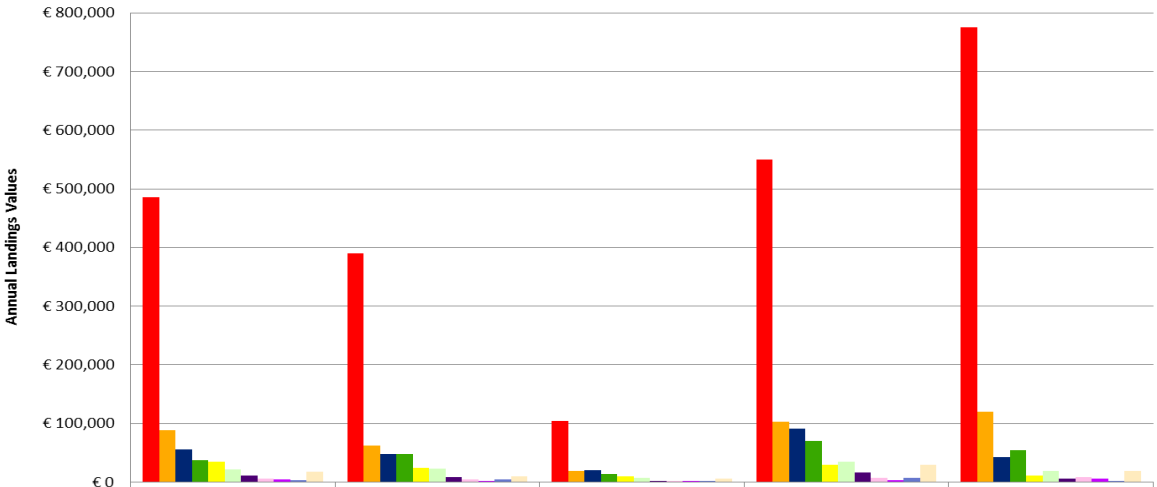
14.1.4.8.1 Annual and Seasonal Variation

14.4.8.1.1 Windfarm Analysis Area (34F2)

114. *Diagram 14.14* and *Diagram 14.15* indicate that landings values from the Belgian fleet in the vicinity of the East Anglia THREE site are similar to other analysis areas and are mainly from beam trawlers targeting sole. Total annual values are considerably lower than from 33F2. The offshore cable analysis area is the only rectangle occupied by the proposed East Anglia THREE project in which landings have been recorded by vessels utilising fly seines, although the values were generally low (a maximum of €24,320).

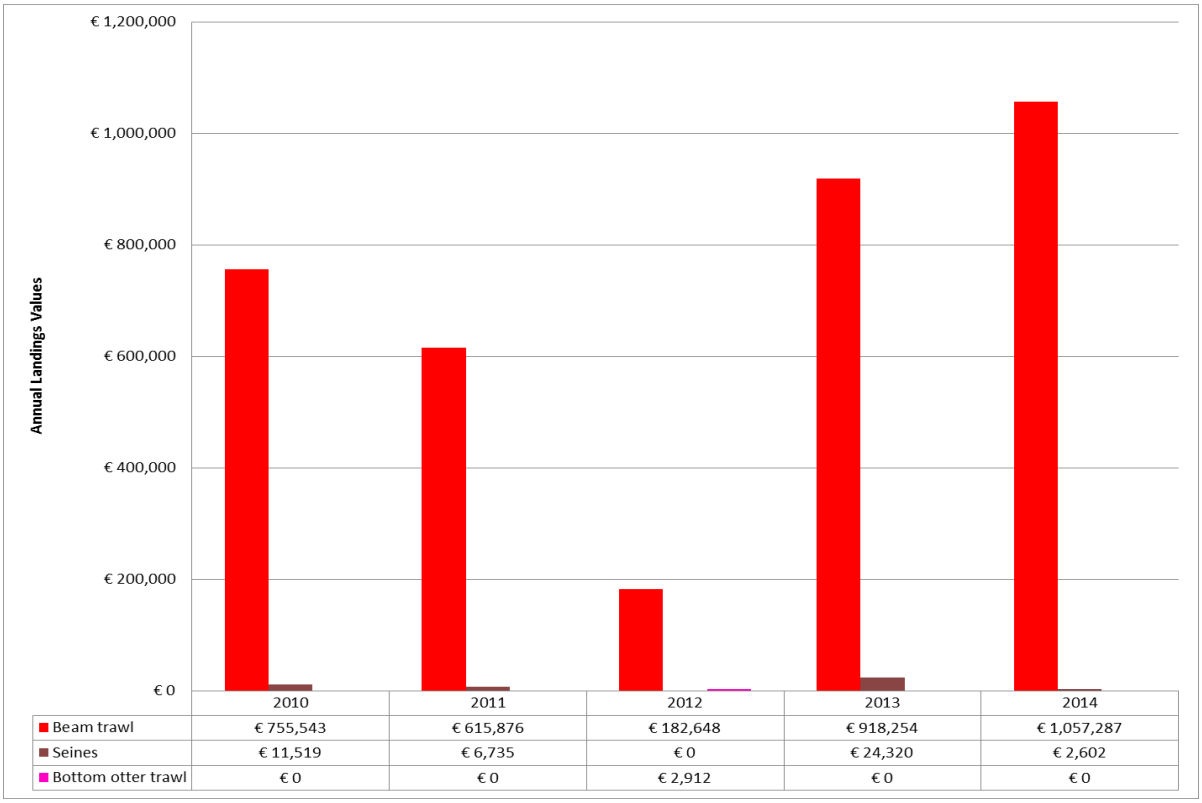
115. *Diagram 14.16* and *Diagram 14.17* shows that the seasonal distribution of landings values (principally by beam trawlers) corresponds to that observed in the offshore cable analysis area (33F2) being highest from September through to December.

Similarly the highest values are recorded during October (€249,059) and January (€164,878).



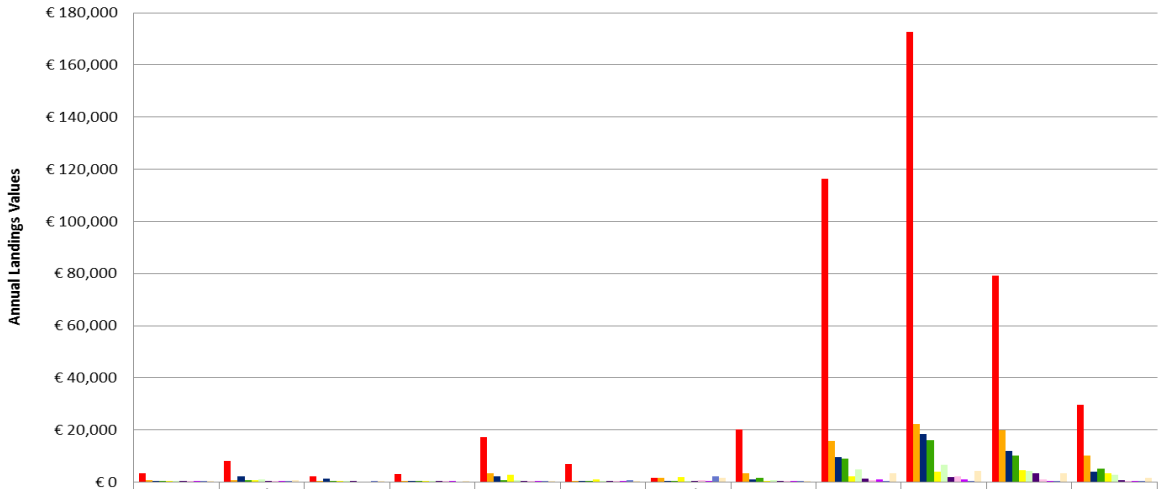
	2010	2011	2012	2013	2014
Sole	€ 485,651	€ 390,512	€ 103,737	€ 549,173	€ 775,129
Plaice	€ 88,796	€ 62,307	€ 19,454	€ 102,728	€ 119,946
Skates & Rays	€ 55,524	€ 48,363	€ 20,878	€ 91,401	€ 42,873
Turbot	€ 37,208	€ 47,859	€ 13,856	€ 70,075	€ 53,892
Cod	€ 34,918	€ 23,918	€ 10,368	€ 30,133	€ 10,951
Brill	€ 21,755	€ 22,550	€ 7,849	€ 35,198	€ 18,886
Lemon Sole	€ 11,592	€ 8,062	€ 1,752	€ 16,735	€ 5,420
Tub Gurnard	€ 5,819	€ 4,019	€ 1,026	€ 6,850	€ 7,968
Dab	€ 4,729	€ 1,384	€ 1,040	€ 3,336	€ 5,915
Red Mullet	€ 3,414	€ 4,015	€ 12	€ 7,250	€ 553
Other Species	€ 17,656	€ 9,622	€ 5,588	€ 29,695	€ 18,356

Diagram 14.14 Belgian Annual Landings Values (€) by Species in the Windfarm Analysis Area (34F2; Source: ILVO, 2011)



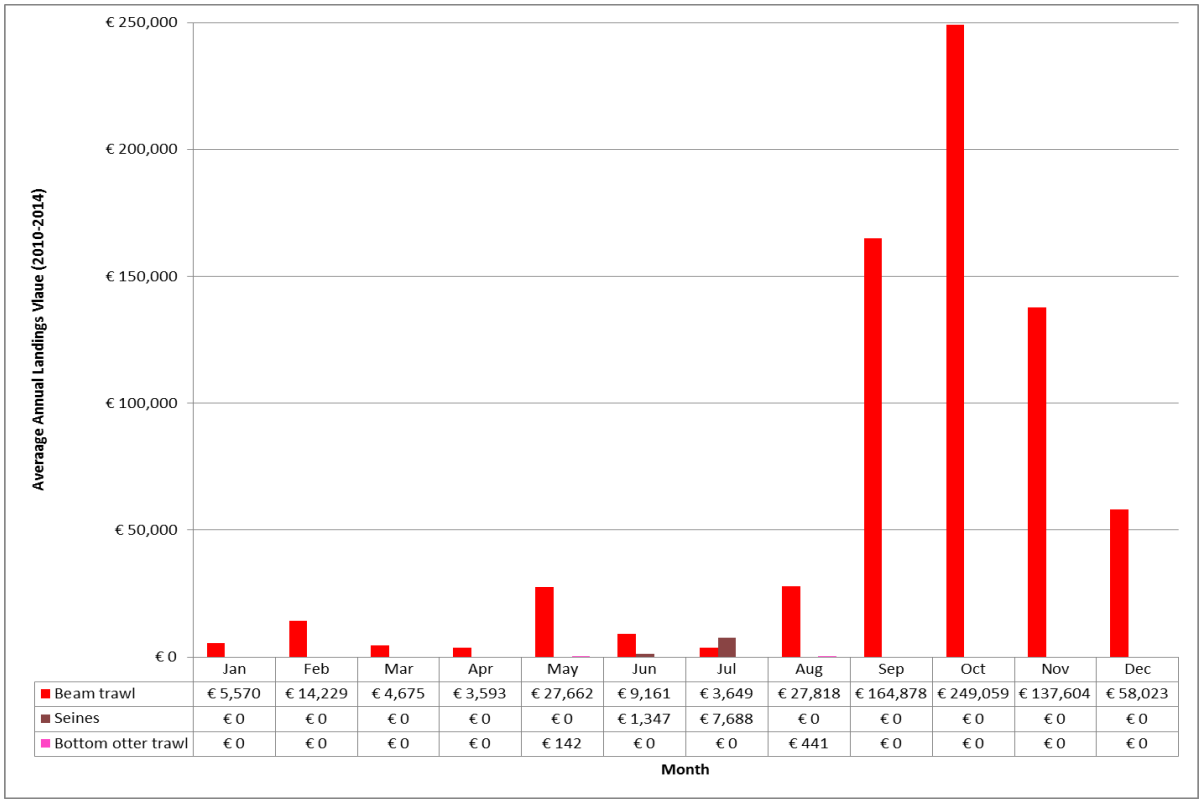
	2010	2011	2012	2013	2014
Beam trawl	€ 755,543	€ 615,876	€ 182,648	€ 918,254	€ 1,057,287
Seines	€ 11,519	€ 6,735	€ 0	€ 24,320	€ 2,602
Bottom otter trawl	€ 0	€ 0	€ 2,912	€ 0	€ 0

Diagram 14.15 Belgian Annual Landings Values (€) by Method in the Windfarm Analysis Area (34F2; Source: ILVO, 2015)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sole	€ 3,488	€ 7,962	€ 2,344	€ 3,067	€ 17,234	€ 7,032	€ 1,653	€ 20,200	€ 116,445	€ 172,580	€ 79,128	€ 29,707
Plaice	€ 698	€ 834	€ 311	€ 4	€ 3,260	€ 559	€ 1,544	€ 3,417	€ 15,799	€ 22,121	€ 19,780	€ 10,318
Skates & Rays	€ 206	€ 2,101	€ 1,266	€ 213	€ 2,252	€ 298	€ 268	€ 1,017	€ 9,729	€ 18,480	€ 11,992	€ 3,985
Turbot	€ 272	€ 854	€ 252	€ 11	€ 798	€ 68	€ 443	€ 1,633	€ 9,002	€ 16,042	€ 10,163	€ 5,041
Cod	€ 281	€ 671	€ 293	€ 225	€ 2,937	€ 954	€ 2,040	€ 307	€ 2,265	€ 3,944	€ 4,609	€ 3,532
Brill	€ 256	€ 931	€ 119	€ 28	€ 619	€ 70	€ 207	€ 634	€ 4,929	€ 6,502	€ 4,170	€ 2,783
Lemon Sole	€ 225	€ 231	€ 18	€ 0	€ 42	€ 84	€ 350	€ 218	€ 1,458	€ 2,035	€ 3,308	€ 744
Tub Gurnard	€ 8	€ 6	€ 0	€ 0	€ 183	€ 189	€ 742	€ 122	€ 812	€ 2,111	€ 884	€ 80
Dab	€ 1	€ 1	€ 0	€ 2	€ 114	€ 114	€ 332	€ 244	€ 1,156	€ 916	€ 269	€ 132
Red Mullet	€ 0	€ 0	€ 3	€ 0	€ 29	€ 789	€ 2,134	€ 8	€ 36	€ 32	€ 11	€ 6
Other Species	€ 134	€ 638	€ 71	€ 43	€ 336	€ 351	€ 1,624	€ 459	€ 3,248	€ 4,296	€ 3,290	€ 1,695

Diagram 14.16 Belgian Seasonal Landings Values (€) by Species in the Windfarm Analysis Area (34F2, Average 2010 to 2014; Source: ILVO, 2015)



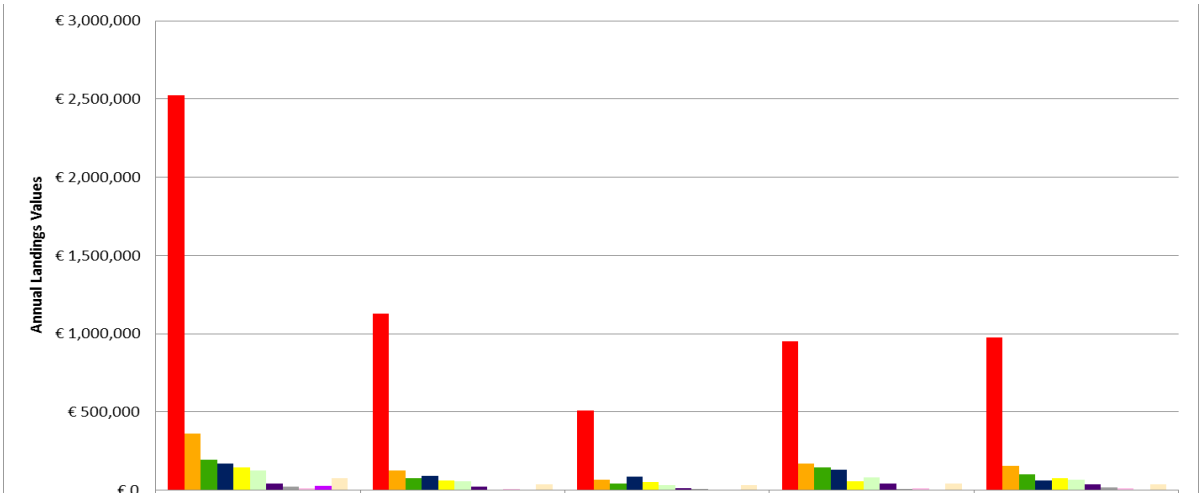
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beam trawl	€ 5,570	€ 14,229	€ 4,675	€ 3,593	€ 27,662	€ 9,161	€ 3,649	€ 27,818	€ 164,878	€ 249,059	€ 137,604	€ 58,023
Seines	€ 0	€ 0	€ 0	€ 0	€ 0	€ 1,347	€ 7,688	€ 0	€ 0	€ 0	€ 0	€ 0
Bottom otter trawl	€ 0	€ 0	€ 0	€ 0	€ 142	€ 0	€ 0	€ 441	€ 0	€ 0	€ 0	€ 0

Diagram 14.17 Belgian Seasonal Landings Values (€) by Method in the Windfarm Analysis Area (34F2, Average 2010 to 2014; Source: ILVO, 2015)

14.4.8.1.2 Offshore Cable Analysis Area

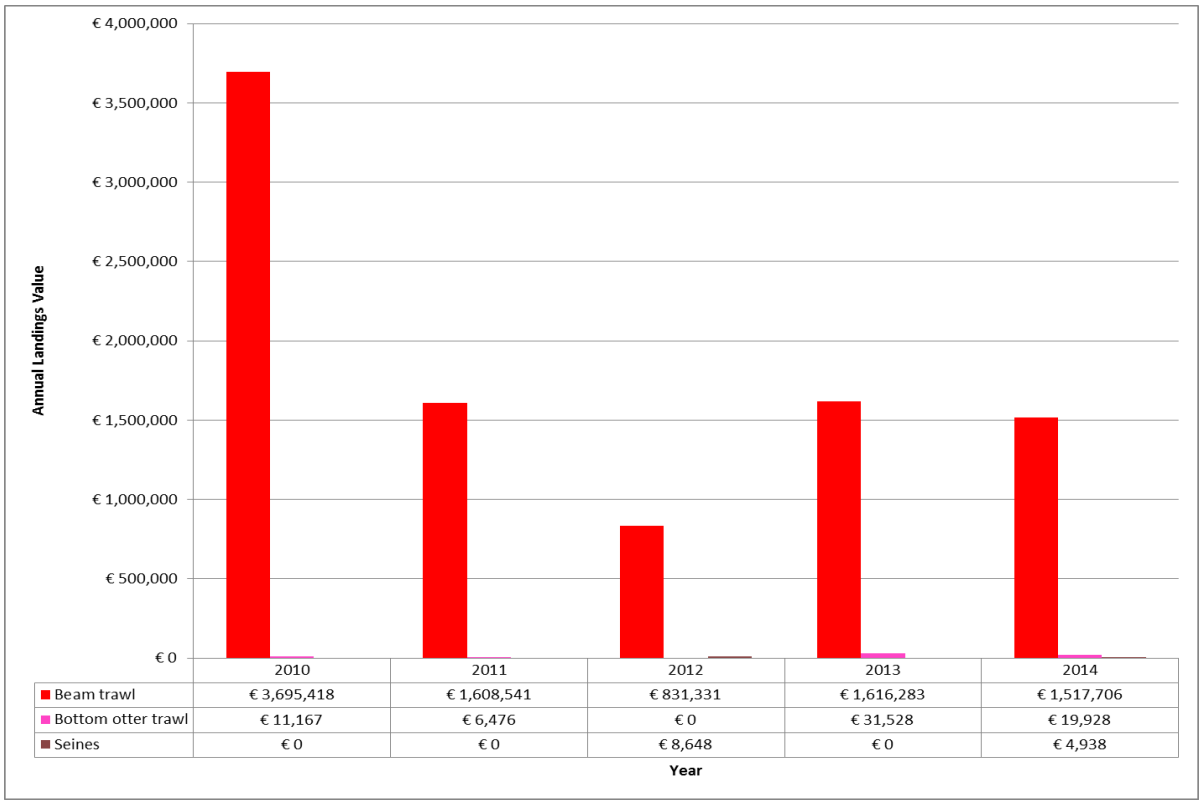
116. *Diagram 14.18* and *Diagram 14.19* illustrate annual Belgian landings values from 33F2 by species and method. Similar to inshore areas, sole are the principal target species of the Belgian beam trawl fleet and landings are therefore of significantly higher value than other species in all years. Landings are however significantly higher than those recorded in 33F1. Demersal otter trawlers account for a much lower proportion of landings values of all species.

117. During consultation (Rederscentrale, August 2013), it was reported that the Belgian beam trawl fleet in the proposed East Anglia THREE project are most active during autumn and winter. *Diagram 14.20* and *Diagram 14.21* show that the highest values in the sole beam trawl fishery occur during this period with maximum values recorded in October (€336,289) and December (€331,798). Activity by vessels utilising demersal otter trawls in this area is negligible by comparison.



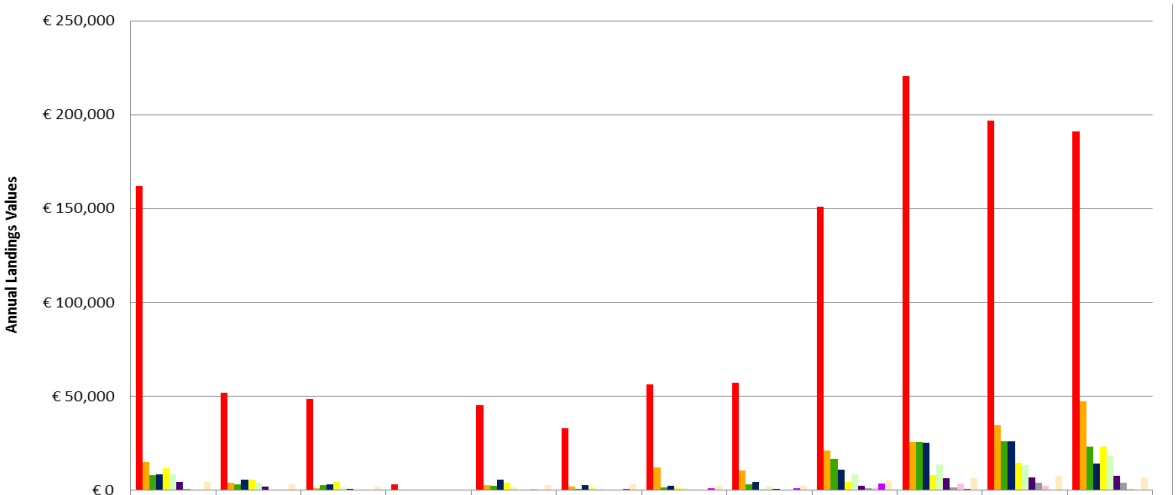
	2010	2011	2012	2013	2014
Sole	€ 2,521,855	€ 1,128,566	€ 506,884	€ 951,162	€ 975,307
Plaice	€ 362,262	€ 125,959	€ 68,235	€ 171,684	€ 153,414
Turbot	€ 196,665	€ 77,204	€ 40,452	€ 146,609	€ 103,163
Skates & Rays	€ 170,978	€ 91,406	€ 85,028	€ 132,522	€ 61,938
Cod	€ 145,868	€ 61,579	€ 52,400	€ 58,861	€ 74,462
Brill	€ 124,416	€ 56,487	€ 32,968	€ 80,670	€ 67,392
Lemon Sole	€ 43,609	€ 23,246	€ 11,194	€ 42,513	€ 38,889
Cuttlefish	€ 22,924	€ 2,992	€ 6,027	€ 7,366	€ 16,404
Tub Gurnard	€ 11,895	€ 6,019	€ 3,856	€ 12,237	€ 11,221
Dab	€ 29,110	€ 4,126	€ 1,638	€ 1,658	€ 1,718
Other Species	€ 77,003	€ 37,433	€ 31,297	€ 42,529	€ 38,664

Diagram 14.18 Belgian Annual Landings Values (€) by Species in the Offshore Cable Analysis Area (33F2; Source: ILVO, 2015)



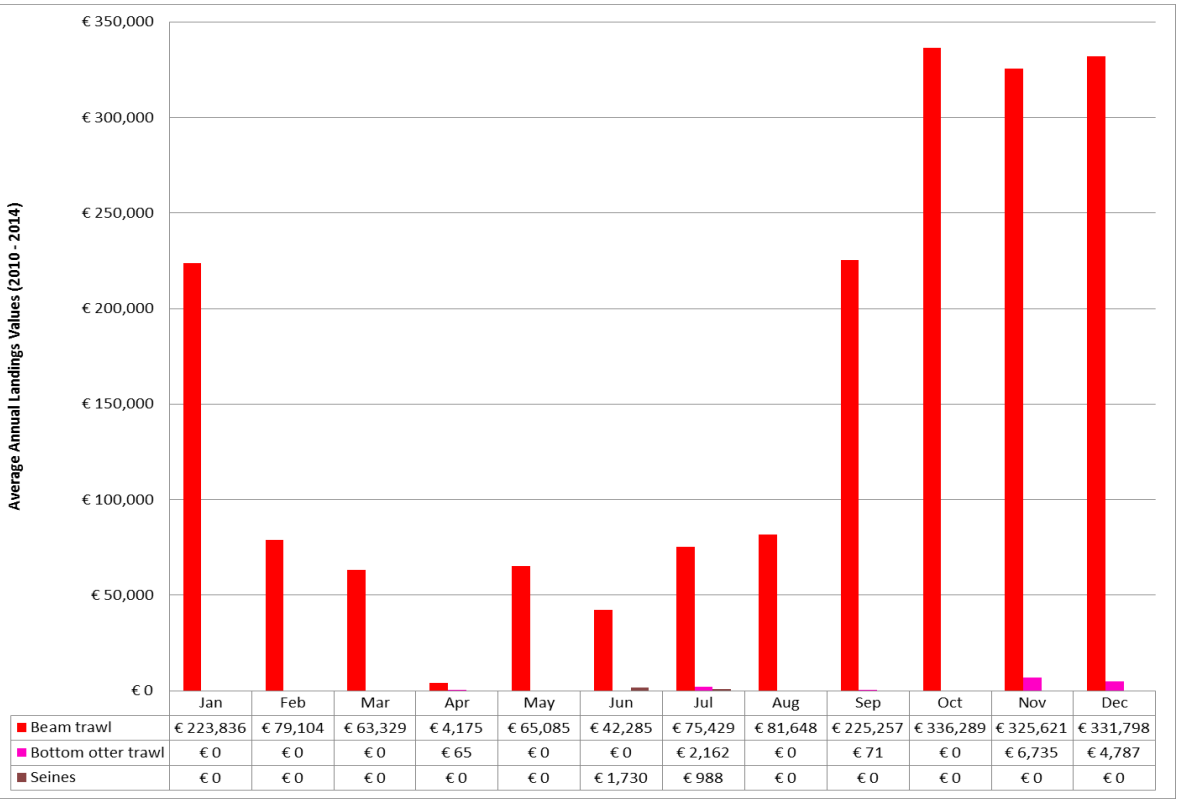
	2010	2011	2012	2013	2014
Beam trawl	€ 3,695,418	€ 1,608,541	€ 831,331	€ 1,616,283	€ 1,517,706
Bottom otter trawl	€ 11,167	€ 6,476	€ 0	€ 31,528	€ 19,928
Seines	€ 0	€ 0	€ 8,648	€ 0	€ 4,938

Diagram 14.19 Belgian Annual Landings Values (€) by Method in the Offshore Cable Analysis Area (33F2; Source: ILVO, 2015)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sole	€ 162,157	€ 51,715	€ 48,589	€ 3,005	€ 45,285	€ 32,912	€ 56,340	€ 57,042	€ 151,132	€ 220,713	€ 196,645	€ 191,219
Plaice	€ 14,881	€ 4,057	€ 930	€ 94	€ 2,827	€ 2,017	€ 12,240	€ 10,475	€ 21,087	€ 25,436	€ 34,791	€ 47,476
Turbot	€ 8,126	€ 3,185	€ 2,486	€ 149	€ 2,415	€ 549	€ 1,407	€ 3,060	€ 16,512	€ 25,695	€ 26,124	€ 23,113
Skates & Rays	€ 8,473	€ 5,730	€ 3,065	€ 218	€ 5,367	€ 2,677	€ 2,467	€ 4,370	€ 10,937	€ 25,083	€ 25,922	€ 14,067
Cod	€ 11,603	€ 5,715	€ 4,363	€ 281	€ 3,787	€ 1,095	€ 963	€ 688	€ 4,178	€ 7,995	€ 14,621	€ 23,345
Brill	€ 8,558	€ 3,781	€ 1,340	€ 190	€ 1,527	€ 588	€ 1,067	€ 1,982	€ 8,228	€ 13,558	€ 13,415	€ 18,154
Lemon Sole	€ 4,531	€ 1,678	€ 695	€ 53	€ 400	€ 399	€ 315	€ 770	€ 2,298	€ 6,221	€ 6,802	€ 7,731
Cuttlefish	€ 606	€ 117	€ 6	€ 2	€ 44	€ 13	€ 6	€ 14	€ 923	€ 1,389	€ 3,949	€ 4,073
Tub Gurnard	€ 196	€ 54	€ 27	€ 7	€ 451	€ 183	€ 347	€ 109	€ 1,179	€ 3,528	€ 2,346	€ 619
Dab	€ 205	€ 98	€ 14	€ 21	€ 365	€ 471	€ 1,133	€ 884	€ 3,626	€ 494	€ 221	€ 117
Other Species	€ 4,501	€ 2,974	€ 1,815	€ 220	€ 2,619	€ 3,112	€ 2,294	€ 2,254	€ 5,229	€ 6,177	€ 7,519	€ 6,670

Diagram 14.20 Belgian Seasonal Landings Values (€) by species in the Offshore Cable Analysis Area (33F2, Average 2010 to 2014; Source: ILVO, 2015)



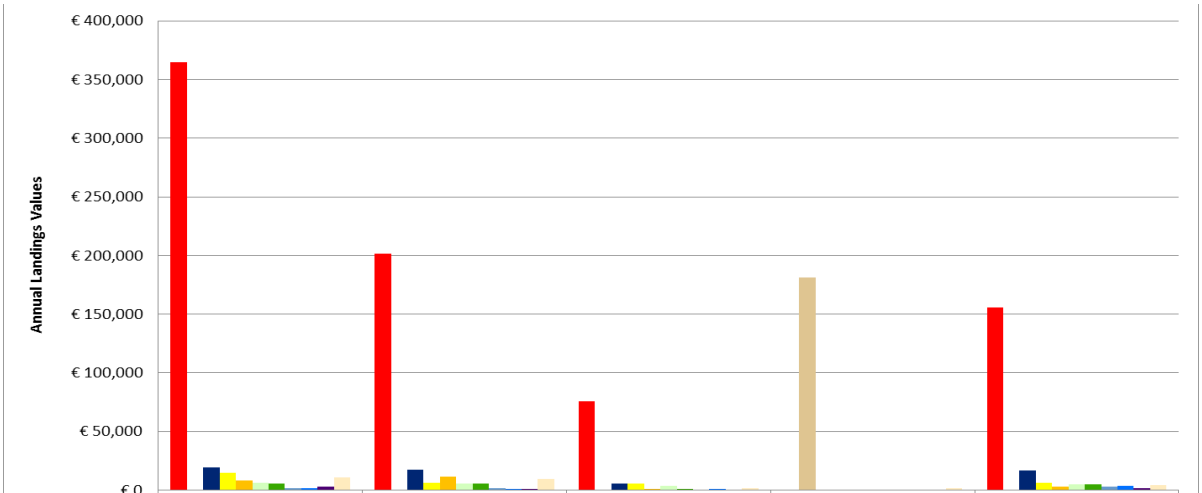
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beam trawl	€ 223,836	€ 79,104	€ 63,329	€ 4,175	€ 65,085	€ 42,285	€ 75,429	€ 81,648	€ 225,257	€ 336,289	€ 325,621	€ 331,798
Bottom otter trawl	€ 0	€ 0	€ 0	€ 65	€ 0	€ 0	€ 2,162	€ 0	€ 71	€ 0	€ 6,735	€ 4,787
Seines	€ 0	€ 0	€ 0	€ 0	€ 0	€ 1,730	€ 988	€ 0	€ 0	€ 0	€ 0	€ 0

Diagram 14.21 Belgian Seasonal Landings Values (€) by Method in the Offshore Cable Analysis Area (33F2, Average 2005 to 2010; Source: ILVO, 2011)

14.4.8.1.3 Inshore Cable Analysis Area (33F1)

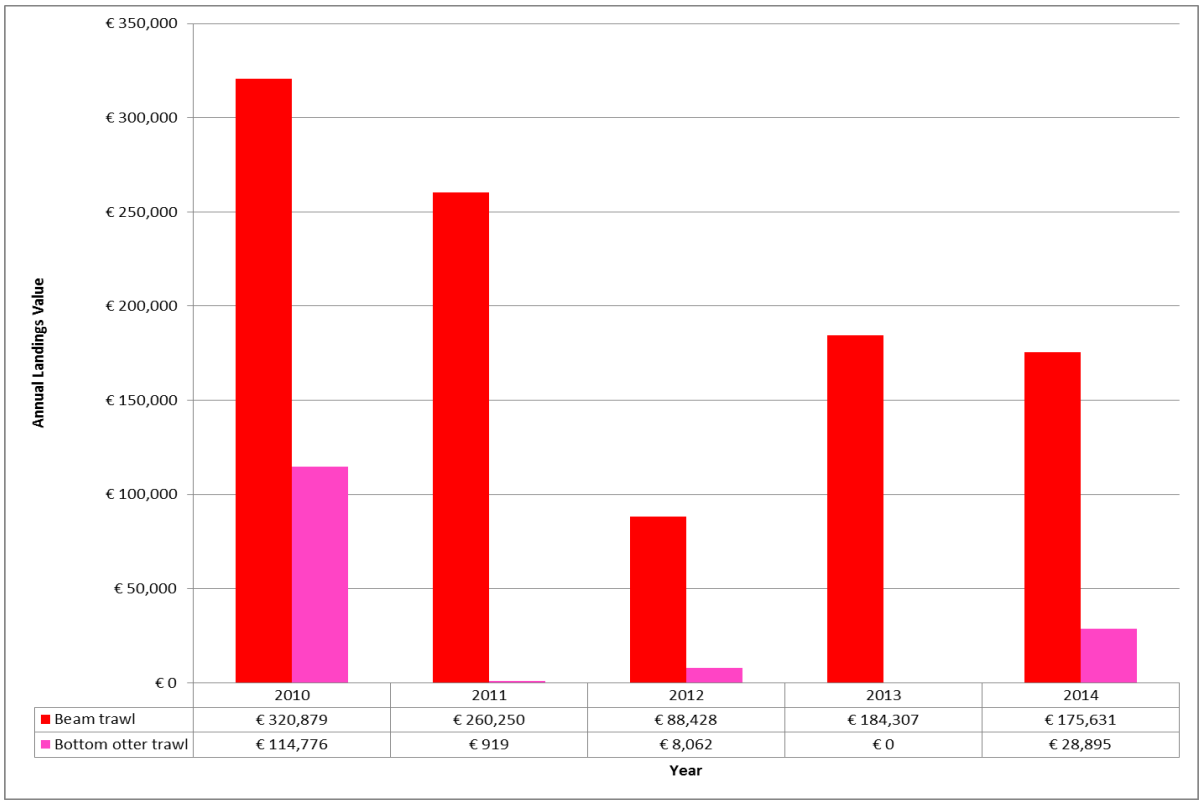
118. Annual landings values by the Belgian fleet by species and method in the inshore cable analysis area are shown in *Diagram 14.22* and *Diagram 14.23*. Sole targeted by beam trawl record the highest landings values. Landings values recorded by the demersal otter trawl fleet are significantly lower. The low landings values recorded for other flatfish, cod, skates and rays from both the beam and otter trawl fisheries reflects that the majority of Belgian quota in ICES Area IV (North Sea) is allocated for sole.

119. Diagram 14.24 and *Diagram 14.25* show that sole landings from the Belgian beam trawl fleet in this area are highest during May and June. In terms of value, monthly landings from demersal otter trawlers are typically less than a third of that from the beam trawl fishery and peak later, during June. As the majority of species are effectively bycatch from the sole fishery, the seasonal distribution of landings values generally follows the same pattern observed for sole.



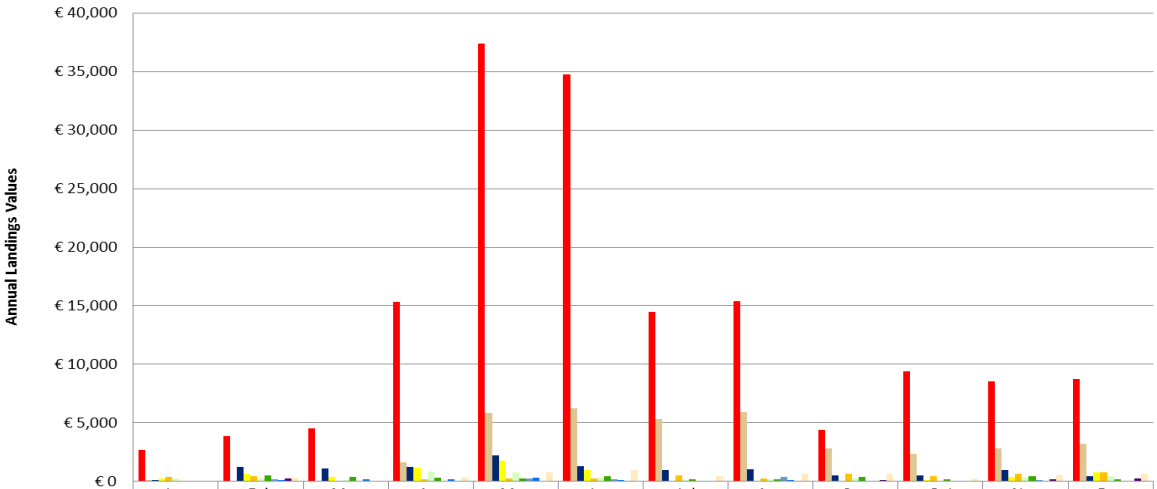
	2010	2011	2012	2013	2014
Sole	€ 364,669	€ 201,264	€ 75,821	€ 477	€ 155,482
Brown Shrimp	€ 0	€ 0	€ 0	€ 181,043	€ 480
Skates & Rays	€ 19,260	€ 17,184	€ 5,420	€ 181	€ 17,029
Cod	€ 14,828	€ 6,467	€ 5,783	€ 153	€ 6,186
Plaice	€ 8,487	€ 11,647	€ 939	€ 257	€ 2,890
Brill	€ 6,016	€ 5,407	€ 3,571	€ 132	€ 4,919
Turbot	€ 5,328	€ 5,909	€ 1,138	€ 84	€ 5,280
Whelk	€ 1,756	€ 1,666	€ 388	€ 17	€ 3,210
Catsharks	€ 1,488	€ 993	€ 841	€ 49	€ 3,484
Lemon Sole	€ 3,061	€ 1,068	€ 679	€ 6	€ 1,489
Other Species	€ 10,762	€ 9,564	€ 1,910	€ 1,908	€ 4,077

Diagram 14.22 Belgian Annual Landings Values (€) by Species in the Inshore Cable Analysis Area (33F1; Source: ILVO, 2015)



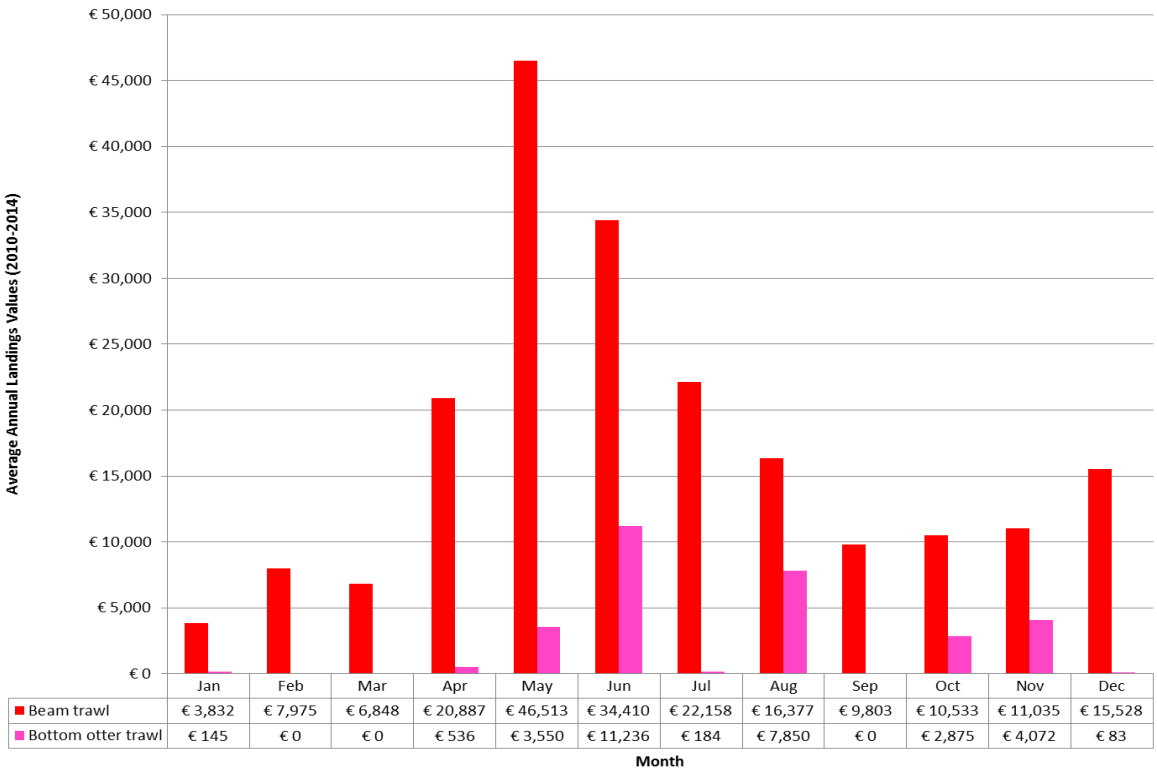
	2010	2011	2012	2013	2014
Beam trawl	€ 320,879	€ 260,250	€ 88,428	€ 184,307	€ 175,631
Bottom otter trawl	€ 114,776	€ 919	€ 8,062	€ 0	€ 28,895

Diagram 14.23 Belgian Annual Landings Values (€) by Method in the Inshore Cable Analysis Area (33F1; Source: ILVO, 2015)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sole	€ 2,661	€ 3,858	€ 4,561	€ 15,343	€ 37,362	€ 34,760	€ 14,483	€ 15,423	€ 4,391	€ 9,417	€ 8,534	€ 8,749
Brown Shrimp	€ 96	€ 0	€ 0	€ 1,615	€ 5,871	€ 6,259	€ 5,344	€ 5,920	€ 2,814	€ 2,347	€ 2,810	€ 3,228
Skates & Rays	€ 128	€ 1,272	€ 1,118	€ 1,241	€ 2,246	€ 1,300	€ 957	€ 1,056	€ 502	€ 511	€ 998	€ 486
Cod	€ 256	€ 669	€ 370	€ 1,200	€ 1,796	€ 983	€ 47	€ 56	€ 2	€ 139	€ 411	€ 754
Plaice	€ 363	€ 447	€ 21	€ 180	€ 270	€ 241	€ 549	€ 268	€ 622	€ 443	€ 651	€ 788
Brill	€ 226	€ 277	€ 151	€ 877	€ 763	€ 311	€ 100	€ 179	€ 254	€ 91	€ 324	€ 457
Turbot	€ 67	€ 537	€ 363	€ 340	€ 264	€ 437	€ 192	€ 168	€ 409	€ 175	€ 429	€ 169
Whelk	€ 7	€ 187	€ 58	€ 71	€ 287	€ 159	€ 86	€ 378	€ 31	€ 8	€ 114	€ 22
Catsharks	€ 19	€ 143	€ 164	€ 169	€ 346	€ 154	€ 79	€ 116	€ 30	€ 17	€ 89	€ 45
Lemon Sole	€ 80	€ 249	€ 24	€ 72	€ 65	€ 76	€ 70	€ 35	€ 116	€ 27	€ 198	€ 247
Other Species	€ 77	€ 335	€ 17	€ 314	€ 792	€ 966	€ 436	€ 628	€ 632	€ 232	€ 548	€ 668

Diagram 14.24 Belgian Seasonal Landings Values (€) by Species in the Inshore Cable Analysis Area (33F1, Average 2010 to 2014; Source: ILVO, 2011)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beam trawl	€ 3,832	€ 7,975	€ 6,848	€ 20,887	€ 46,513	€ 34,410	€ 22,158	€ 16,377	€ 9,803	€ 10,533	€ 11,035	€ 15,528
Bottom otter trawl	€ 145	€ 0	€ 0	€ 536	€ 3,550	€ 11,236	€ 184	€ 7,850	€ 0	€ 2,875	€ 4,072	€ 83

Diagram 14.25 Belgian Seasonal Landings Values (€) by Method in the Inshore Cable Analysis Area (33F1, Average 2010 to 2015; Source: ILVO, 2015)

14.1.4.9 Belgian Vessels, Gears and Operating Practices

120. The Belgian fishing fleet is smaller than that of the Dutch comprising of 35 vessels over 24m in length and 40 which less than 24m, the majority of which are beam trawlers. Belgian beam trawlers are of similar design to Dutch vessels, although engine power is usually lower. Main engine powers of the vessels targeting grounds in the vicinity of the proposed East Anglia THREE project range from 250hp to 1305hp. The majority of the fleet are registered at the main Belgian landing ports of Oostende or Zeebrugge. *Plate 14.3* shows a typical 40m beam trawler known to target grounds in the East Anglia Zone.

Plate 14.3 Typical Larger Class of Belgian Beam Trawler which Targets Grounds in the East Anglia Zone (Source: BMM, 2013)

121. As outlined previously, Belgium holds historic fishing rights between the UK's 6 and 12nm territorial fishing limits. Under EU regulations, however, restrictions apply to use of beam trawl gear within this boundary. Specifically, only those vessels using main engines of less than 300hp ("Eurocutters") are permitted access to these

grounds. It was reported during consultation that up to 30 vessels from this fleet segment may fish within the 6 to 12nm limit off the East Anglian coast. Larger vessels may operate inside 12nm only if they are using demersal otter trawls or fly seines. It was also stated that larger more powerful vessels may occasionally switch over to demersal otter trawl gear allowing them access to grounds within the 6 to 12nm limit.

122. Belgian beam trawlers use the same traditional gear as the Dutch, although on the larger class of vessel the beams are typically shorter at 11m as opposed to 12m in length. Including the beam of the vessel this gives an effective maximum gear width of 36m. In efforts to cut fuel costs, a number of vessels in the Belgian fleet are now using Sum Wings including some which target grounds in the East Anglia Zone. It was reported that only five vessels use this gear on a full time basis in all sea areas fished by the Belgian fleet. This is because, unlike traditional beam gear, Sum Wings cannot be fished with 'flip ups'[7] and can therefore only be towed over clean ground. The majority of vessels in the East Anglia Zone still use traditional open beam gear, an example of which (without groundline or nets) is shown in *Plate 14.4*. Tow durations in the area are typically 2 to 2.5 hours in length and skippers reported towing across the tide where possible to save on fuel costs.

123. A broad indication of the areas fished by both Eurocutters and large category Belgian vessels, as depicted on paper charts by skippers during consultation (Rederscentrale, August 2013) is shown in *Figure 14.32.* The areas correspond broadly with VMS datasets shown previously.

124. Areas fished by both vessel categories are generally located along the western edge of the East Anglia Zone some distance from the East Anglia THREE site. Eurocutter grounds are located within the 6 to 12nm limit, whilst those of larger vessels are located outside of this boundary. Specific grounds fished within these areas are dictated by the distribution of target species and will vary between years.

[7] 'Flip ups' are rope meshes which are towed in front of the groundline, lifting it above obstacles on the seabed and preventing obstacles from entering and damaging the panels or cod end of the trawl.

Plate 14.4 Traditional Beam Trawl Gear on Zeebrugge Fish Dock (Source: BMM, 2013)

125. Activity by the Belgian fleet is wide ranging being distributed throughout the central and southern North Sea, English Channel, Celtic Sea and Irish Sea and individual vessels regularly move between these areas. This is in contrast to Dutch activity which is mainly restricted to the North Sea and grounds targeted by fleets from particular ports may be relatively localised (e.g. Den Helder / Texel). It was reported during consultation that the intensity of fishing by the Belgian fleet in the vicinity of the proposed East Anglia THREE project had reduced in recent years as the quality of the fishing is perceived to have declined. In response more vessels, particularly those in the over-24m category, are currently targeting grounds in the Western Waters (Channel and Celtic Sea). One skipper present reported having been recently fishing off the coast of Denmark. Only a few vessels fish the Irish Sea due to the low sole quota available, (e.g. 36 tonnes in 2013 compared to 1,588 in the English Channel). The specifications of a typical Belgian beam trawler, which at the time of writing has been targeting grounds in the East Anglia Zone (Marinetraffic.com, October, 2013), are shown in *Table 14.5.*

Table14.5 Vessel and Gear Specifications of a Zeebrugge based Beam Trawler

Specifications of a Belgian Beam Trawler	
Homeport	Zeebrugge
Fishing Association	Redercentrale
Length	38m
Beam	8.5m
Draft	5.0m
Main engine HP	1,300bhp
Typical trip duration	7 to 10 days
Typical distance steamed per trip	160nm
Principal method	Sum Wing
Main species	Sole, plaice and skate
Beam length	2x11m
Groundline length	28m
Tickler chain length	1x18m, 1x17m, 1x16m, 1x15m
Net type	V-net (open gear)
Cod end mesh size	Sole - 85mm
Average towing speed	5 to 8 knots
Average towing duration	2.5 hours

14.1.4.10 UK Fishing Activity – Overview

126. *Figure 14.33* shows the extent of UK fishing activity (all gear types) by vessels over-15m as recorded by VMS (value). The highest value areas are located off the West of Scotland (ICES sub-area VIa), in the Irish Sea (sub-area VIIa), Celtic Sea (sub-areas VIIf, VIIg, VIIh), English Channel (VIIe, VIId) and central North Sea (sub-area IVb). The area of the southern North Sea (sub-area IVc) in which the proposed East Anglia THREE project is situated exhibits lower values than all other areas in UK waters. As previously highlighted, however, VMS datasets describe activity for the over-15m fleet only and will therefore under represent total fishing activity.

127. Surveillance sightings of UK vessels identified by method are given in *Figure 14.34*. The principal gear types[8] employed by UK registered vessels within the vicinity of the proposed East Anglia THREE project are as follows:

[8] Note that although scallop dredgers have been recorded during surveillance operations these are likely to be vessels steaming to and from ports outside East Anglia to grounds located in the English Channel. At the time of writing there are no known scallop grounds in the vicinity of the proposed East Anglia THREE project.

- potting;
- gillnetting;
- beam trawling;
- demersal trawling;
- longlining; and
- driftnetting.

14.1.4.10.1 Potting[9]

128. *Figure 14.35* shows the distribution of landings values of shellfish pot fisheries around the UK. On a national scale, crab and lobster landings from the vicinity of the proposed East Anglia THREE project are low. However, these landings are important to local vessels in addition fish species targeted with other methods. Similarly, it should be noted that whilst whelk landings from the vicinity of the East Anglia THREE project are low in a national context, a small number local and visiting vessels are targeting this species full time.

14.1.4.10.2 Netting

129. The distribution of landings values from UK vessels deploying driftnets, gillnets and trammel nets are shown in *Figure 14.36* to *Figure 14.38,* respectively. In all cases, landings recorded in the vicinity of the proposed East Anglia THREE project are dominated by sole and are of lower value than areas such as the south east and English Channel. Lower values of herring and other species are recorded immediately west of the proposed East Anglia THREE project. In the south east and English Channel, either sole or bass represent the highest value landings for all three methods in all sea areas, the majority of which will originate from small (e.g. under-10m) vessels targeting inshore grounds.

130. It should be noted that there is likely to be some overlap in the recording of these methods in the MMO datasets as, to some extent, their descriptions are interchangeable and are likely to vary between fishermen. For example, in the area under consideration driftnetting is usually undertaken with trammel nets, which, in addition to gillnetting, may also be used as a static netting method.

[9] Potting is a static gear comprised of a mainline holding between six to 25 pots spaced at intervals between 10 and 20m (e.g. 60 to 440m total length) depending on vessel size and the area fished. Further information on gear specification and operational practices are provided in *section 14.1.4.13*.

14.1.4.10.3 Longlining[10]

131. The distribution of longlining landings values is shown in *Figure 14.39*. Landings in the vicinity of the East Anglia THREE project (particularly the offshore cable corridor) are considerably higher than those from the Bristol Channel, the Wash and off the Holderness. The highest longlining landings values are recorded in the vicinity of the Shetlands for hake. Landings from this fishery in the East Anglia THREE project are dominated by cod, with bass, skates and rays and thornback ray constituting smaller but significant proportions of total values.

14.1.4.10.4 Beam Trawling

132. The distribution of beam trawl grounds and the main species landed within the fishery are shown in *Figure 14.40*. Landings from 33F2, in which part of the offshore cable corridor is located are among the highest in the southern North Sea and are dominated by sole. Beam trawl landings from this area are however of moderate value in the national context when compared to the Celtic sea, English Channel and Central North Sea.

14.1.4.10.5 Demersal Otter Trawling

133. *Figure 14.41* demonstrates that demersal trawling by UK registered vessels is widely distributed throughout all sea areas around the UK and Republic of Ireland. Landings from the vicinity of the East Anglia THREE project are of low to moderate value compared to those from areas such as the northern North Sea and English Channel. Similar to other sea areas including the Thames Estuary and eastern English Channel, landings from the otter trawl fleet in the proposed East Anglia THREE project area are dominated by sole.

14.1.4.11 UK Fishing Activity – Regional

14.1.4.11.1 Surveillance Sightings

134. *Figure 14.34* shows that sightings of UK vessels are principally located in inshore areas; much lower numbers are recorded further offshore. Observations have been particularly low in the vicinity of the East Anglia THREE site. Within the inshore section of the cable corridor (33F1 and part of 33F2) the highest numbers of sightings are of potting vessels, with particularly high densities recorded to the north. Unspecified trawlers also represent a relatively high proportion of sightings in this area. The highest densities of beam trawlers are recorded to the north-east of the inshore area of the cable corridor, with further observations located closer to

[10] Longlining is a static gear comprised of a main line onto which a series of baited or unbaited hooks are attached via snoods at regular intervals. Further information on gear specification and operational practices are provided in *section 14.1.4.13.1*.

shore to the south. The highest numbers of vessels working longlines also occur to the north-east of the offshore cable corridor. Demersal trawlers and gill and driftnetters are observed in lower numbers within the inshore section of the offshore cable corridor.

135. Sightings in offshore areas are characterised by low numbers of potters, beam trawlers, unspecified trawlers and longliners.

14.1.4.11.2 Landings Values

136. *Figure 14.42* illustrates landings values recorded in the vicinity of the proposed East Anglia THREE project by species. Average landings values from the windfarm analysis area are comparatively low (£351,767) and dominated by sole. Cod, plaice and sprats (respectively) represent smaller proportions of the total value.

137. A similar pattern is apparent over the offshore cable corridor, though landings of plaice are of considerably higher value than cod. On average, landings values from this area (£405,669) are greater than from the windfarm analysis area.

138. Landings from the inshore cable corridor analysis area (£970,093) are of considerably higher value than both other analysis areas with over half the total value represented by sole. Cod are more important than in other areas and account for approximately a quarter of total landings values. Bass and thornback rays are also of increased importance compared to rectangles located to the east and north, although respective contributions are relatively low. Landings values in 32F1, in which the south-western extremity of the offshore cable corridor is located, are the highest from any rectangle in the vicinity of the proposed East Anglia THREE project, approximately 40% of which is comprised by sole. The large proportion of 'other species' in this rectangle will be landings of cockles from the Thames Estuary fishery. Although cod represent a smaller proportion of landings than in the inshore cable analysis area, the distribution of other species is similar.

139. *Figure 14.43* shows landings values recorded in the vicinity of the proposed East Anglia THREE project by method.

140. Similar to adjacent areas, the majority of landings values in the windfarm analysis area originate from vessels using beam trawls. It is important to note that a significant proportion of landings from UK registered beam trawlers will in fact be by the Anglo-Dutch fleet (See *section 14.1.4.12.2*). The proportion of landings values recorded by longlines corresponds directly with those shown previously for cod.

141. Beam trawls are also the principal method used to target plaice and sole in the offshore cable analysis area. Midwater otter trawls record much lower values which

correspond to those observed previously for sprat. Landings values recorded by methods such as longlines, otter trawls and gillnets are somewhat lower.

142. In the inshore cable analysis area, fish species are targeted by a more diverse range of gear types. Longlines represent the greater proportion of values, followed by beam trawls, gillnets and both categories of otter trawl. Longlines are principally used to target cod and will account for a proportion of thornback ray and bass landings. In addition to sole, landings values recorded by beam trawls, gillnets and otter trawls will also be formed by varying amounts of these species.

143. *Figure 14.44* shows landings values by length category in the vicinity of the proposed East Anglia THREE project.

144. With specific reference to the analysis areas it is interesting to note that in the windfarm analysis area, whilst the over-15m fleet records three quarters of the landings values, the majority of the remainder is formed by vessels in the under-10m category. This proportion is similar to that recorded for longlines (see *Figure 14.39*) indicating a number of vessels using this gear type are in the under-10m fleet. Landings values in the offshore cable corridor originate almost entirely from vessels in the over-15m category. In contrast, approximately two thirds of landings values in the inshore cable corridor are from the under-10m fleet.

14.1.4.11.3 Fishing Effort

145. *Figure 14.45* shows recorded fishing effort (days at sea) by gear type. The distribution of effort is self-explanatory in most cases, usually corresponding directly to landings values. In the inshore cable analysis area the proportion of total effort occupied by longlines, gillnets and both categories of otter trawls are similar to corresponding landings values. The distribution of effort, however, in the offshore cable and windfarm analysis areas do not directly reflect values. For example, longlining effort in the windfarm analysis area is proportionally greater than corresponding landings values whilst the pattern is reversed for beam trawl effort. This suggests that beam trawlers achieve higher landings values per unit effort (e.g. more fish for fewer days at sea); a reflection of increased catching capacity and the targeting of high value species such as sole.

146. *Figure 14.46* shows fishing effort by vessel category. Broadly, the distribution of effort by vessel category corresponds to landings values: the highest effort levels in the East Anglia THREE project area are recorded within the inshore area of the cable corridor by vessels in the under-10m fleet. Approximately one third of the effort recorded in the windfarm analysis area is by the under-10m fleet whereas the majority of effort recorded in the offshore cable analysis area is by the vessels in the over-15m category.

14.1.4.11.4 VMS Data

147. Based on previous analysis of effort and landings data, a significant proportion of activity recorded in the vicinity of the proposed East Anglia THREE project is by vessels under-15m in length. This is particularly true of the inshore areas of the cable corridor. As VMS satellite data are only representative of the activity of vessels over-15 metres in length a significant proportion of activity close to shore will not be represented by either MMO or Marine Scotland datasets.

14.4.11.4.1 MMO Data

148. *Figure 14.47* and *Figure 14.48* show the distribution of fishing activity by the over-15m fleet as represented by VMS value and effort, respectively.

149. The proposed East Anglia THREE project is located in an area of relatively low fishing activity. Higher value areas are located to the west in the Wash and to the north around the Silver Pit. VMS densities within the East Anglia THREE site are low and fall within the lower value categories (less than £10,000). Higher values are recorded immediately south-west of the East Anglia THREE site, within the offshore cable corridor, as well as immediately east of the East Anglia THREE site, on the edge of the East Anglia Zone. Although UK VMS data is not categorised by gear type, based on previous analyses of MMO statistics a considerable proportion of this offshore activity is by beam trawlers, significant numbers of which will be from the Anglo-Dutch fleet. Further areas of relatively high VMS densities are located closer to shore over the inshore cable corridor.

150. In general, areas of highest VMS effort densities mirror those observed for value: areas of high effort within the proposed East Anglia THREE project are located south-west of the East Anglia THREE site and in the vicinity of the inshore area of the cable corridor. Effort is generally low in other areas.

14.4.11.4.2 Marine Scotland Data

151. *Figure 14.49* to *Figure 14.51* show the distribution VMS integrated with relative landings values from the over-15m demersal otter trawl, demersal static gear and pelagic fleets, respectively.

152. In all cases, relative value is generally low in areas occupied by the proposed East Anglia THREE project. Areas of slightly higher value are recorded directly over the offshore cable corridor in the inshore cable analysis area by vessels deploying demersal mobile gears. Demersal static nets (most likely wreck netters targeting cod) record higher value landings to the east of the East Anglia Zone. Pelagic vessels record slightly increased values in a discrete area to the south of the East Anglia East Anglia THREE site and a small north-eastern section of the offshore cable corridor.

14.1.4.12 UK Fishing Activity – Project Specific

14.1.4.12.1 Annual and Seasonal Variation

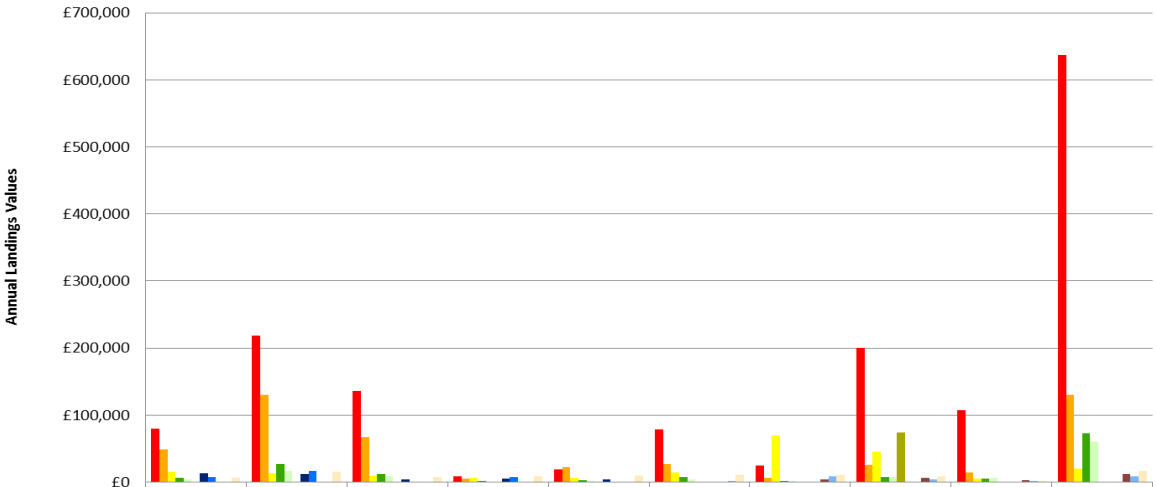
14.4.12.1.1 Windfarm Analysis Area (34F2)

153. Average annual landings values by species are shown in *Diagram 14.26.* In all years, except 2008 and 2010, landings values of sole have been higher than other species. The distribution of plaice and sole landings values are broadly similar to those recorded in the offshore cable analysis area being particularly high in 2005 and 2006 before declining dramatically in 2007. Variation in following years showed no obvious patterns although high sole landings values were recorded again in 2011 (£200,500) and 2012 (£107,299). The highest landings were recorded in 2013 (£636,690). Cod landings values show a pattern of general decline from 2002 (£32,504) to 2008 (£6814) but increased considerably in 2010 (£69,390) and 2011 (£44,810) before dropping again in 2012 (£4,682).

154. *Diagram* 14.27 shows that landings values by method directly mirror those recorded by species. As would be expected, patterns of beam trawler landings values correspond to those of sole, plaice, turbot and brill. Similarly, landings values from vessels engaged in longlining generally follow the same distribution pattern as those recorded for cod. Landings of sprat were recorded by midwater pair trawls in 2011 only.

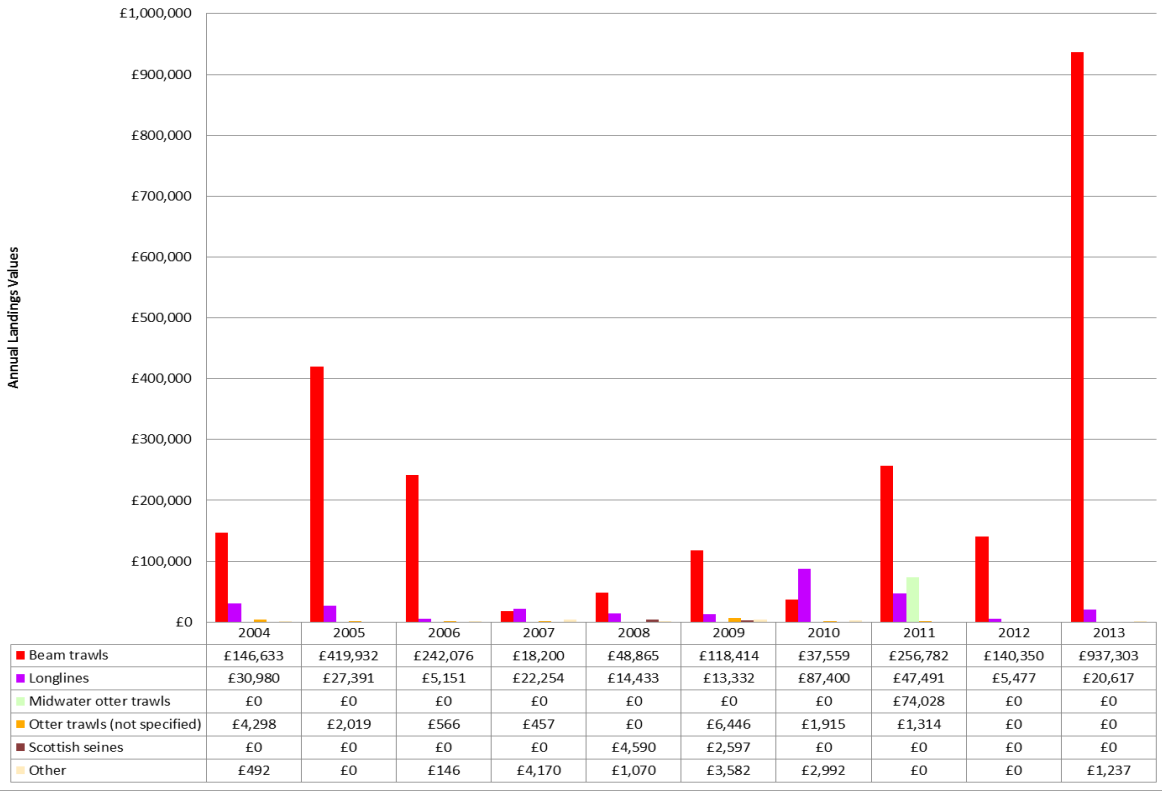
155. *Diagram 14.28* shows that annual variation of effort by beam trawlers and netters directly reflect corresponding landings values. However, longlining has been the predominant gear for most years in terms of effort with no reflection in landings values, suggesting that longliners either target less profitable species or have a lower catch per unit of effort (CPUE).

156. Seasonal landings values by species and method are provided in *Diagram 14.29 and Diagram 14.30,* respectively. Landings of sole and plaice (and to a lesser extent, turbot and brill) are greatest from the beam trawl fishery from September to May, peaking in December. Vessels targeting cod with longlines record their highest landings values from November through to April. Seasonal variation in effort by method shown in *Diagram 14.31* broadly reflects landings values.



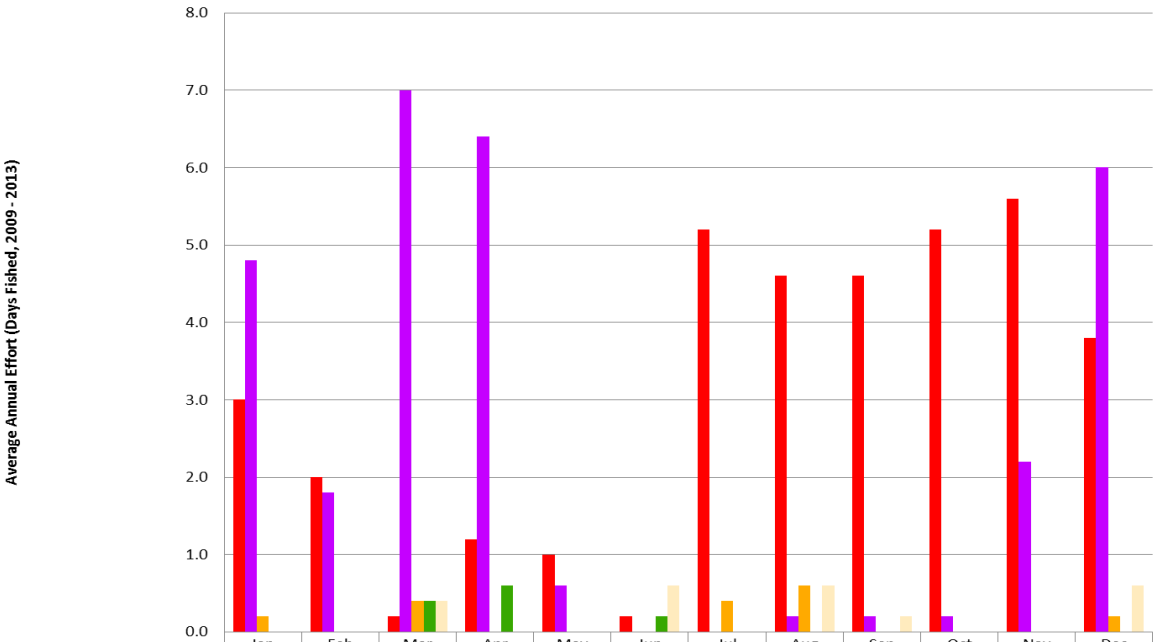
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sole	£79,454	£219,093	£136,008	£8,465	£18,435	£78,247	£24,697	£200,500	£107,299	£636,690
Plaice	£49,128	£130,107	£67,352	£5,297	£22,774	£26,613	£6,521	£26,009	£14,340	£130,789
Cod	£16,074	£12,876	£10,006	£6,819	£6,814	£13,955	£69,390	£44,810	£4,682	£20,098
Turbot	£6,572	£26,587	£12,418	£2,350	£2,709	£7,711	£2,307	£8,057	£5,558	£72,717
Brill	£3,737	£16,976	£8,616	£952	£1,767	£4,134	£2,110	£8,000	£6,823	£60,084
Sprats	£0	£0	£0	£0	£0	£0	£0	£74,028	£0	£0
Skates and Rays	£13,505	£12,277	£4,601	£5,707	£4,417	£0	£0	£0	£0	£0
Spurdog	£7,421	£16,351	£850	£7,162	£166	£381	£70	£0	£0	£0
Blonde Ray	£0	£0	£0	£0	£1,173	£683	£4,503	£5,893	£2,933	£12,542
Thornback Ray	£0	£0	£0	£0	£1,204	£1,391	£9,237	£3,561	£1,839	£9,139
Other Species	£6,513	£15,074	£8,088	£8,329	£9,500	£11,255	£11,033	£8,758	£2,352	£17,098

Diagram 14.26 UK Annual Landings Values (£) by Species in the Windfarm Analysis Area (34F2; Source: MMO, 2015)



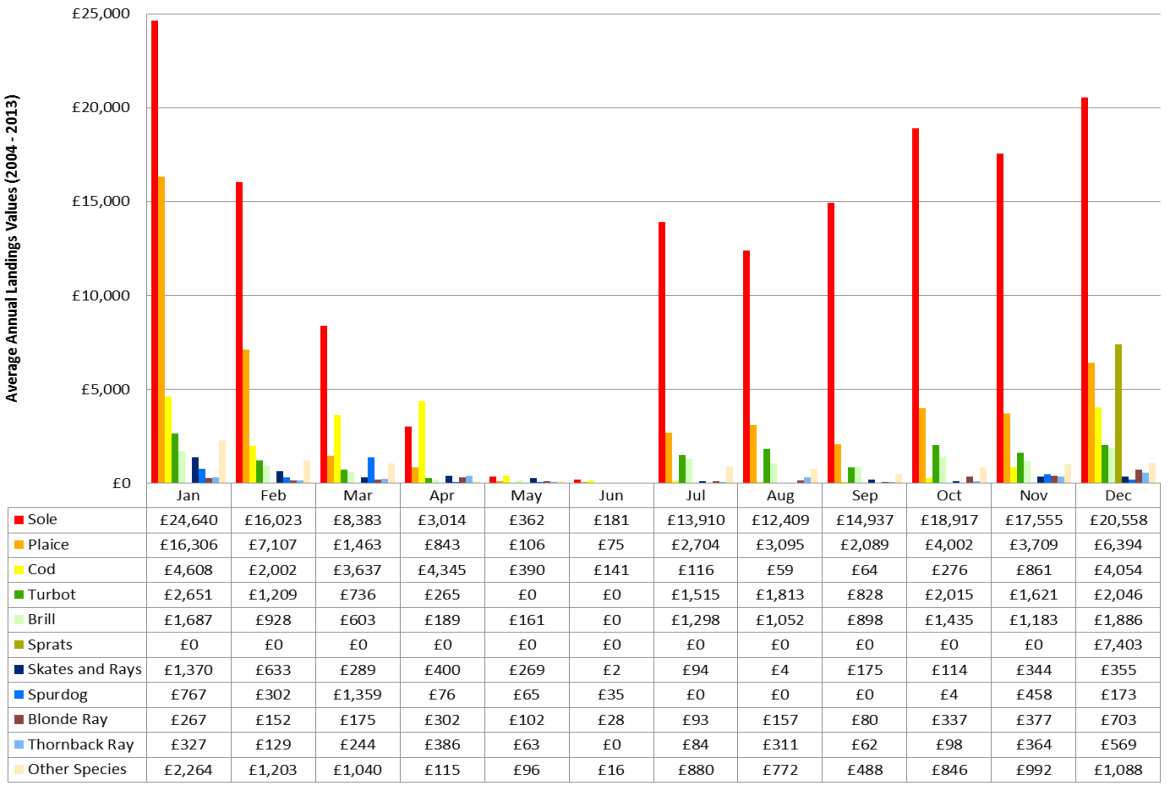
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beam trawls	£146,633	£419,932	£242,076	£18,200	£48,865	£118,414	£37,559	£256,782	£140,350	£937,303
Longlines	£30,980	£27,391	£5,151	£22,254	£14,433	£13,332	£87,400	£47,491	£5,477	£20,617
Midwater otter trawls	£0	£0	£0	£0	£0	£0	£0	£74,028	£0	£0
Otter trawls (not specified)	£4,298	£2,019	£566	£457	£0	£6,446	£1,915	£1,314	£0	£0
Scottish seines	£0	£0	£0	£0	£4,590	£2,597	£0	£0	£0	£0
Other	£492	£0	£146	£4,170	£1,070	£3,582	£2,992	£0	£0	£1,237

Diagram 14.27 UK Annual Landings Values (£) by Method in the Windfarm Analysis Area (34F2; Source: MMO, 2015)



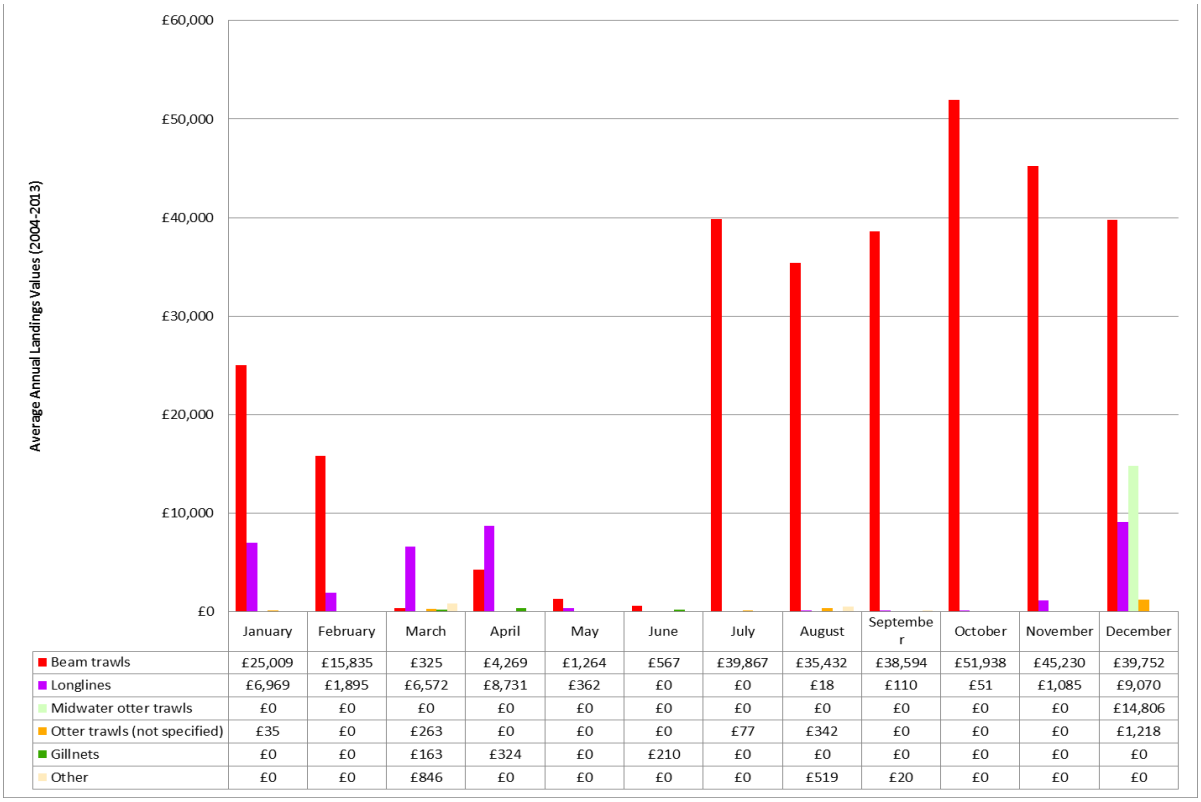
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beam trawls	3.0	2.0	0.2	1.2	1.0	0.2	5.2	4.6	4.6	5.2	5.6	3.8
Longlines	4.8	1.8	7.0	6.4	0.6	0.0	0.0	0.2	0.2	0.2	2.2	6.0
Otter trawls (not specified)	0.2	0.0	0.4	0.0	0.0	0.0	0.4	0.6	0.0	0.0	0.0	0.2
Gillnets	0.0	0.0	0.4	0.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Other Methods	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.6	0.2	0.0	0.0	0.6

Diagram 14.28 UK Annual Effort (Days Fished) by Method in the Windfarm Analysis Area (34F2, 2003 to 2012, Source: MMO, 2015)



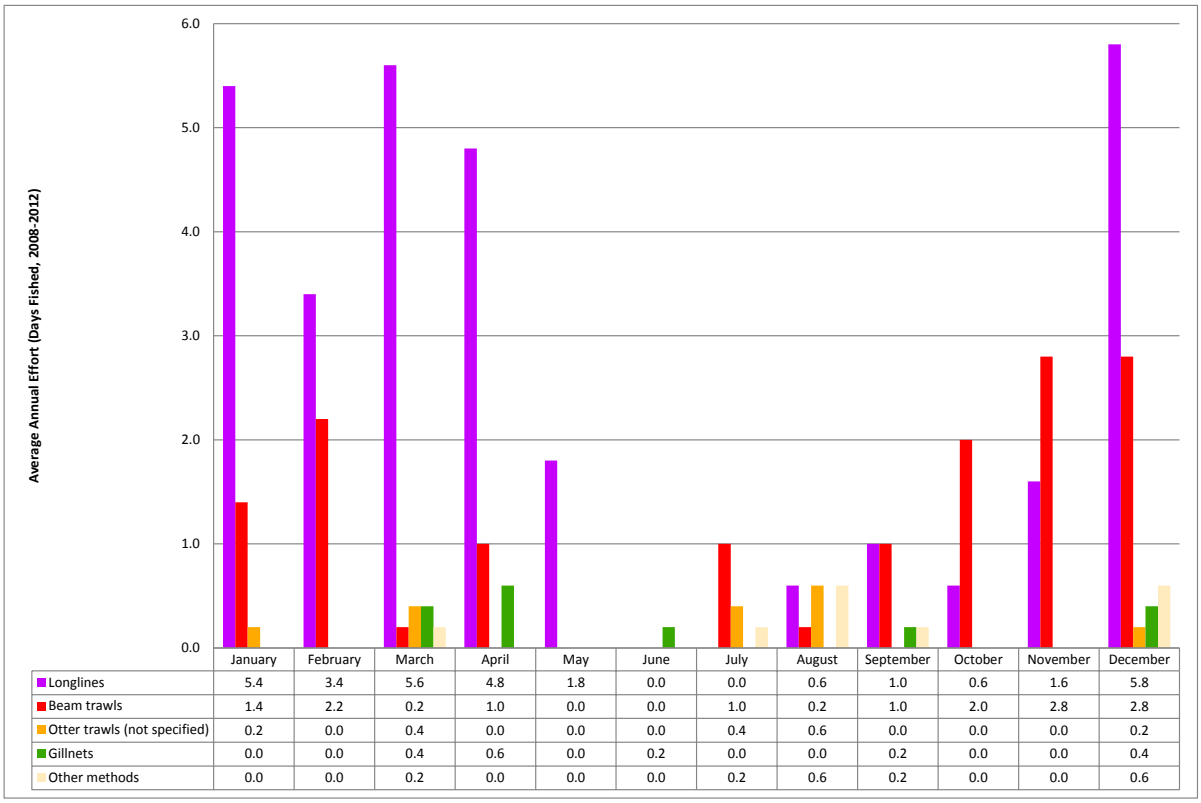
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sole	£24,640	£16,023	£8,383	£3,014	£362	£181	£13,910	£12,409	£14,937	£18,917	£17,555	£20,558
Plaice	£16,306	£7,107	£1,463	£843	£106	£75	£2,704	£3,095	£2,089	£4,002	£3,709	£6,394
Cod	£4,608	£2,002	£3,637	£4,345	£390	£141	£116	£59	£64	£276	£861	£4,054
Turbot	£2,651	£1,209	£736	£265	£0	£0	£1,515	£1,813	£828	£2,015	£1,621	£2,046
Brill	£1,687	£928	£603	£189	£161	£0	£1,298	£1,052	£898	£1,435	£1,183	£1,886
Sprats	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£7,403
Skates and Rays	£1,370	£633	£289	£400	£269	£2	£94	£4	£175	£114	£344	£355
Spurdog	£767	£302	£1,359	£76	£65	£35	£0	£0	£0	£4	£458	£173
Blonde Ray	£267	£152	£175	£302	£102	£28	£93	£157	£80	£337	£377	£703
Thornback Ray	£327	£129	£244	£386	£63	£0	£84	£311	£62	£98	£364	£569
Other Species	£2,264	£1,203	£1,040	£115	£96	£16	£880	£772	£488	£846	£992	£1,088

Diagram 14.29 UK Seasonal Landings Values (£) by Species in the Windfarm Analysis Area (34F2, Average 2009 to 2013, Source: MMO, 2013)



	January	February	March	April	May	June	July	August	September	October	November	December
Beam trawls	£25,009	£15,835	£325	£4,269	£1,264	£567	£39,867	£35,432	£38,594	£51,938	£45,230	£39,752
Longlines	£6,969	£1,895	£6,572	£8,731	£362	£0	£0	£18	£110	£51	£1,085	£9,070
Midwater otter trawls	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£14,806
Otter trawls (not specified)	£35	£0	£263	£0	£0	£0	£77	£342	£0	£0	£0	£1,218
Gillnets	£0	£0	£163	£324	£0	£210	£0	£0	£0	£0	£0	£0
Other	£0	£0	£846	£0	£0	£0	£0	£519	£20	£0	£0	£0

Diagram 14.30 UK Seasonal Landings Values (£) by Method in the Windfarm Analysis Area (34F2; Average 2009 to 2013, Source: MMO, 2013)



	January	February	March	April	May	June	July	August	September	October	November	December
Longlines	5.4	3.4	5.6	4.8	1.8	0.0	0.0	0.6	1.0	0.6	1.6	5.8
Beam trawls	1.4	2.2	0.2	1.0	0.0	0.0	1.0	0.2	1.0	2.0	2.8	2.8
Otter trawls (not specified)	0.2	0.0	0.4	0.0	0.0	0.0	0.4	0.6	0.0	0.0	0.0	0.2
Gillnets	0.0	0.0	0.4	0.6	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.4
Other methods	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.6	0.2	0.0	0.0	0.6

Diagram 14.31 UK Seasonal Effort (Days Fished) by Method in the Windfarm Analysis Area (34F2; Average 2008 to 2012, Source: MMO, 2013)

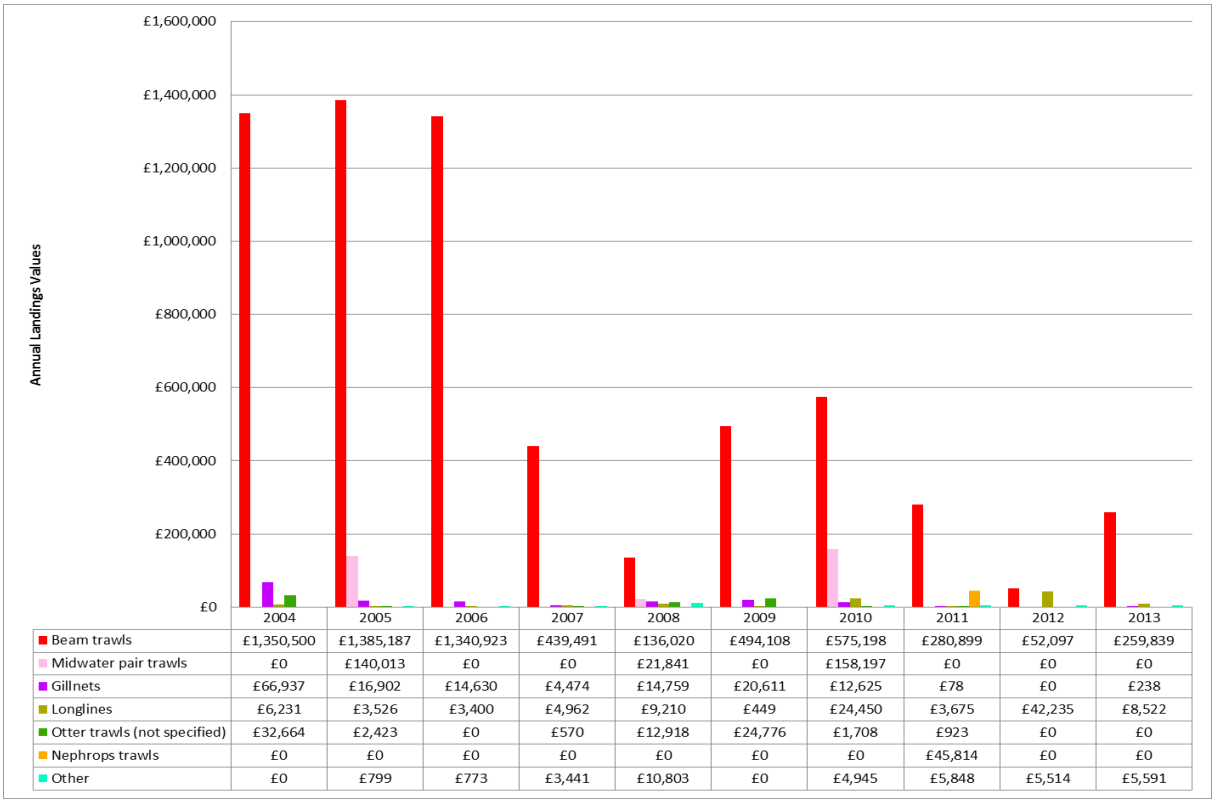
14.4.12.1.2 Offshore Cable Analysis Area

157. Annual landings values by species in the offshore cable analysis area are shown in *Diagram 14.32*. Excepting 2003, 2007 and 2010, sole represent the highest landings values of all species but have shown considerable variability. Between 2003 and 2006 sole landings showed a tenfold increase in value (£183,087 to £730,049) then declined sharply in 2007 (£150,962) and 2008 (£68,224). Some recovery was recorded in 2009 (£361,925) and 2010 (£365,495), before values falling again in 2011 (£205,443) and 2012 (£12,640). Values then increased substantially in 2013 (£152,988).

158. Landings values of plaice were highest from 2003 (£343,722) to 2007 (£180,473), with a peak value recorded in 2004 (£559,191); approximately equal to sole landings in the same year. Similar to sole, landings values then generally declined in the latter half of the time series. Landings values of other flatfish species such as brill and turbot generally map those of sole and plaice. The majority of these landings will be bycatch from the beam trawl fishery. The peak landings values for both species occurred in 2005 (brill: £72,252; turbot: £97,976) coinciding with those of sole.

159. Annual landings values of cod were highest in the first half of the dataset and peaked in 2003 (£153,921). It is worth noting that cod landings are generally of lower value than in the inshore cable corridor (33F1).

160. With respect to methods,



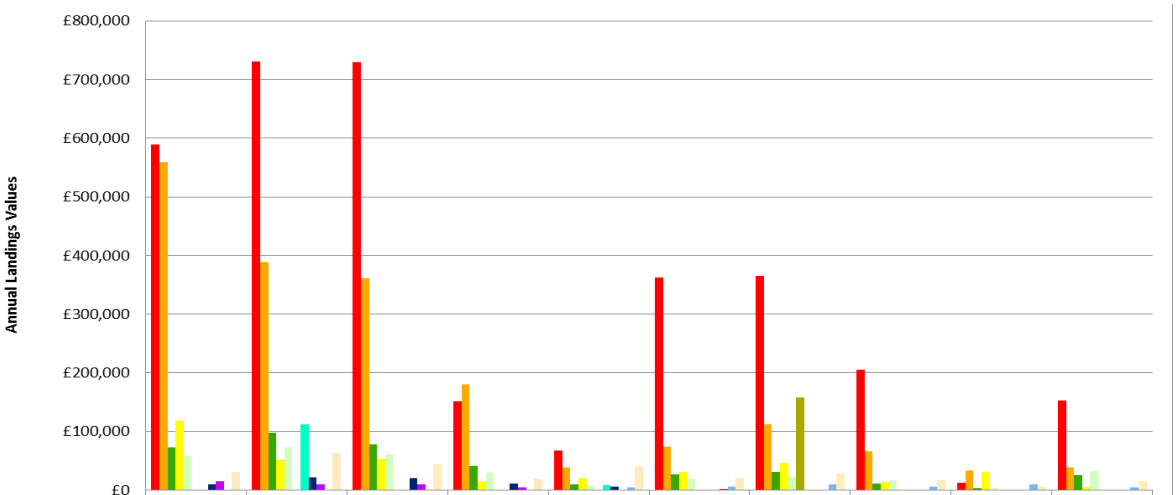
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beam trawls	£1,350,500	£1,385,187	£1,340,923	£439,491	£136,020	£494,108	£575,198	£280,899	£52,097	£259,839
Midwater pair trawls	£0	£140,013	£0	£0	£21,841	£0	£158,197	£0	£0	£0
Gillnets	£66,937	£16,902	£14,630	£4,474	£14,759	£20,611	£12,625	£78	£0	£238
Longlines	£6,231	£3,526	£3,400	£4,962	£9,210	£449	£24,450	£3,675	£42,235	£8,522
Otter trawls (not specified)	£32,664	£2,423	£0	£570	£12,918	£24,776	£1,708	£923	£0	£0
Nephrops trawls	£0	£0	£0	£0	£0	£0	£0	£45,814	£0	£0
Other	£0	£799	£773	£3,441	£10,803	£0	£4,945	£5,848	£5,514	£5,591

Diagram 14.33*Diagram* 14.33 shows that in most years annual average landings values from the beam trawl fishery are an order of magnitude greater than those recorded by any other method. As plaice and sole are the target species of the beam trawl fishery respective landings values closely mirror one another. Landings values from the fishery exceeded £1,300,000 in 2004, 2005 and 2006, but were considerably lower in subsequent years following the same pattern of decline previously observed in sole values.

161. A broadly similar pattern is apparent between the value of landings derived from gillnets, longlines and those of cod (both used to the species) which show a general reduction from 2004 to 2007. Landings values originating from vessels operating midwater pair trawls only occur in 2005 (£140,013), 2008 (£21,841) and 2010 (£158,197) corresponding to landings values of horse mackerel (2005, 2008) and sprats (2010).

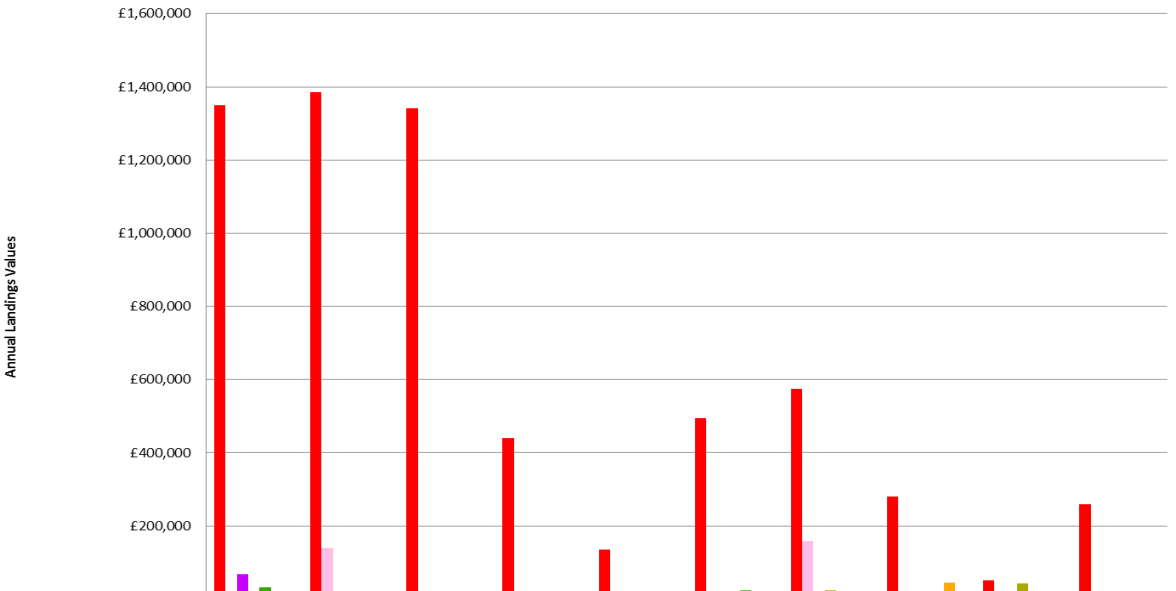
162. Annual variations of effort by method broadly reflect patterns shown by landings values (*Diagram 14.34*). The decline of beam trawler values over the period is directly linked to a decrease in effort.

163. The seasonal distribution of landings values by species and method are shown in Diagram 14.35 and Diagram 14.36. The highest landings of beam trawled sole are recorded from October to April with a peak in January. Landings of plaice follow the same pattern as sole, peaking in January. Landings of longlined cod are recorded from October to July with a peak in January. Seasonal variation in effort by method shown in *Diagram 14.37* broadly reflects landings values.



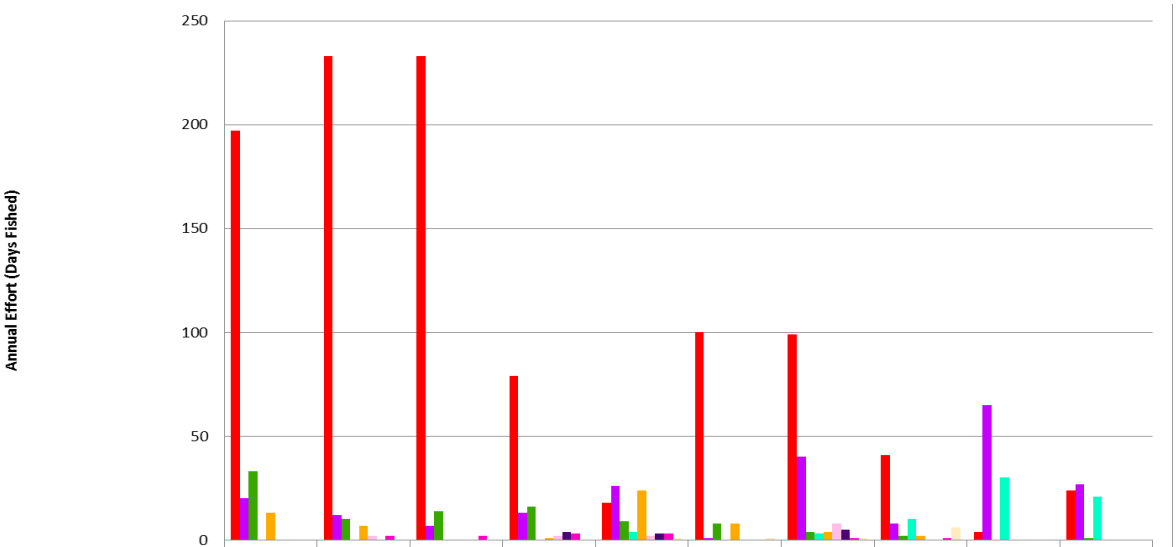
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sole	£589,812	£730,705	£730,049	£150,962	£68,224	£361,925	£365,495	£205,443	£12,640	£152,988
Plaice	£559,191	£388,392	£361,434	£180,473	£38,282	£73,738	£111,811	£66,088	£34,036	£38,298
Turbot	£72,213	£97,976	£78,423	£41,695	£10,003	£27,150	£31,277	£11,545	£3,305	£26,188
Cod	£118,961	£51,245	£53,456	£14,746	£20,736	£31,159	£46,717	£14,197	£30,424	£5,127
Brill	£58,797	£72,252	£60,752	£29,956	£7,249	£18,504	£23,268	£15,949	£3,075	£31,976
Sprats	£0	£0	£0	£0	£0	£0	£158,197	£0	£0	£0
Horse Mackerel	£0	£112,555	£19	£0	£8,807	£2	£0	£0	£0	£0
Skates and Rays	£10,341	£21,394	£20,862	£10,783	£6,507	£0	£0	£0	£0	£13
Dabs	£15,559	£10,515	£10,308	£5,188	£1,228	£1,461	£1,061	£676	£282	£213
Thornback Ray	£0	£0	£0	£0	£4,566	£5,779	£10,440	£5,954	£9,771	£4,180
Other Species	£31,458	£63,815	£44,423	£19,134	£39,950	£20,227	£28,858	£17,386	£6,313	£15,208

Diagram 14.32 UK Annual Landings Values (£) by Species in the Offshore Cable Analysis Area (33F2; Source: MMO, 2015)



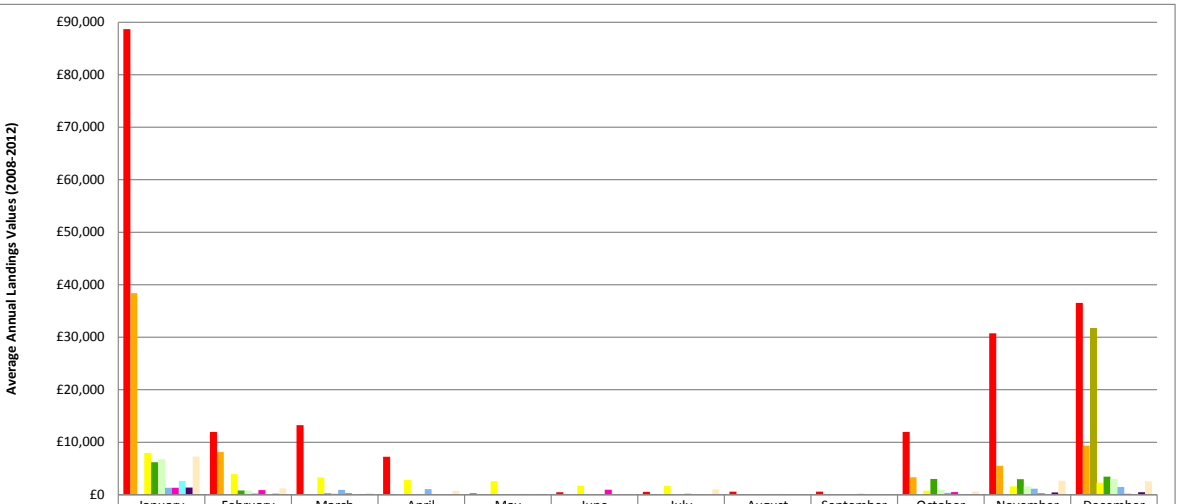
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beam trawls	£1,350,500	£1,385,187	£1,340,923	£439,491	£136,020	£494,108	£575,198	£280,899	£52,097	£259,839
Midwater pair trawls	£0	£140,013	£0	£0	£21,841	£0	£158,197	£0	£0	£0
Gillnets	£66,937	£16,902	£14,630	£4,474	£14,759	£20,611	£12,625	£78	£0	£238
Longlines	£6,231	£3,526	£3,400	£4,962	£9,210	£449	£24,450	£3,675	£42,235	£8,522
Otter trawls (not specified)	£32,664	£2,423	£0	£570	£12,918	£24,776	£1,708	£923	£0	£0
Nephrops trawls	£0	£0	£0	£0	£0	£0	£0	£45,814	£0	£0
Other	£0	£799	£773	£3,441	£10,803	£0	£4,945	£5,848	£5,514	£5,591

Diagram 14.33 UK Annual Landings Values (£) by Method in the Offshore Cable Analysis Area (33F2; Source: MMO, 2015)



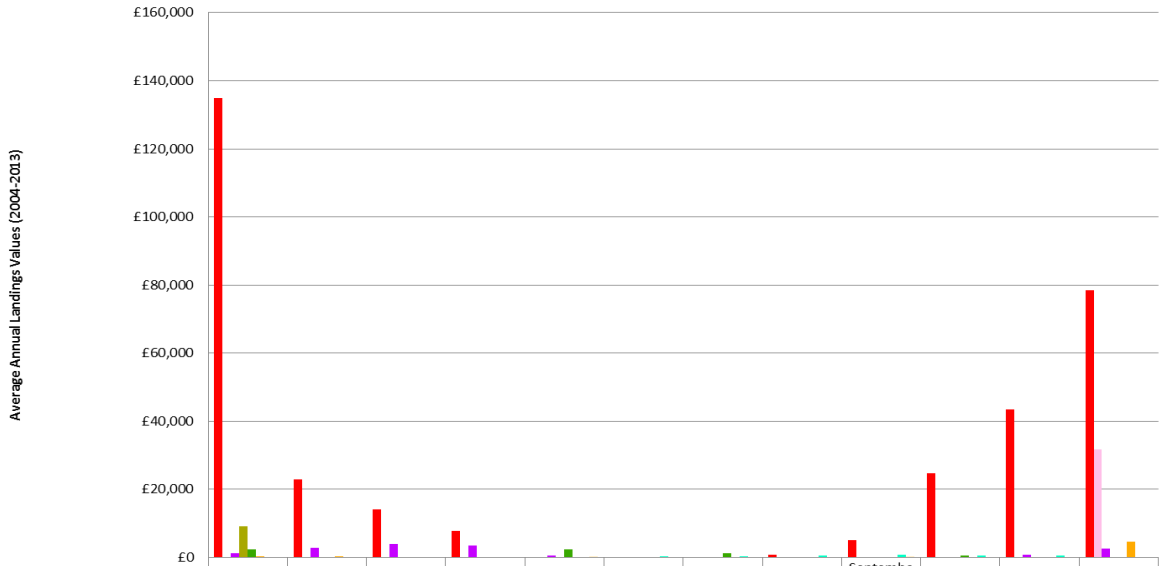
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Beam trawls	197	233	233	79	18	100	99	41	4	24
Longlines	20	12	7	13	26	1	40	8	65	27
Gillnets	33	10	14	16	9	8	4	2	0	1
Driftnets	0	0	0	0	4	0	3	10	30	21
Otter trawls (not specified)	13	7	0	1	24	8	4	2	0	0
Midwater pair trawls	0	2	0	2	2	0	8	0	0	0
Trammel nets	0	0	0	4	3	0	5	0	0	0
Bottom otter trawls	0	2	2	3	3	0	1	1	0	0
Other Methods	0	0	0	0	1	1	1	6	0	0

Diagram 14.34 Annual Effort (Days Fished) by Method in the Offshore Cable Analysis Area (33F2, 2004 to 2013 Source: MMO, 2015)



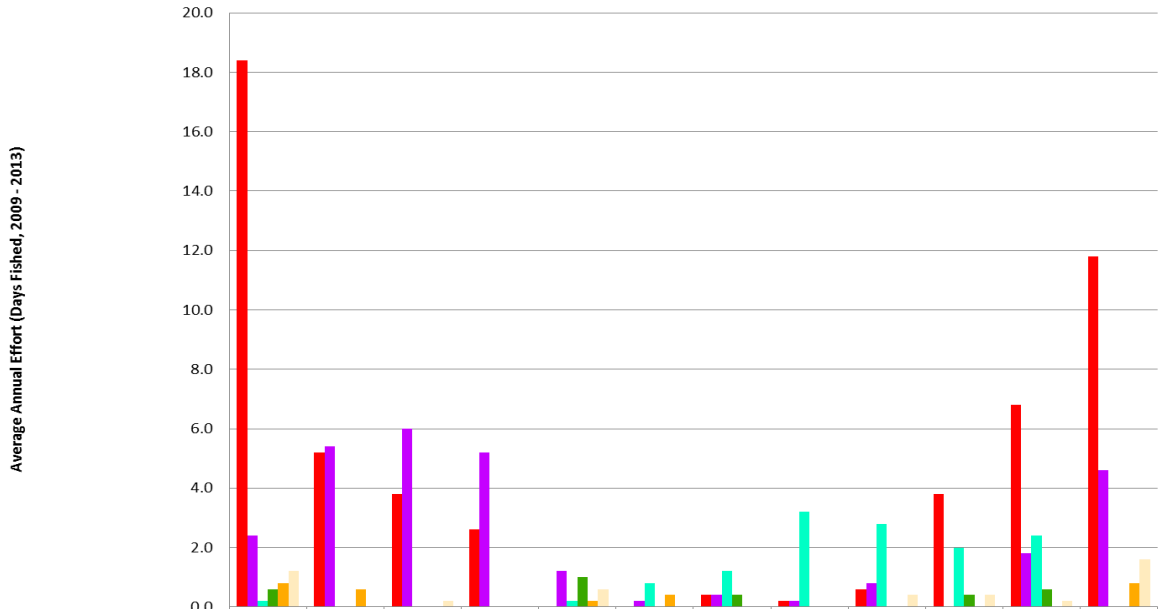
	January	February	March	April	May	June	July	August	September	October	November	December
Sole	£88,681	£11,945	£13,239	£7,242	£243	£471	£552	£578	£597	£11,942	£30,735	£36,522
Plaice	£38,383	£8,109	£54	£1	£46	£4	£14	£0	£0	£3,316	£5,528	£9,336
Sprats	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£31,639
Cod	£7,975	£3,937	£3,289	£2,826	£2,609	£1,656	£1,674	£23	£18	£772	£1,587	£2,281
Turbot	£6,185	£790	£248	£22	£0	£2	£0	£0	£0	£2,991	£2,974	£3,443
Brill	£6,747	£825	£307	£160	£2	£11	£2	£4	£6	£950	£1,594	£3,002
Thornback Ray	£1,328	£267	£918	£1,059	£153	£111	£218	£93	£188	£352	£1,128	£1,489
Bass	£1,340	£869	£238	£11	£114	£951	£54	£4	£3	£526	£238	£187
Herring	£2,621	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Lemon Sole	£1,369	£190	£92	£20	£1	£0	£0	£0	£0	£51	£429	£467
Other species	£7,258	£1,205	£311	£743	£192	£87	£1,031	£21	£39	£667	£2,665	£2,559

Diagram 14.35 UK Seasonal Landings Values (£) by Species in the Offshore Cable Analysis Area (33F2; Average 2008 to 2012, Source: MMO, 2013)



	January	February	March	April	May	June	July	August	September	October	November	December
Beam trawls	£134,906	£22,915	£14,156	£7,698	£0	£0	£133	£831	£5,005	£24,780	£43,566	£78,438
Midwater pair trawls	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£31,639
Longlines	£1,273	£2,759	£3,957	£3,589	£502	£16	£96	£12	£205	£0	£895	£2,561
Nephrops trawls	£9,163	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Gillnets	£2,443	£0	£0	£0	£2,371	£0	£1,304	£0	£0	£529	£63	£0
Otter trawls (not specified)	£304	£316	£0	£0	£7	£185	£0	£0	£0	£0	£0	£4,670
Driftnets	£50	£0	£0	£0	£67	£243	£440	£661	£707	£620	£589	£0
Other	£0	£0	£100	£0	£422	£0	£0	£0	£241	£140	£100	£0

Diagram 14.36 UK Seasonal Landings Values (£) by Method in the Offshore Cable Analysis Area (33F2; Average 2009 to 2013, Source: MMO, 2015)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beam trawls	18.4	5.2	3.8	2.6	0.0	0.0	0.4	0.2	0.6	3.8	6.8	11.8
Longlines	2.4	5.4	6.0	5.2	1.2	0.2	0.4	0.2	0.8	0.0	1.8	4.6
Driftnets	0.2	0.0	0.0	0.0	0.2	0.8	1.2	3.2	2.8	2.0	2.4	0.0
Gillnets	0.6	0.0	0.0	0.0	1.0	0.0	0.4	0.0	0.0	0.4	0.6	0.0
Otter trawls (not specified)	0.8	0.6	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.8
Other Methods	1.2	0.0	0.2	0.0	0.6	0.0	0.0	0.0	0.4	0.4	0.2	1.6

Diagram 14.37 UK Seasonal Effort (Days Fished) by Method in the Offshore Cable Analysis Area (33F2; Average 2008 to 2012, Source: MMO, 2013)

14.4.12.1.3 Inshore Cable Analysis Area

164. Annual landings values by species and method are provided in *Diagram 14.38* and *Diagram 14.39.* With the exception of 2003, sole landings have consistently recorded the highest values with distinct peaks recorded in 2006 (£570,895), 2009 (£725,772) and 2010 (£912,520). Landings of cod have shown considerable fluctuation decreasing from £300,800 in 2003 to £84,082 in 2005, then increasing in subsequent years to a peak of £422,445 in 2010. Values in 2011 were among the lowest recorded in any year (£92,408) before increasing again in 2012 (£133,980). The decline in recorded landings values of skates and rays from 2007 (corresponding to a rise in thornback ray values) is due to a request by the EU commission that skate and ray species be recorded individually as opposed to in a generic category (P.Wintz, (MMO) pers. comm. 2013). Sprat landings increased markedly from 2003 (£78,791) to 2005 (£248,475) but were substantially reduced in subsequent years. Landings values of bass have remained relatively stable although particularly high values were recorded in 2008 (£93,246).

165. The decline in spurdog landings is related to successive quota reductions and the introduction of a minimum landing size in response to concerns regarding overexploitation of the stock. This eventually culminated in no TAC provision (and therefore no UK quota allocation) in 2011 and the fishery remains closed to date.

166. Landings of lobster and crab have shown considerable variation over the ten year period for which data is shown. This is particularly so for crab landings values which peaked in 2003 (£124,527) but recorded less than a quarter of this value consistently until 2008 (£25,625), before falling again in 2009 (£2,082).

167. With respect to method, longlines, gillnets and beam trawls record the highest values. Longline landings values broadly track those observed for cod (which is one of the principal methods used to target the species) peaking in 2003 (£399,886) and 2010 (£489,719). The fact that the value of longlining exceeds that observed for cod reflects the fact that the method also accounts for significant landings of thornback ray, bass, spurdog (pre-2011) and other demersal species. Beam trawl landings show distinct peaks in 2009 (£340,719) and 2010 (£611,004) reflecting those observed for landings of sole. The peak in landings for midwater pair trawls during 2005 (£247,013) matches that recorded for sprats although landings by this method were absent entirely from 2007 onwards.

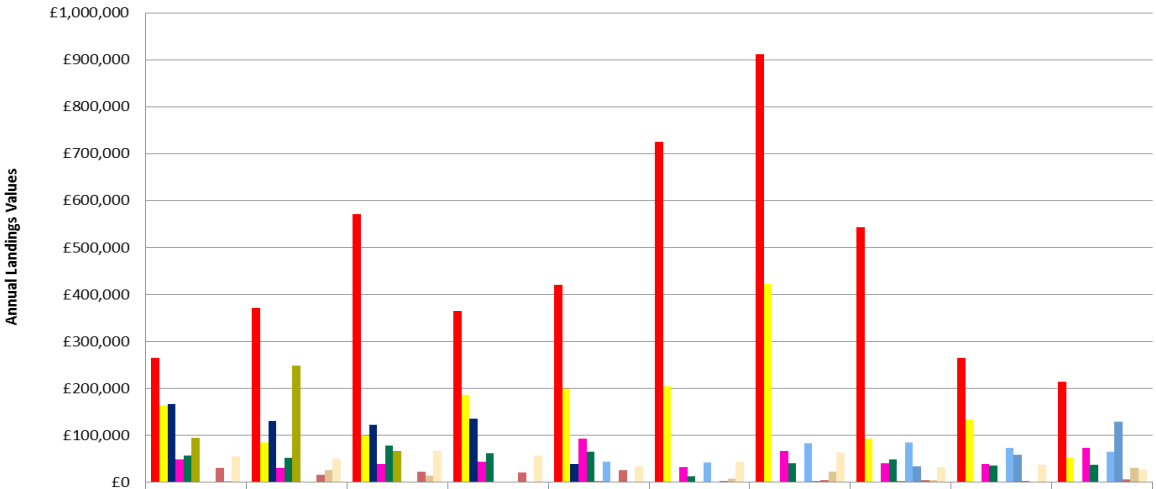
168. Variation of effort by method broadly reflects landing values (*Diagram 14.40*). Static gears are predominantly used in the inshore cable analysis area in terms of effort but

do not generate the highest landings values, which can be explained either by less profitable target species or lower catch per unit of effort (CPUE).

169. Seasonal variation in landings values by species and method are shown in *Diagram 14.41* and *Diagram 14.42*, respectively. Seasonal variations in effort are shown in *Diagram 14.43*.

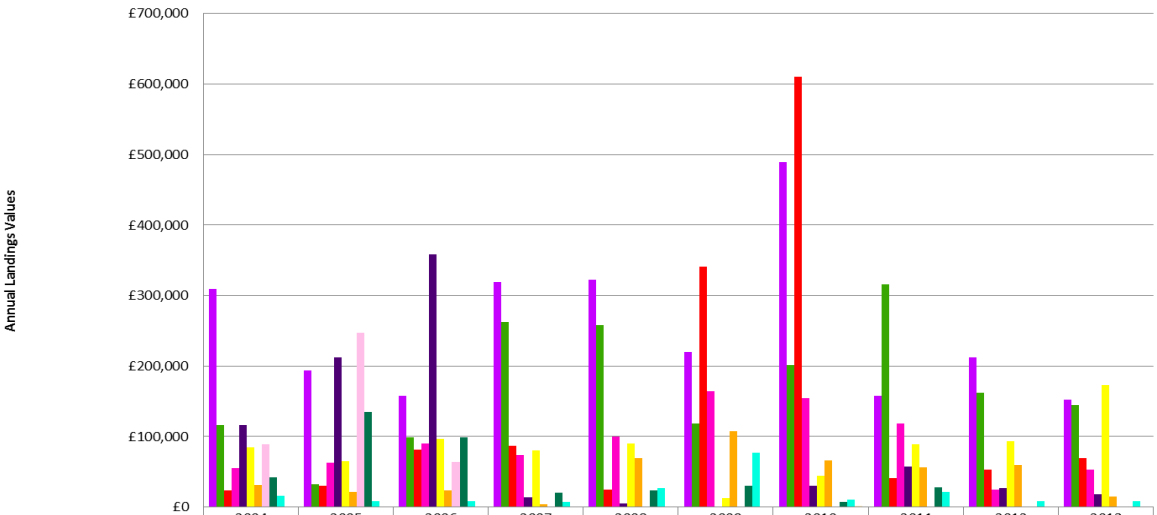
170. Sole landings increased from January onwards, more than tripling in value from February (£3,704) to March (£14,776) and increasing markedly again from April (£56,924) to July (£68,908). Cod are generally targeted during the autumn through to spring. Accordingly, landings values for the species increase steadily from November (£7,565) onwards, peaking in March (£35,493) and remain high into April (£32,482). Bass landings values are highest during May (£10,957) and June (£7,819) decreasing until October where a smaller secondary peak is recorded (£5,114). Lobster and crab landings values are greatest from May to November with respective peaks recorded in July (£9,161) and September (£1,665). By value, whelk landings are generally lower and show considerable variation but are highest July (£5,999).

171. Landings values from vessels operating longlines again broadly follow those recorded for cod, being highest in March (£42,854) and April (£39,629). The beam trawl fleet record their highest value landings during the earlier part of the sole season (April; £34,516 and May; £47,607). Vessels setting gillnets record peak landings values during July (£35,835), August (£27,917) and September (£33,754), coinciding with the peak of the sole fishery. Demersal otter trawlers (e.g. bottom otter trawls) record the highest value landings between April (£9,993) to October (£9,066), peaking in September (£19,906). As crab and lobster are targeted exclusively with pots the distribution of values are broadly similar, being highest from April (£8,478) to November (£7,918). Seasonal effort by method shown broadly reflects landings values.



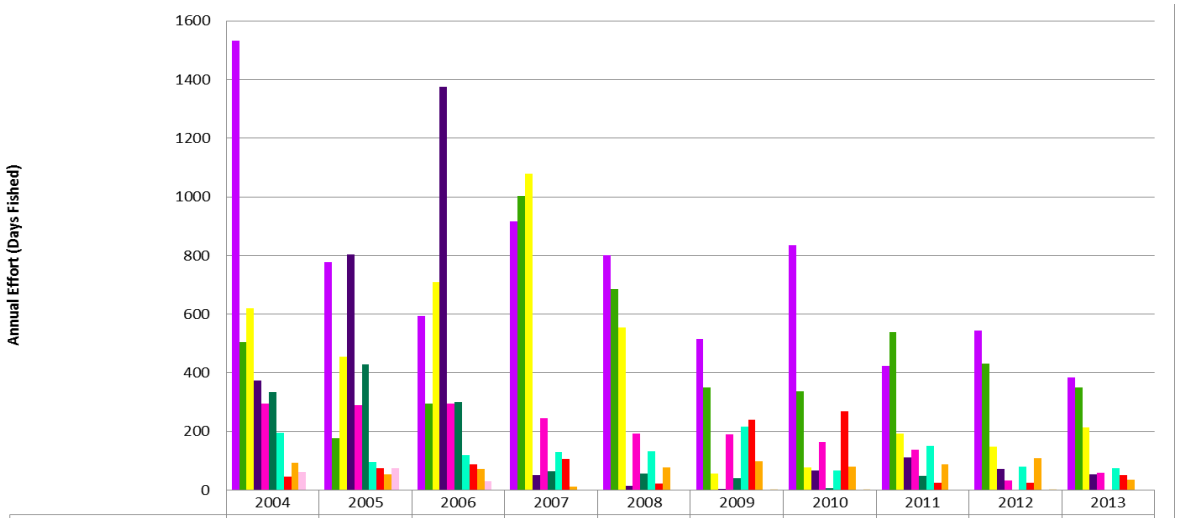
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sole	£264,058	£371,557	£570,895	£364,062	£420,391	£725,772	£912,520	£542,813	£263,931	£214,112
Cod	£163,769	£84,082	£99,311	£186,161	£199,345	£203,242	£422,445	£92,408	£133,981	£51,470
Skates and Rays	£165,563	£130,097	£122,638	£135,506	£38,174	£602	£0	£0	£60	£1,414
Bass	£49,134	£30,119	£38,571	£42,742	£93,246	£31,301	£66,787	£40,594	£38,106	£72,961
Lobsters	£56,079	£51,844	£78,673	£61,001	£64,621	£12,432	£39,627	£48,477	£35,838	£37,513
Sprats	£94,602	£248,475	£65,786	£301	£1,971	£1,660	£714	£1,782	£237	£6
Thornback Ray	£0	£0	£0	£0	£43,322	£42,577	£82,825	£83,736	£72,304	£65,332
Whelks	£288	£76	£143	£25	£4	£1,617	£1,746	£34,417	£58,910	£127,931
Edible Crabs	£30,341	£15,540	£22,178	£21,246	£25,625	£2,082	£3,678	£4,606	£2,322	£5,228
Brown Shrimps	£2,924	£25,182	£13,857	£0	£0	£7,252	£22,833	£3,593	£1,020	£30,539
Other Species	£55,688	£50,817	£65,824	£56,999	£33,942	£43,890	£63,106	£32,525	£36,234	£27,361

Diagram 14.38 UK Annual Landings Values (£) by Species in the Inshore Cable Analysis Area (33F1; Source: MMO, 2015)



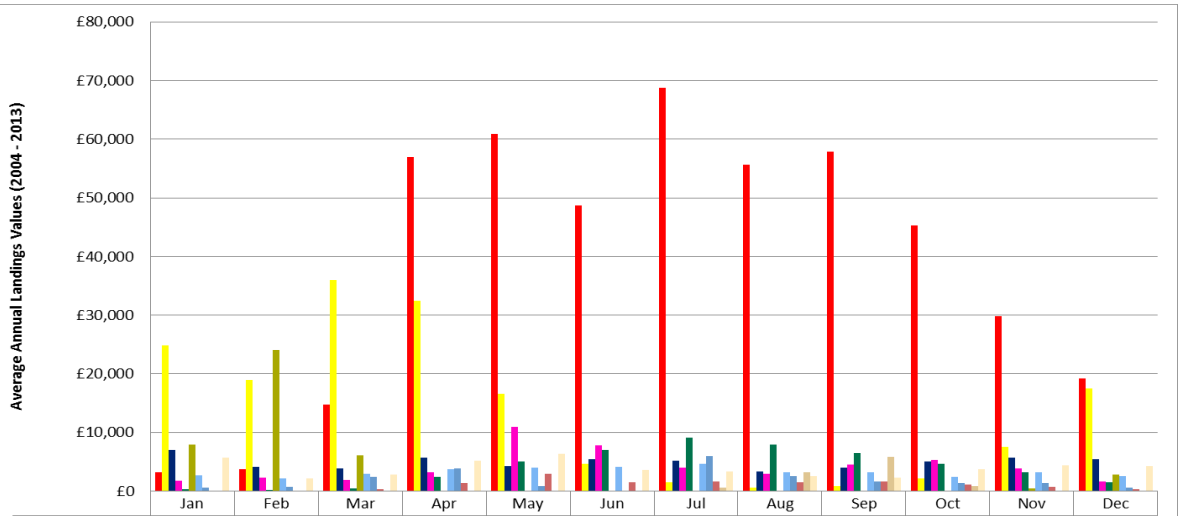
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Longlines	£308,867	£193,730	£158,264	£319,548	£322,478	£219,832	£489,719	£157,710	£212,363	£152,420
Gillnets	£116,387	£32,262	£99,397	£262,827	£258,064	£117,983	£201,246	£315,416	£162,458	£144,684
Beam trawls	£23,969	£29,966	£80,960	£87,204	£25,119	£340,719	£611,004	£40,774	£53,294	£69,027
Bottom otter trawls	£55,199	£62,432	£89,953	£74,330	£100,459	£164,356	£154,529	£118,856	£25,000	£53,207
Trammel nets	£116,412	£212,111	£358,408	£13,705	£4,809	£1,174	£30,690	£57,730	£26,546	£18,081
Pots	£84,255	£65,325	£96,162	£79,873	£89,733	£13,014	£44,102	£89,375	£93,925	£173,418
Otter trawls (not specified)	£30,829	£21,042	£23,283	£3,808	£69,358	£107,418	£65,947	£55,956	£59,967	£15,056
Midwater pair trawls	£88,892	£247,013	£64,181	£0	£0	£0	£0	£0	£0	£0
Otter twin trawls	£41,775	£134,610	£99,261	£19,859	£23,581	£29,918	£6,762	£28,053	£566	£114
Driftnets	£15,591	£8,820	£7,925	£6,889	£26,806	£77,096	£10,378	£21,076	£7,904	£7,860
Other	£269	£479	£83	£0	£187	£915	£1,905	£0	£917	£0

Diagram 14.39 UK Annual Landings Values (£) by Method in the Inshore Cable Analysis Area (33F1; Source: MMO, 2015)



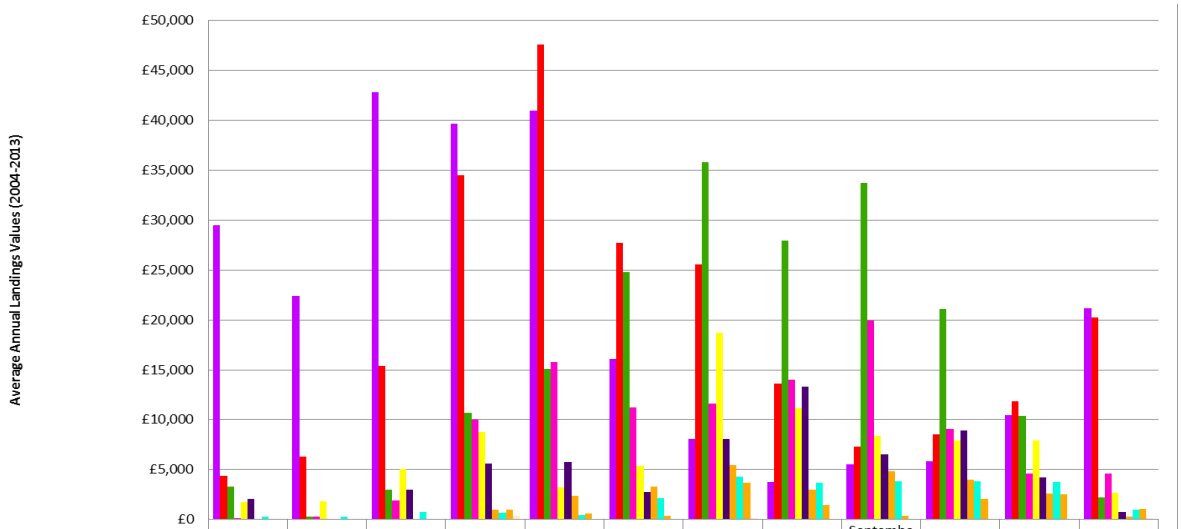
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Longlines	1533	778	594	916	802	514	836	424	545	384
Gillnets	504	178	295	1004	686	349	337	539	431	350
Pots	620	456	709	1078	555	56	78	194	147	214
Trammel nets	373	803	1374	50	14	5	66	112	73	53
Bottom otter trawls	296	290	295	245	194	190	164	139	34	58
Otter twin trawls	334	429	299	65	56	42	8	48	2	1
Driftnets	196	96	119	130	133	217	68	151	80	75
Beam trawls	45	75	89	106	23	241	269	26	24	52
Otter trawls (not specified)	93	53	72	12	78	99	79	87	109	35
Midwater pair trawls	61	76	31	0	0	0	0	0	0	0
Other Methods	1	2	2	1	2	3	5	0	4	0

Diagram 14.40 Annual Effort (Days Fished) by Method in the Inshore Cable Analysis Area (33F1, 2004 to 2013 Source: MMO, 2015)



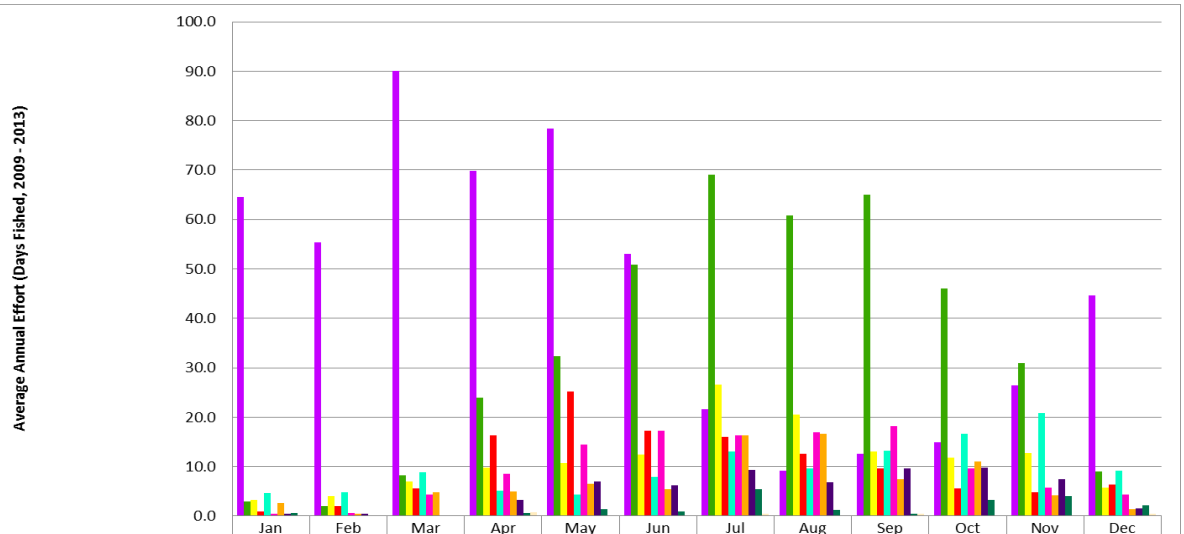
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sole	£3,210	£3,704	£14,776	£56,924	£60,908	£48,715	£68,808	£55,685	£57,932	£45,302	£29,800	£19,248
Cod	£24,799	£18,972	£35,943	£32,482	£16,634	£4,634	£1,499	£551	£887	£2,150	£7,565	£17,505
Skates and Rays	£7,074	£4,084	£3,940	£5,764	£4,241	£5,492	£5,235	£3,302	£3,954	£5,114	£5,727	£5,478
Bass	£1,762	£2,240	£1,900	£3,282	£10,957	£7,819	£4,038	£2,923	£4,567	£5,311	£3,924	£1,634
Lobsters	£396	£228	£471	£2,390	£5,052	£7,014	£9,161	£7,940	£6,554	£4,662	£3,163	£1,579
Sprats	£7,873	£24,101	£6,137	£134	£0	£0	£0	£0	£0	£0	£465	£2,843
Thornback Ray	£2,751	£2,165	£2,922	£3,687	£4,061	£4,102	£4,631	£3,199	£3,279	£2,419	£3,188	£2,606
Whelks	£625	£767	£2,459	£3,901	£917	£138	£5,999	£2,581	£1,667	£1,414	£1,427	£621
Edible Crabs	£101	£87	£333	£1,380	£2,958	£1,580	£1,601	£1,497	£1,655	£1,076	£691	£325
Brown Shrimps	£28	£13	£14	£21	£0	£15	£617	£3,171	£5,816	£895	£118	£12
Other Species	£5,744	£2,187	£2,878	£5,224	£6,409	£3,609	£3,329	£2,566	£2,301	£3,773	£4,381	£4,237

Diagram 14.41 UK Seasonal Landings Values (£) by Species in the Inshore Cable Analysis Area (33F1; Average, 2009 to 2013, Source: MMO, 2015)



	January	February	March	April	May	June	July	August	September	October	November	December
Longlines	£29,526	£22,427	£42,854	£39,629	£40,983	£16,118	£8,099	£3,784	£5,549	£5,823	£10,440	£21,175
Beam trawls	£4,364	£6,302	£15,407	£34,516	£47,607	£27,725	£25,584	£13,602	£7,266	£8,511	£11,831	£20,247
Gillnets	£3,277	£275	£3,016	£10,698	£15,074	£24,819	£35,835	£27,917	£33,754	£21,066	£10,402	£2,224
Bottom otter trawls	£151	£272	£1,923	£9,993	£15,794	£11,200	£11,634	£14,035	£19,906	£9,066	£4,631	£4,583
Pots	£1,785	£1,818	£5,048	£8,748	£3,217	£5,377	£18,677	£11,184	£8,391	£7,906	£7,918	£2,697
Otter trawls (not specified)	£2,091	£43	£2,960	£5,585	£5,734	£2,767	£8,031	£13,285	£6,544	£8,884	£4,210	£732
Trammel nets	£49	£17	£0	£989	£2,346	£3,326	£5,434	£2,980	£4,828	£3,954	£2,616	£306
Driftnets	£281	£284	£753	£644	£420	£2,113	£4,306	£3,661	£3,849	£3,822	£3,758	£972
Otter twin trawls	£46	£25	£0	£979	£575	£359	£3,652	£1,464	£358	£2,080	£2,494	£1,051
Other	£0	£0	£0	£357	£0	£19	£164	£58	£33	£0	£0	£116

Diagram 14.42 UK Seasonal Landings Values (£) by Method in the Inshore Cable Analysis Area (33F1; Average 2009 to 2013, Source: MMO, 2015)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Longlines	64.6	55.4	90.0	69.8	78.4	53.0	21.6	9.2	12.6	15.0	26.4	44.6
Gillnets	3.0	2.0	8.2	24.0	32.4	50.8	69.0	60.8	65.0	46.0	31.0	9.0
Pots	3.2	4.0	7.0	9.8	10.8	12.4	26.6	20.6	13.0	11.8	12.8	5.8
Beam trawls	1.0	2.0	5.6	16.4	25.2	17.2	16.0	12.6	9.6	5.6	4.8	6.4
Driftnets	4.6	4.8	8.8	5.2	4.4	8.0	13.0	9.6	13.2	16.6	20.8	9.2
Bottom otter trawls	0.4	0.6	4.4	8.6	14.4	17.2	16.4	17.0	18.2	9.6	5.8	4.4
Otter trawls (not specified)	2.6	0.4	4.8	5.0	6.6	5.4	16.4	16.6	7.4	11.0	4.2	1.4
Trammel nets	0.4	0.4	0.0	3.2	7.0	6.2	9.4	6.8	9.6	9.8	7.4	1.6
Otter twin trawls	0.6	0.2	0.0	0.6	1.4	1.0	5.4	1.2	0.4	3.2	4.0	2.2
Other Methods	0.0	0.0	0.0	0.8	0.0	0.2	0.4	0.2	0.4	0.0	0.0	0.4

Diagram 14.43 UK Seasonal Effort (Days Fished) by Method in the Inshore Cable Analysis Area (33F1; Average 2009 to 2013, Source: MMO, 2015)

14.1.4.12.2 Landings Values by Port

172. *Table 14.6, Table 14.7 and Table 14.8* show the most important ports by landings values from the inshore cable analysis area, the offshore cable analysis area and the windfarm analysis area and proportion of each port's total income that these values represent.

173. *Table 14.6* shows that highest proportion of landings from the inshore cable analysis area (33.7%) are into Lowestoft, representing 45.26% of the ports total value between 2008 and 2012. Other important ports are Southwold and Aldeburgh and Orford (18.43% and 14.89%, respectively). It is worth noting that landings into these ports constitute a significant proportion of each ports total (93.86% and 72.51%, respectively). The majority of landings into these ports will be by local vessels from the inshore fleet and their positions in the table indicate the importance of landings from this rectangle to local vessels. Landings into Brixham (1.8 % of the annual value from 33F1) likely originate from UK owned beam trawlers which occasionally target grounds off the coast of East Anglia.

174. Landings from the inshore cable analysis area into Ipswich and Sizewell constitute less than 2% of the total for the rectangle in both cases but represent 33.5% and 99.6% of port totals, respectively. In the case of Sizewell, the majority of these values will originate from a single vessel. In contrast, landings into Ijmuiden (Netherlands) represent 11.5% of landings values from 33F1, but this represents 0.5% of average annual total for the port. UK vessels will occasionally land into ports in the Netherlands. It is considered however that a significant proportion of the fleet operating in 33F1 are under-10m and therefore more restricted by sea conditions and operational range. The majority of landings from 33F1 into Ijmuiden are from the Anglo-Dutch fleet as opposed to vessels based at local UK ports.

Table 14.6 UK Registered Vessels, Landings Values by Port. All Methods for the Inshore Cable Analysis Area (Average 2008 to 2012, Source: MMO, 2013)

Port	Average Annual Landings Values (£) in the Inshore Cable Analysis Area (2009-2013)	% of Average Annual Landings Values in the Inshore Cable Analysis Area	Total Average Annual Port Value (2008-2012)	% of Total Average Annual Port Value that the Inshore Cable Analysis Area represents
Lowestoft	£373,781	38.53%	£825,806	45.26%
Southwold	£178,835	18.43%	£190,524	93.86%
Aldeburgh and Orford	£144,454	14.89%	£199,217	72.51%
Ijmuiden	£111,533	11.50%	£19,315,492	0.58%
West Mersea	£34,961	3.60%	£663,874	5.27%

Port	Average Annual Landings Values (£) in the Inshore Cable Analysis Area (2009-2013)	% of Average Annual Landings Values in the Inshore Cable Analysis Area	Total Average Annual Port Value (2008-2012)	% of Total Average Annual Port Value that the Inshore Cable Analysis Area represents
Shoreham	£19,366	2.00%	£8,639,869	0.22%
Ipswich	£18,103	1.87%	£54,127	33.45%
Brixham	£17,448	1.80%	£23,454,357	0.07%
Sizewell Beach	£13,083	1.35%	£13,136	99.60%
Harwich	£11,584	1.19%	£254,660	4.55%
Whitby	£8,587	0.89%	£2,210,664	0.39%
Scheveningen	£8,120	0.84%	£4,137,773	0.20%
Zeebrugge	£6,542	0.67%	£39,098	16.73%
Great Yarmouth	£5,330	0.55%	£71,789	7.42%
Oostende	£3,349	0.35%	£28,982	11.56%
Grimsby	£2,515	0.26%	£2,691,657	0.09%
Scarborough	£1,978	0.20%	£2,737,004	0.07%
Plymouth	£1,889	0.19%	£13,833,086	0.01%
Lowestoft	£373,781	38.53%	£825,806	45.26%
Southwold	£178,835	18.43%	£190,524	93.86%

175. *Table 14.7* shows that 89% of landings by UK registered vessels from the offshore cable analysis area are into the Dutch ports of Scheveningen (42.5%) and Ijmuiden (45.8%). In both cases these landings represent a low proportion of annual landings, particularly in the case of Ijmuiden (1.0%). As previously, landings into Dutch ports are likely to originate mainly from the Anglo-Dutch beam trawl fleet. Landings from 33F2 in into Lowestoft are considerably lower than those from 33F1, indicating the importance of inshore grounds to the local fleet. Vessels landing from 33F2 into other ports represent less than 2% of annual landings in all cases.

Table 14.7 UK Registered Vessels, Landings Values by Port. All Methods in Offshore Cable Analysis Area (Average 2008 to 2012, Source: MMO, 2013)

Port	Average Annual Landings Values (£) in the Offshore Cable Analysis Area (2008-2012)	% of Average Annual Landings Values in the Offshore Cable Analysis Area	Total Average Annual Port Value (2008-2012)	% of Total Average Annual Port Value that the Offshore Cable Analysis Area represents
Ijmuiden	£186,054	45.86%	£19,315,492	0.96%
Scheveningen	£172,456	42.51%	£4,137,773	4.17%
Lowestoft	£25,527	6.29%	£825,806	3.09%
Harlingen	£6,843	1.69%	£14,937,937	0.05%
Stellendam	£4,898	1.21%	£68,407	7.16%

Port	Average Annual Landings Values (£) in the Offshore Cable Analysis Area (2008-2012)	% of Average Annual Landings Values in the Offshore Cable Analysis Area	Total Average Annual Port Value (2008-2012)	% of Total Average Annual Port Value that the Offshore Cable Analysis Area represents
Vlissengen	£3,630	0.89%	£8,656	41.94%
Great Yarmouth	£3,035	0.75%	£71,789	4.23%
Harwich	£921	0.23%	£254,660	0.36%
Southwold	£905	0.22%	£190,524	0.47%
Boulogne	£547	0.13%	£2,711,147	0.02%
Aldeburgh and Orford	£240	0.06%	£199,217	0.12%
Grimsby	£195	0.05%	£2,691,657	0.01%
Queenborough	£185	0.05%	£52,934	0.35%

176. *Table 14.8* shows that landings from the windfarm analysis area are recorded into fewer ports than both the inshore and offshore cable analysis areas. Similar to the offshore cable analysis area, the highest proportion of landings are recorded in a Dutch port; in this case Scheveningen, which represents over half (55.0%) of the total average annual value. Approximately a quarter of landings from the windfarm analysis area are into Lowestoft representing 4.0% of the average annual port value. Vessels landing into Egursund (Norway; 4.0%) lower values to landings from 34F2.

Table 14.8 UK Registered Vessels, Landings Values by Port. All Methods in the Windfarm Analysis Area (Average 2003 to 2012, Source: MMO, 2013)

Port	Average Annual Landings Values (£) in the Windfarm Analysis Area (2008-2012)	% of Average Annual Landings Values in the Windfarm Analysis Area	Total Average Annual Port Value (2008-2012)	% of Total Average Annual Port Value that the Windfarm Analysis Area represents
Scheveningen	£193,378	54.97%	£4,137,773	4.67%
Ijmuiden	£90,568	25.75%	£19,315,492	0.47%
Lowestoft	£36,277	10.31%	£825,806	4.39%
Egersund	£14,806	4.21%	£12,254,246	0.12%
Harlingen	£8,702	2.47%	£14,937,937	0.06%
Stellendam	£6,735	1.91%	£68,407	9.85%
Great Yarmouth	£683	0.19%	£71,789	0.95%
Scarborough	£598	0.17%	£2,737,004	0.02%
Cromer	£20	0.01%	£264,354	0.01%

14.1.4.13 UK Vessels, Gears and Operating Practices

177. The current pattern of fishing by UK vessels in the area of the proposed East Anglia THREE project reflects that generally observed in UK fishing over the past two decades. This is typified by declining vessel numbers, effort, particularly in the over-15m fleet, and a shift toward smaller less powerful vessels. In grounds outside the 12nm limit, a significant proportion of UK activity has been supplanted by that of the Dutch fleet. As described previously this has been facilitated by the purchase of UK vessels (particularly beam trawlers) and associated licences and quota by Dutch interests. In ports such as Lowestoft, which once supported a fleet of larger category vessels including both stern and beam trawlers, active vessels are now almost entirely in the under-10m category and tend to target inshore grounds.

178. Consultation and analysis of the available data has shown that vessels fishing in the area of the proposed East Anglia THREE project deploy a range of mobile and static gear methods.

179. Within the over-15m fleet, the majority of activity has been by beam trawlers with lower levels by midwater pair trawlers and demersal otter trawlers. Previous analysis of landings values by port suggests a significant number of these vessels are from the Anglo-Dutch fleet. Activity by UK owned and registered beam trawlers based at ports such as Plymouth and Brixham is significantly lower. Most beam trawlers from the South West fleet are of the 'Eurocutter' type, a number of which have been purchased second hand from Dutch owners. The gear used by these vessels is not described further here as it is essentially the same as traditional beam gear detailed below for Dutch and Belgian fleets.

180. The over-15m UK owned and registered demersal otter trawlers which occasionally operate in the area of the proposed East Anglia THREE project are understood to be vessels of between 20m to 24m in length with main engines between 350hp and 500hp. These vessels are based mainly at the east coast ports of Grimsby and Scarborough (*Plate 14.5*). These vessels operate either single or twin rig trawls with combined weights, including trawl doors, of approximately 2.5 to 4 tonnes.

Plate 14.5 UK Owned and Registered Demersal Otter Trawler (Source: BMM, 2012)

181. Consultation and analyses of fisheries statistics indicates that a significant amount of fishing activity in inshore waters off the Suffolk and Essex coasts is by the under-15m fleet. This is particularly true of the inshore cable analysis area (33F1) where over 75% of landings values originate from this fleet, a significant proportion of which are from the under-10m category. These vessels are based at the ports of Lowestoft, Southwold, Aldeburgh, Orford, Felixstowe Ferry, Harwich and West Mersea.

182. Vessels operating from these ports have a versatile approach which utilises multiple gear types, helping to maintain commercial viability. Very few vessels apply a single method for all their fishing though the time spent working a particular gear type will vary on individual vessel basis. The principal methods used in the area are longlining, static netting, driftnetting, potting and demersal trawling (single, twin rig and shrimp trawls). Skippers will also work more than one gear type in any given day. For example, fleets of pots may be shot or hauled between working nets or longlines. A small number of vessels from ports such as Harwich also undertake midwater pair trawling for sprats and herring. With the exception of four vessels from Lowestoft and a single West Mersea based trawler, all these vessels are in the under-10m category. In addition, there are currently two visiting whelk potting vessels from South West ports working out of Lowestoft. Based on Automatic

Identification System (AIS) transmissions from these vessels (Marinetraffic.com), it is understood that the grounds targeted at the time of writing are to the north of the offshore cable corridor (33F1) and some distance south of the proposed East Anglia THREE project (32F2) close to the Greater Gabbard Offshore Wind Farm. The number of active vessels based at each port is provided in Table 14.9. Examples of local vessels are shown in *Plate 14.6* and *Plate 14.7*.

Table 14.9 Numbers of Vessels by East Anglian Port and the Principal Methods Used

Numbers of Vessels by UK Port and Principal Methods			
Port	**No. of Vessels**	**Main Methods**	**Other Methods**
Lowestoft	14	Longlining, netting	Netting, potting, trawling, whelking
Southwold	10	Netting, longlining	Potting, trawling, whelking
Aldeburgh	6	Longlining, netting, potting	Trawling
Orford	7	Longlining, netting, potting, trawling	Whelking
Felixstowe Ferry	13	Netting, potting, longlining, trawling	Whelking
Harwich / Shotley	22	Trawling, longlining, netting	Potting, midwater pair trawling
West Mersea	12	Trawling	Dredging, netting

Plate 14.6 Aldeburgh Beach Launched Netter, Potter and Longliner (Source: BMM, 2013)

Plate 14.7 Harwich Based Netter and Longliner (Source: BMM, 2013)

14.1.4.13.1 Longlining

183. Longlines deployed by vessels operating in the area of the proposed East Anglia THREE project generally range from 2.5 to 4nm in length and consist of 2,500 to 4,000 hooks baited with squid or fish bait depending on target species. Distance between each snood[11] varies between 2 to 2.4m. Mainlines are anchored by two large grapnel anchors and marked by up to four gear markers (two at each end), consisting of a dhan and buff (buoy). Up to 100 small fishermen's anchors are set at intervals along the mainline keep the gear close to the sea bed.

184. Lines are set across the tide along east-west headings and are typically left to soak from three to six hours, although this may occasionally be extended overnight or up to a maximum of 24 hours, usually during winter. For example, if lines come back holding substantial bait then they may be shot away again and left to fish overnight. 'Night lays' may be shot inside the 6nm limit to avoid the risk of gear being lost or damaged by visiting vessels or Belgian demersal trawlers which have historic access rights within 6 to 12nm limit. Similarly, when targeting grounds outside the 12nm limit vessels may stay close to the gear in order to reduce the risk of conflict with the larger class of Dutch and Belgian beam trawlers which fish offshore areas.

185. Although longlines are used year round by a number of local vessels, their use increases during the winter and spring when they are one of the principal methods used to target cod. Other important species in the longline fishery are bass, thornback ray and smoothhounds. Spurdog cannot currently be landed legally due to an absence of a TAC (and therefore UK quota) although they formed an important part of the local fishery prior 2010. During consultation it was stated that there was a potential for this fishery to reopen in the future.

186. Vessel and gear specifications for one of the most active longlining vessels operating in the area are provided in *Table 14.10*. It is worth noting that at times this vessel will also work static gillnets, driftnets and whelk pots.

[11] The 'snood' is a length of line tied to the mainline to which the baited hook is attached

Table 14.10 Vessel and Gear Specifications of a Typical Lowestoft based Longliner

Specifications of a Lowestoft based longliner	
Homeport	Lowestoft
Fishing association	National Fishermen's Federation Organisation (NFFO)
Length	10m
Beam	4m
Draft	1.5m
Main engine	221bhp
Average days at sea per year	200 days
Typical trip duration	24 to 36 hours
Typical distance steamed per trip	Up to 60nm
Length of mainline	4nm
No. of snoods	4,000
Hook size	7/0
Type of anchor	Grapnel / Fishermen's
No. of anchors per fleet	2/100
Anchor weight and size	8kg and 1kg
Type of gear marker	Dhan and buoy
No. of markers per fleet	Two to four
Direction of shooting	Across tide
Bait	Squid, whelk, herring
Typical soak time	3 to 24 hours

14.1.4.13.2 Driftnetting

187. Fleets of demersal driftnets used by the local fleet typically comprise of between three to five trammel[12] nets with a six foot rise between 100 to 200m long giving a total length between 0.5 and 1km. Up to three fleets are worked across the flooding tide drifting for distances between 1.8 and 3.7km depending on ground type and tidal conditions. Each end of the fleet is marked with a dhan (often with a radar reflector) and buff. The method requires clean ground free of fasteners and heavy mud to allow the nets to fish efficiently. For this reason driftnetting grounds tend to be more localised than those which can be targeted by other methods such as longlining. Driftnets can be fished all year round by the local fleet but are most

[12] Trammel nets are formed by three layers of meshes, a smaller, slack inner mesh layered between two panels of larger meshes to form a bag when fish enter the net.

commonly used to target sole from April to December. Other species landed include flatfish species such as flounder, dab, occasional brill, turbot and plaice and thornback rays and smoothhounds.

14.1.4.13.3 Static Nets

188. Fleets lengths of monofilament fixed nets used in the vicinity of the proposed East Anglia THREE project vary in length and depth depending on the vessel and the species targeted. Both trammel and gillnets[13] are used in the area consideration. Nets are anchored using grapnel anchors and marked with a combination of dhans and buffs. The type of net and position which it fishes in the water column also varies in response to target species. For example, nets may be set close to the surface for pelagic species such as sprats and herring, in midwater for bass and cod and on the sea bed for sole and skate.

189. Static nets are often set in close proximity to wrecks, due to their fish aggregating properties and their avoidance by demersal trawlers. In areas where activity by demersal trawlers (particularly Belgian vessels) is higher, nets are set inside the 6 to 12nm to avoid potential gear conflict. Nets are usually set for periods of between 24 and 48 hours. In contrast to driftnetting, static nets are generally set along the tide in a north to south heading to prevent them being fouled by weed and other debris and being damaged by the tide.

190. Table 14.11 shows the specifications of a Southwold based vessel and netting gear. As with many other vessels from local ports this vessel also fishes pots and longlines at certain times of the year. *Plate 14.8* and *Plate 14.9* show the shooting of a driftnet, a driftnet marker and hauling of the net on a local vessel during August 2013.

[13] Gillnets are formed by a single mesh layer.

Table 14.11 Vessel and Gear Specifications of a Southwold based Netter

Specifications of a Southwold based netter	
Homeport	Southwold
Fishing Association	Various
Length	8.5m
Beam	3.6m
Draft	1.6m
Main engine HP	146bhp
Average days at sea per year	200 days
Typical trip duration	12 hours
Typical distance steamed per trip	40nm
Net type (drift, gill, tangle, trammel, kit etc.)	All
Mesh sizes	100 to 220mm
No. of fleets	Ten
No. nets per fleet	5 to 10
Fleet length	0.5 to 1km
Headline flotation	600 to 4,000g
Leadline	No. 4
Type of gear marker	Dhans
No of markers per fleet	Two
Direction of shooting	Across tide – drift With tide - static
Position of net in water column	Varies dependent on net type / target species
Typical soak time	1 to 48 hours

Plate 14.8 Shooting a Fleet of Drift Trammel Nets (Source: BMM, 2013)

Plate 14.9 Driftnet Marker (Dhan and Buoy buff) (Source: BMM, 2013)

Plate 14.10 Hauling a Drift Trammel Net (Source: BMM, 2013)

14.1.4.13.4 Potting

191. Local vessels working pots target crabs, lobsters and, to a lesser extent, whelks. There are currently two visiting vessels working out of Lowestoft targeting whelks on a full time basis.

192. Fleets, also known as shanks, consist of a mainline holding between six and 25 pots spaced at intervals between 10 and 20m (e.g. 60 to 440m total length) depending on vessel size and the area fished. Generally, shorter fleets or single pots are used to target wrecks. The fleet is anchored with either a weight or grapnel anchor at either end and marked with a dhan or buff or combination of both. Some skippers reduce overheads by retaining dogfish and other low value species caught using other gears for pot bait, although baits such as scad maybe purchased specifically. Fish frames (filleted carcasses) and guts are also frequently used. Brown crab discards are often used as pot bait when targeting whelks.

193. Pots are left to soak for anything between two to fourteen days depending on factors such as weather and sea conditions. A number of vessels work pots all year round, although generally the highest effort levels in the crab and lobster fishery occur from March to December. Pots are occasionally left unbaited to overwinter at sea.

194. Vessel and gear specifications for an Orford based vessel which works pots all year round are shown in *Table 14.12.* This vessel works quite a high number of fleets for the area although it should be noted that netting and longlining also form significant proportions of its fishing activity.

Table 14.12 Vessel and Gear Specifications of an Orford based Potting Vessel

Specifications of an Orford based Potting vessel	
Homeport	Orford
Fishing Association	Orford Inshore Fishermen's Association (OIFA)
Length	9.99m
Beam	6.0m
Draft	1.5m
Main engine HP	2 x 350bhp
Average days at sea per year	200 days
Typical trip duration	12 hours
Typical distance steamed per trip	30nm
Pot type	36" Parlour
No. of fleets	40
No. pots per fleet	8 to 10
Pot spacing	10 to 12m
Fleet length	100m
Anchor type and No.	2 x 20kg weight
Type and No. of gear marker	2 x 30" Buffs
Direction of shooting	Across tide where possible
Bait	Fish frames and guts
Typical soak time	5 to 14 days

14.1.4.13.5 Demersal Otter Trawling

195. The key target species for most vessels undertaking demersal otter trawling are cod, sole, skate, bass and, to a lesser extent, flounder. Generally, skate and bass are caught year round whilst the peak of sole and flounder landings is from April to August. Cod are targeted from September through to May.

196. The majority of vessels undertake trips of a single day although a small number fish for up to 36 hours. Tows are usually orientated into the tide and gear varies in response to target species. For example, as sole are often found over relatively soft

ground, small bobbins or grass ropes (soft ground gear) may be used. In addition, as sole are either found hard on the sea bed or partially buried within the substrate, headline height of the trawl is usually only around 1m. Tickler chains on the groundline disturb the fish from the substrate up into the path of the approaching trawl. Towing speeds can be a slow as 1.5 knots. To increase the swept area of the gear, triple or twin rig trawls are used by some vessels when targeting sole.

197. By contrast, cod are usually targeted over rougher ground and trawls are therefore equipped with rockhopper bobbins on the groundline to aid passage over the ground. Cod tend to be positioned higher in the water column and have increased swimming capabilities compared to species such as sole. Headline height is therefore increased (e.g. 3.5m) and the gear may be towed faster at a speed of around 2.5 to 3.5 knots.

198. Vessel and gear specifications for an Orford based vessel which spends the majority of its fishing time trawling are shown in *Table 14.13*. This vessel tends to switch to alternative methods such as whelk potting and netting for non-quota species when quota for pressure stock species is exhausted.

Table 14.13 Vessel and Gear Specifications of an Orford based Demersal Otter Trawler

Specifications of an Orford based otter trawler	
Homeport	Orford
Fishing Association	OIFA
Length	9.90m
Beam	4.57m
Draft	2.13m
Main engine HP	200bhp
Average days at sea per year	120 to 200 days
Typical trip duration	36 hours
Typical distance steamed per trip	30nm
Trawl door type	Bison
Trawl door dimensions	L5' x H3.5'
Trawl door weight	200kg
Groundline type	Rockhopper and softground
Groundline length	Soles (soft) - 153ft Cod and other (rockhopper) - 215ft
Rock hopper disc diameter	8 inches
Distance between doors when towing	33m
Cod end mesh size	Sole - 80mm Cod -120mm
Headline height	Sole - 80mm Cod - 120mm
Average towing speed	Sole - 1.5 knots Cod - 2.5 knots
Average towing duration	Sole - 1.5 hours Cod - 2.5 hours
Average tow length	Sole - 2.25nm Cod - 11.25nm

14.1.4.13.6 UK Fishing Grounds

199. As under-15m vessels are not normally satellite tracked, during consultation skippers of under-15m vessels were asked to draw the extent of their fishing grounds on paper charts. These are compiled into *Figure 14.52* to *Figure 14.73*. It can be seen that the only methods which have parts of their grounds located within the

boundaries of the East Anglia THREE site are Lowestoft and Southwold longliners and netters.

200. During consultation with a Lowestoft longliner it was stated that offshore areas within the East Anglia THREE site are fished only occasionally. Grounds in the vicinity of the Davy and Welland fields (located north and west of the East Anglia THREE site) and certain areas of the deep water route are targeted periodically in the spring when cod migrate through these areas.

201. Longliners and to a lesser extent, netters (e.g. Southwold vessels) tend to target a wider range of grounds located further offshore than other methods and the location of productive grounds may vary from year to year. Charts therefore show the extent of potential grounds targeted by longlining and netting vessels which could be targeted in any given year. It was, however, also stated in consultation with other skippers that areas within the East Anglia THREE site are targeted infrequently.

202. As shown in *Figure 14.52* to *Figure 14.73* all local skippers consulted produced charts showing the offshore cable corridor passing through their fishing grounds, particularly the inshore section which passes through 33F1. The spatial extent of the grounds potentially impacted varies between fleets by port and method but broadly relates to the position of the port relative to the landfall location. Based on the information provided, the vessels with the highest proportion of their grounds located within the offshore cable corridor are those from Felixstowe Ferry[14], Harwich, Orford and Aldeburgh. Vessels from Southwold (particularly netters and longliners) and Lowestoft have a smaller proportion of their grounds located in the offshore cable corridor.

203. The grounds depicted by skippers from Felixstowe are located in discrete areas such as the Sledway, Shipway and Shipwash. Therefore a high proportion are intersected by the offshore cable corridor. The same applies to Harwich netting and potting grounds that are situated in similar areas. Relatively large areas of Orford netting, potting and trawling grounds are also covered by the offshore cable corridor. The same applies to Aldeburgh netting and potting grounds. Southern, eastern and central areas of areas targeted by Southwold vessels working pots, nets and longlines are within the offshore cable corridor, although wider grounds are located further north.

[14] During consultation at Felixstowe Ferry, skippers elected to depict areas of the offshore cable corridor in terms of potential degree impact to fishing activity as opposed to indicating specific fishing areas. The location of those grounds depicting more detail was gathered during consultation for the proposed East Anglia ONE project.

204. In all cases, due to the wider areas potentially available, longlining has the smallest proportion of grounds potentially intersected by the offshore cable corridor.

14.1.4.14 French Fishing Activity - Overview

205. 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 available published information and from consultation undertaken during 2013 with representatives of CRPMEM, Nord-Pas de Calais, OP FROM Nord and OP CME.

14.1.4.15 French Fishing Activity - Regional

14.1.4.15.1 Surveillance Sightings

206. MMO Surveillance sightings of vessels from the French fleet observed in the vicinity of the proposed East Anglia THREE project are shown in *Figure 14.74.* The principal gear types employed are as follows:

- trawler (unspecified); and
- beam trawler.

207. *Figure 14.74* shows that overall sightings of French vessels within in the proposed East Anglia THREE project are low. The highest concentrations of French vessels are recorded some distance from the proposed East Anglia THREE project, south of the East Anglia Zone off the coasts of Essex and Kent.

208. Over the five year period for which data is presented, no French vessels have been recorded in the East Anglia THREE site. The highest number of sightings have been recorded in the inshore cable analysis area, immediately north of the cable corridor. As non-UK vessels are prohibited from fishing within the UK 6nm limit, it is assumed that observations recorded within this boundary are by vessels not actively fishing. During consultation it was noted that a number of larger French vessels have the capability to switch between pelagic and demersal trawl gear during a single trip. Although not possible to quantify, the category 'unspecified trawler' is therefore likely to comprise a proportion of vessels carrying both gear types.

14.1.4.15.2 VMS Data

209. In response to initial consultation and the publication of the Round 3 Zone locations and boundaries, CNPMEM in association with IFREMER, produced "French Answer to the Consultation on Round 3 UK Windfarms Proposal 2009". In 2012, the Comité Régional des Pêches Maritimes et des Elevages Marins (CRPMEM) produced a paper, also in association with IFREMER: "Components of Activity of French Vessels in 2008 to 2009 Near the East Anglia Offshore Windfarm Project Zone".

210. The stated objective of the CNPMEM (2009) report was to assess the socio-economic impact of the Round 3 developments on French fishing activity. The CRPMEM (2012) paper provides only a series of charts showing the relative spatial distribution of effort, values and vessels numbers within the East Anglia Zone. The results and charts produced are based on speed filtered VMS data and sales registered at French fish auctions. The data used were not presented however, nor were details given of the modelling used, although reference was made to the use of algorithms.

211. The premise of the CNPMEM (2009) report is that loss of fishing area equates to loss of fishing income and the assessment made is based on a single years' worth of data (2008).

212. Table 14.14*Table 14.14* shows the results of the assessment, which gives total annual landings for the French fleet of €79,302 in the East Anglia Zone. During consultation this data was presented to representatives of CRPMEM, Nord-Pas de Calais, OP FROM Nord and OP CME in order to check its accuracy. Representatives stated that some of this information was incorrect, specifically, that activity by netters no longer occurred in the East Anglia Zone. This information has therefore been removed which effectively reduces annual landings to €41,906.

Table 14.14 French Over-15m Effort and Value Vessel within the East Anglia Zone in 2008, Effort and Value (Source: CNPMEM, 2009)

French Over-15m (Effort and Value) Vessel Activity within the East Anglia Zone in 2008					
Vessel Type	**No. of Vessels**	**Fishing time in East Anglia Zone (hours)**	**Average dependence on the area (%)**	**Total Value (€) to the Fleet**	**Average Value (€) per Vessel**
Demersal trawlers	10	123	0.4%	€26,328	€2,633
Combined trawlers (pelagic / demersal)	7	55	0.2%	€15,984	€2,283
Purse seines	1	102	2.4%	€36,990	€36,990
Total	**18**	**208**	**3.0%**	**€79,302**	**€41,906**

213. Charts from the 2009 CNPMEM report have been reproduced to show the distribution of fishing effort by method, relative to the proposed East Anglia THREE project. *Figure 14.75* to *Figure 14.77* show that only relatively small fractions of the total effort recorded for all three methods within the East Anglia Zone have been ascribed to grounds within the vicinity of the proposed East Anglia THREE project.

214. *Figure 14.78* to *Figure 14.83* show charts reproduced from the later CRPMEM (2012) report. In this case data is provided in "order of magnitude" values for a grid aligning

to ten minutes of latitude and ten minutes of longitude. Comparison of *Figure 14.78* and *Figure 14.79* indicates that there has been a decrease in the categorisation of landings values from the East Anglia THREE site from €75,000 to €100,000 in 2008 to €50,000 to €75,000 in 2009. Landings values originating from the offshore area of the cable corridor have remained comparatively stable although are distributed over a wider area. *Figure 14.80* and *Figure 14.81* show that vessel numbers in a small area of the north-west of the East Anglia THREE site have increased from less than five vessels in 2008 to up to ten in 2009. In addition, the area fished by up to 40 vessels in the vicinity of the offshore cable corridor has expanded in 2009 compared to 2008. In both 2008 and 2009 effort by French vessels remained below 100 hours in the vicinity of the East Anglia THREE site. Corresponding to vessel numbers, patterns of effort in the 100 to 250 hour category have expanded to areas east and north in 2009 compared to 2008 (*Figure 17.82* and *Figure 17.83*).

14.1.4.15.3 Effort Data

215. *Figure 14.84* shows effort by French vessels (all methods) in months for 2012 only and is based on a consultation with 89% of the fleet. It can be seen that the highest levels of effort by French vessels are located in the southern part of the East Anglia Zone, which supports VMS data. The 2012 data indicates relatively low levels of activity (6 to 15 months) in the west part of the windfarm analysis area and the offshore cable analysis area.

14.1.4.16 French Vessels, Gears and Operating Practices

216. The vessels accounting for the majority of French fishing activity in the area of the proposed East Anglia THREE project are the larger category of trawlers operating from the Nord Pas de Calais region, of which Boulogne is the principal fishing port. During consultation it was stated that are up to 20 vessels which potentially target grounds in the area of the proposed East Anglia THREE project, five of which are from Fonds Régional d'Organisation du Marché du Nord (FROM Nord) (four demersal otter trawlers and one pelagic freezer trawler) and 15 from CME. The majority of these vessels are between 20 and 25m in length with main engines of between 300hp and 800hp. The pelagic freezer trawler is however much larger with a registered length of 86.25m. *Plate 14.11* and *Plate 14.12* show typical examples of the type of French demersal trawlers based at Boulogne.

Plate 14.11 Typical French Trawler (registered in Dieppe) undergoing maintenance in Boulogne (Source: BMM 2013)

Plate 14.12 Typical French Trawler Moored at Boulogne Fish Dock (Source: BMM, 2013)

217. From consultation, it is understood that the majority of the French fleet operating in the East Anglia Zone are twin rigged trawlers, a high proportion of which also carry pelagic gear (*Plate 14.13*). Both gear types are regularly used on the same trip, which are typically of five days duration, four times a month. The principal target species in the vicinity of the proposed East Anglia THREE project are whiting and mackerel, although cod and gurnard are also important. Herring are targeted further south of the East Anglia Zone. The large pelagic freezer trawler operating out of Boulogne targets horse mackerel. Effective gear width of the 20 to 25m class of vessels is estimated to be in the order of 90 to 100m and is towed at a maximum of five knots. It was stated during consultation that grounds in the East Anglia Zone are fished periodically and relatively infrequently, usually when fishing is poor close to the home ports.

218. With respect to the future of the fleet, it was stated during consultation that there has been an underlying decrease in the number of vessels, largely due to cumulative constraints on commercial fishing activities. In addition, there is currently particular concern regarding the consequences of the CFP reform on the fleet size, especially trawlers.

Plate 14.13 Example of a French Trawler carrying both Demersal and Pelagic Trawl doors.

14.1.4.17 German Fishing Activity - Overview

219. VMS densities from the German fleet within the North Sea are shown in *Figure 14.85*. With respect to the proposed East Anglia THREE project, fishing activity is generally constricted to a small area of low to moderate intensity to the south of the East Anglia THREE site, within the offshore cable corridor. The areas of highest fishing intensity by this fleet are located off the German and Danish coasts, although activity is also relatively high within Dutch waters.

14.1.4.18 German Fishing Activity - Regional

14.1.4.18.1 Surveillance Sightings

220. Surveillance sightings of German registered vessels by gear type are provided in *Figure 14.86.* Activity by the fleet in the vicinity of the proposed East Anglia THREE project is generally low and is dominated by beam trawlers; sightings of vessels using other gears are much lower.

221. In the five years spanning 2010 to 2015 a single beam trawler was recorded by surveillance sightings, within the East Anglia THREE site. Higher numbers of beam trawlers have been recorded in north-western and central areas of the offshore cable corridor. Sightings of demersal trawlers and vessels working gillnets have been recorded only infrequently within the East Anglia Zone.

14.1.4.18.2 Landings Values

222. Landings values by species are shown *Figure 14.87*. Landings values originating from rectangles north of the East Anglia Zone (35F2, 35F3, 36F2 and 36F3) are composed principally by sole and flatfish, with lower value, but significant, landings of turbot also recorded.

223. In those rectangles to the east and south of the East Anglia Zone, sole represent the majority of landings values with those plaice of reduced importance. Landings from areas south-west of the East Anglia Zone are low (32F1; €7,567) and comprised mainly by horse mackerel.

224. Landings by the German fleet in the proposed East Anglia THREE project show considerable variation between analysis areas. For example, in 33F1 there are none. This can partially be explained by the fact that Germany holds no historic rights off the East Anglian coast and the majority of 33F1 is located within the 12nm limit. Only a very small proportion of the grounds in 33F1 are therefore available to the fleet. Within the windfarm analysis area (34F2) landings values are also low (€16,278) and comprised by sole, horse mackerel and cod. Landings values in the offshore cable analysis area (33F2; €301,969) are considerably higher, increasing by around one and a half orders of magnitude compared to 34F2. In this area the majority of landings are of sole and horse mackerel.

14.1.4.18.3 Fishing Effort

225. German fishing effort by days fished are shown in *Figure 14.88*. Effort within the East Anglia Zone corresponds with landings data, with the highest effort in the offshore cable analysis area (33F2; 122 days). German vessels have no historic acess to the 6-12nm limit and therefore no effort is recorded by the fleet within the inshore cable analysis area (33F1).

226. With respect to method, ffishing effort within the East Anglia zone is dominated by set gillnets, otter trawls and beam trawls.

14.1.4.18.4 VMS Data

227. VMS density of German registered vessels operating in the vicinity of the proposed East Anglia THREE project is shown in *Figure 14.89*. The data shows that VMS by densities less than two recorded position plots throughout almost the entire East

Anglia THREE site. The intensity of activity increases (five to 20) immediately south of the East Anglia THREE site over the north-eastern area of the offshore cable corridor, corresponding to the higher landings values and effort shown previously in 32F2.

14.1.4.19 German Fishing Activity – Project Specific

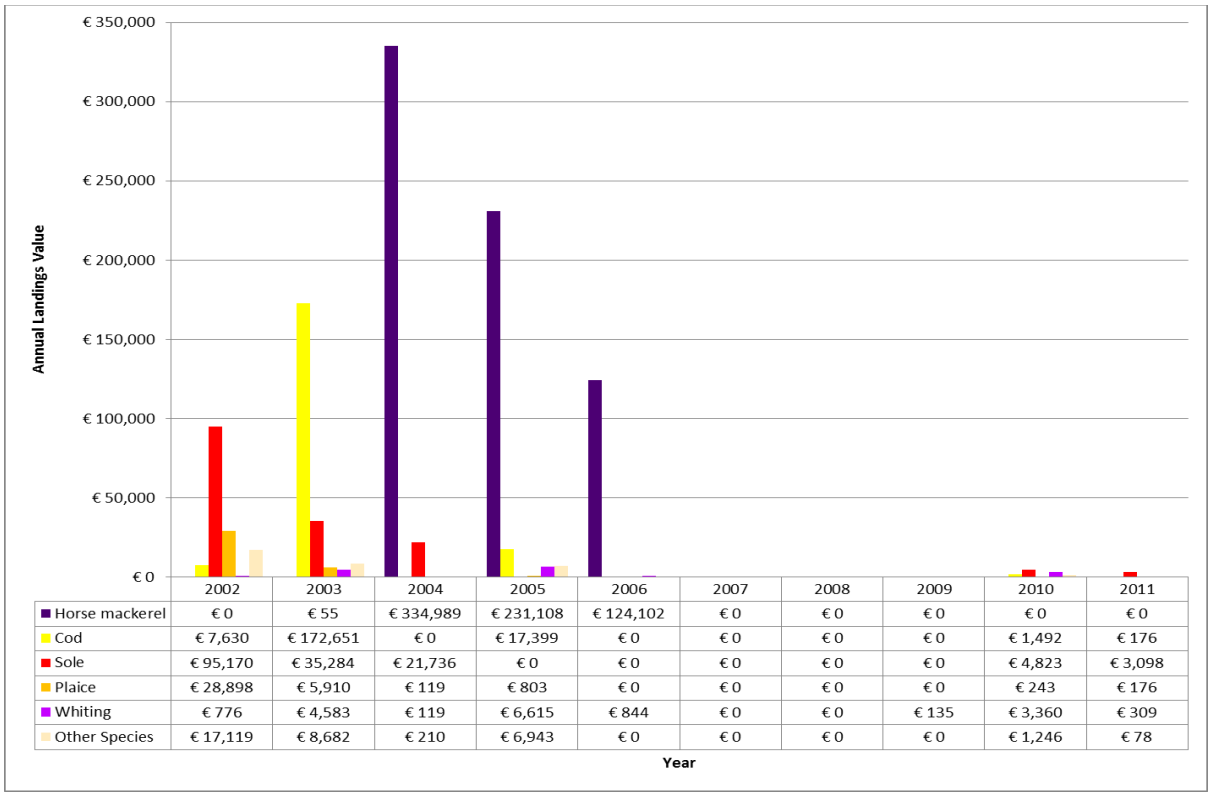
14.1.4.19.1 Annual and Seasonal Variation

228. Due no landings being recorded by the German Fleet in 33F1, annual and seasonal variation in landings values are shown only for the offshore cable and windfarm analysis areas.

14.4.19.1.1 Windfarm Analysis Area (34F2)

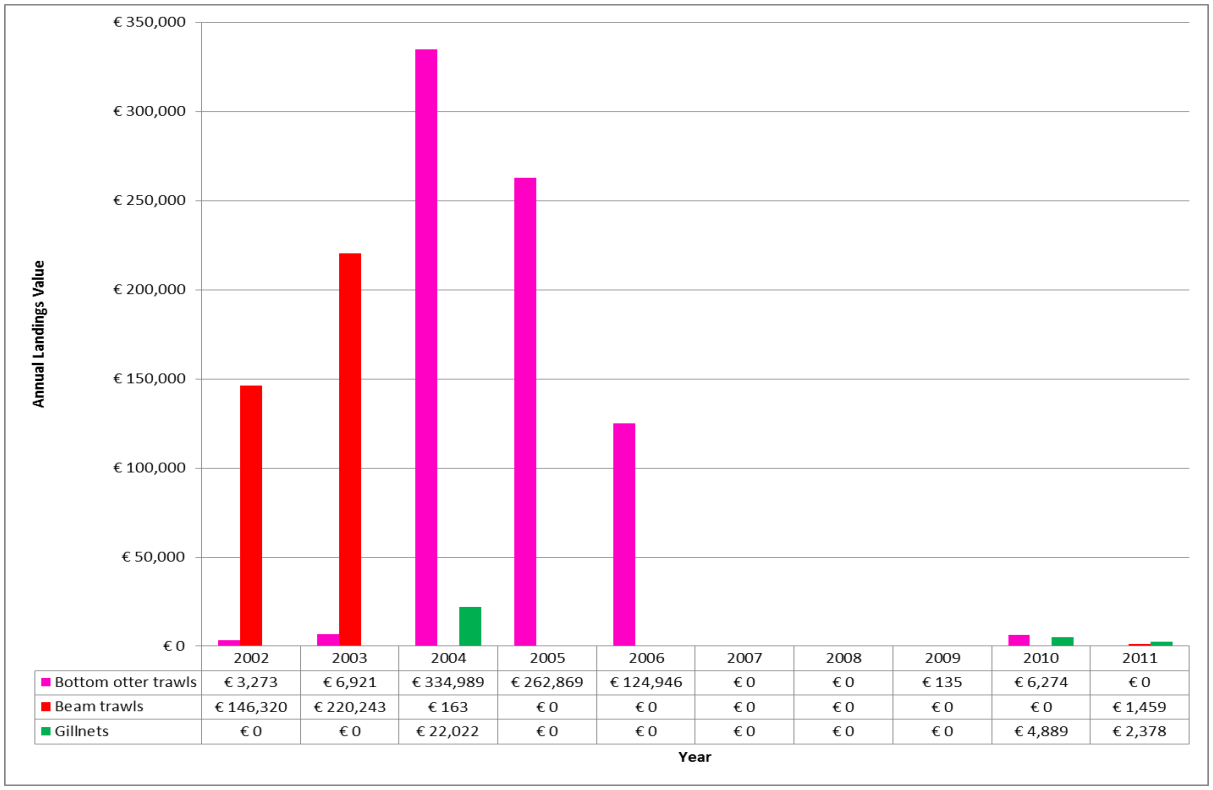
229. *Diagram 14.44* and *Diagram 14.45* show that landings of horse mackerel (demersal otter trawls), sole, cod and whiting (beam trawl, gillnets) were significantly higher from 2002 to 2006. No horse mackerel landings have been recorded since 2006 and there was a virtual absence of landings of other species by the German fleet from 2007 to 2009. Total landings values (all species / methods combined) were low in both 2010 (€11,164) and 2011 (€3,837).

230. *Diagram 14.46* and *Diagram 14.47* show that, on average, monthly landings are low, only exceeding €700 in October. Landings are seasonally constricted occurring mainly during September and October although lower landings are also recorded during February and March. In terms of method, beam trawls account for all landings earlier in the year, whilst gillnets and demersal otter trawls account for the higher landings in late summer / autumn.



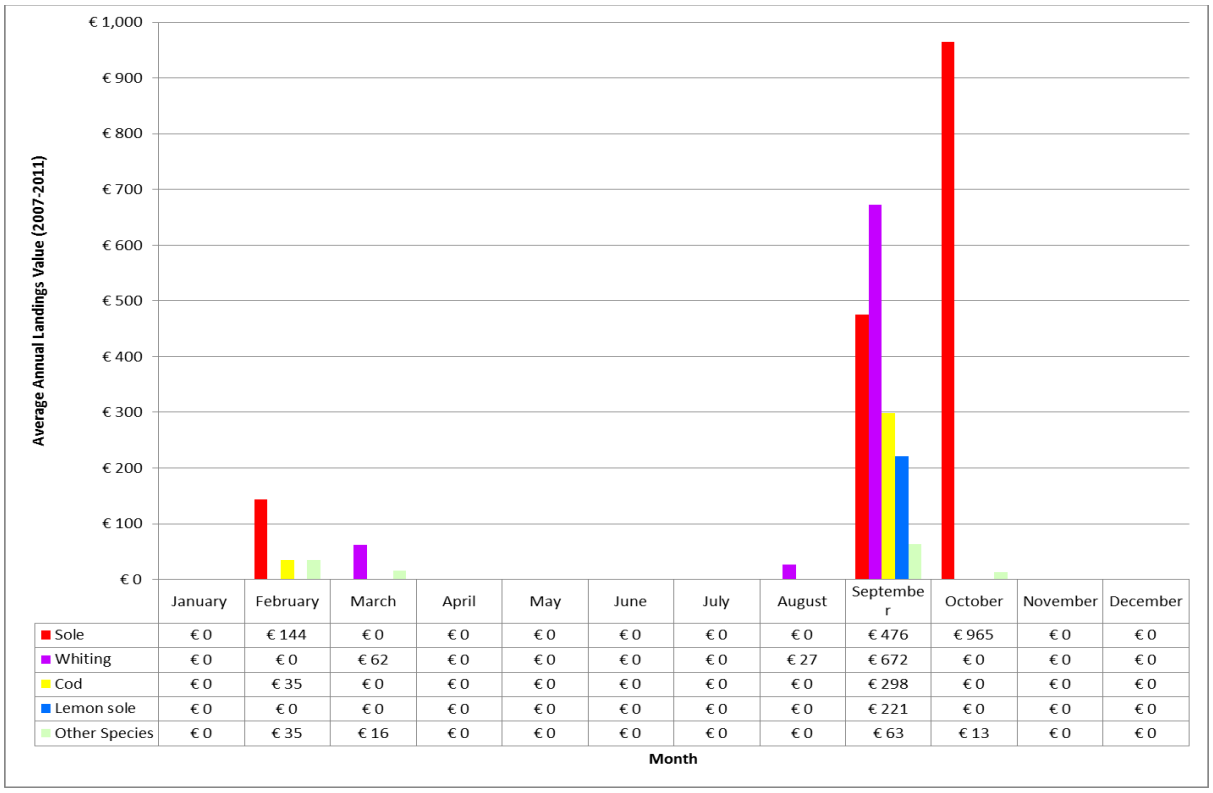
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Horse mackerel	€ 0	€ 55	€ 334,989	€ 231,108	€ 124,102	€ 0	€ 0	€ 0	€ 0	€ 0
Cod	€ 7,630	€ 172,651	€ 0	€ 17,399	€ 0	€ 0	€ 0	€ 0	€ 1,492	€ 176
Sole	€ 95,170	€ 35,284	€ 21,736	€ 0	€ 0	€ 0	€ 0	€ 0	€ 4,823	€ 3,098
Plaice	€ 28,898	€ 5,910	€ 119	€ 803	€ 0	€ 0	€ 0	€ 0	€ 243	€ 176
Whiting	€ 776	€ 4,583	€ 119	€ 6,615	€ 844	€ 0	€ 0	€ 135	€ 3,360	€ 309
Other Species	€ 17,119	€ 8,682	€ 210	€ 6,943	€ 0	€ 0	€ 0	€ 0	€ 1,246	€ 78

Diagram 14.44 German Annual Landings Values (€) by Species in the Windfarm Analysis area (34F2; 2002 to 2011, Source: BLE, 2012)



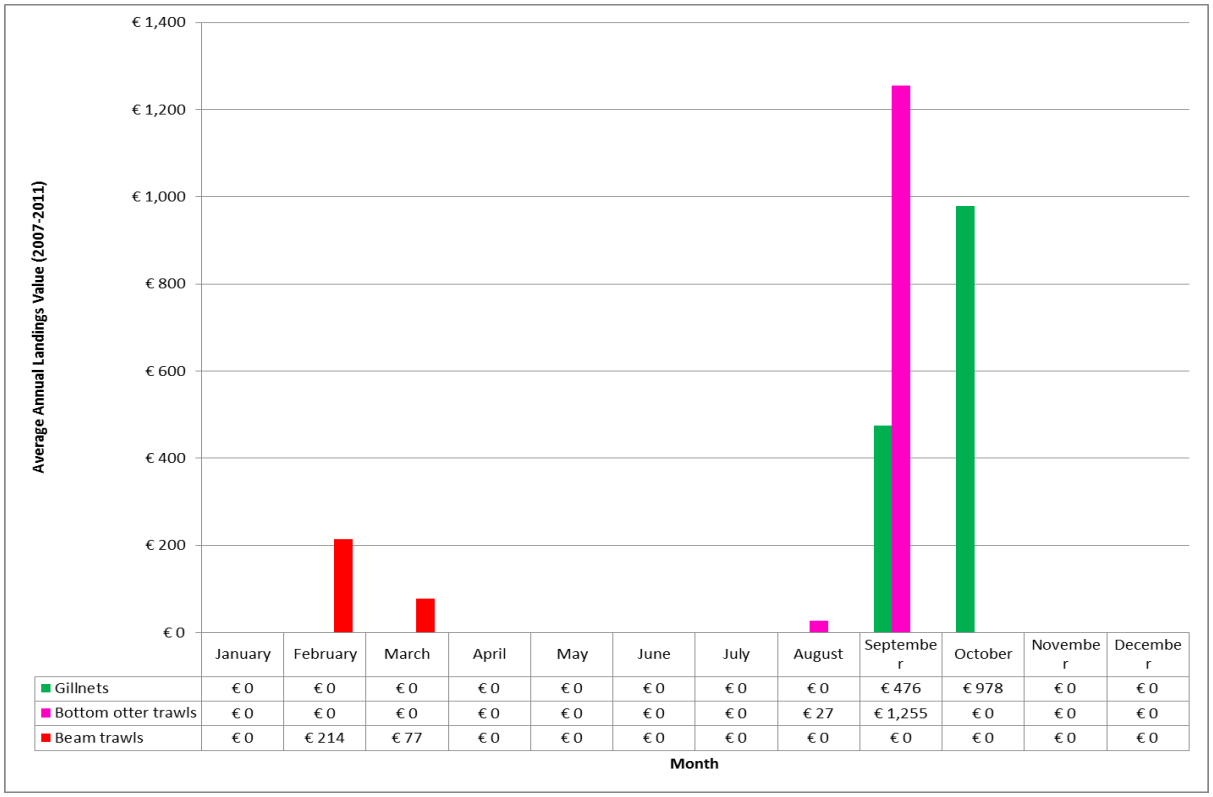
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bottom otter trawls	€ 3,273	€ 6,921	€ 334,989	€ 262,869	€ 124,946	€ 0	€ 0	€ 135	€ 6,274	€ 0
Beam trawls	€ 146,320	€ 220,243	€ 163	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 1,459
Gillnets	€ 0	€ 0	€ 22,022	€ 0	€ 0	€ 0	€ 0	€ 0	€ 4,889	€ 2,378

Diagram 14.45 German Annual Landings Values (€) by Method in the Windfarm Analysis Area (34F2; 2002 to 2011, Source: BLE, 2012)



	January	February	March	April	May	June	July	August	September	October	November	December
Sole	€ 0	€ 144	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 476	€ 965	€ 0	€ 0
Whiting	€ 0	€ 0	€ 62	€ 0	€ 0	€ 0	€ 0	€ 27	€ 672	€ 0	€ 0	€ 0
Cod	€ 0	€ 35	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 298	€ 0	€ 0	€ 0
Lemon sole	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 221	€ 0	€ 0	€ 0
Other Species	€ 0	€ 35	€ 16	€ 0	€ 0	€ 0	€ 0	€ 0	€ 63	€ 13	€ 0	€ 0

Diagram 14.46 German Seasonal Landings Values (€) by Species in the Windfarm Analysis Area (34F2; Average, 2007 to 2011, Source: BLE, 2012)



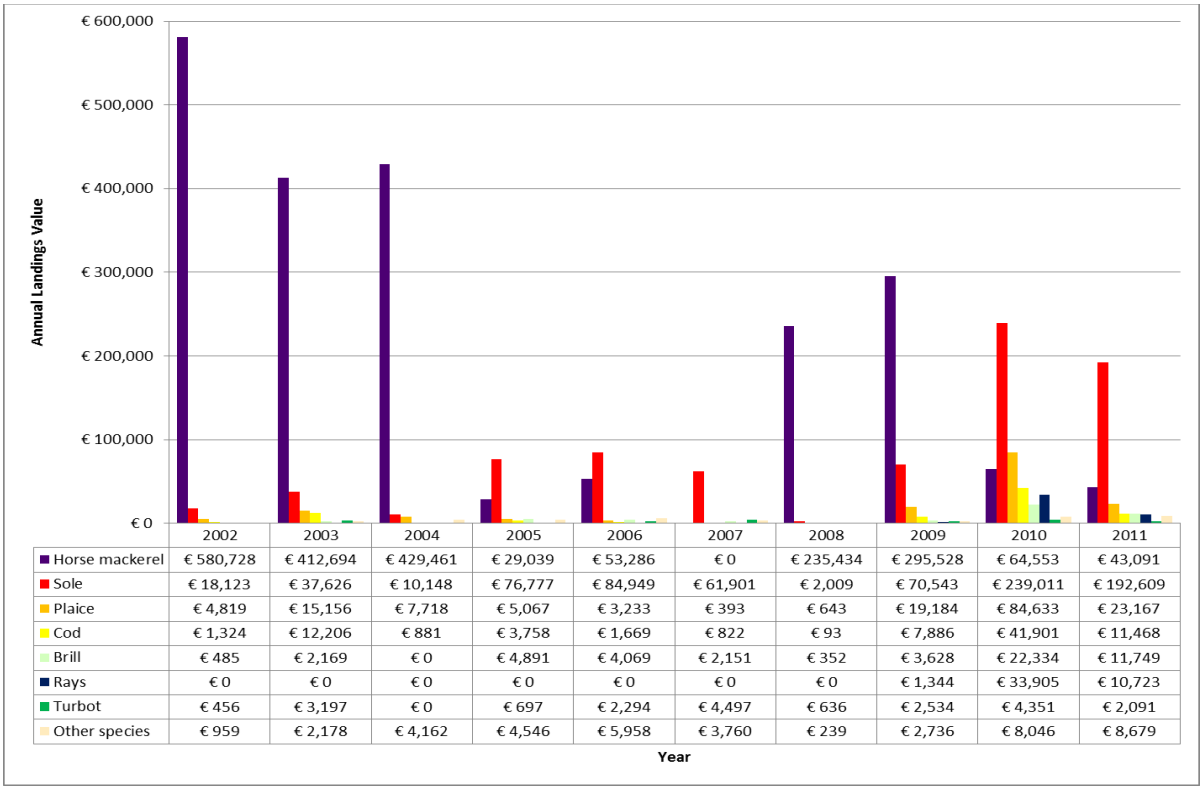
	January	February	March	April	May	June	July	August	September	October	November	December
Gillnets	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 476	€ 978	€ 0	€ 0
Bottom otter trawls	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 27	€ 1,255	€ 0	€ 0	€ 0
Beam trawls	€ 0	€ 214	€ 77	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0

Diagram 14.47 German Seasonal Landings Values (€) by Method in the Windfarm Analysis Area (34F2; Average, 2007 to 2011, Source: BLE, 2012)

14.4.19.1.2 Offshore Cable Analysis Area (33F2)

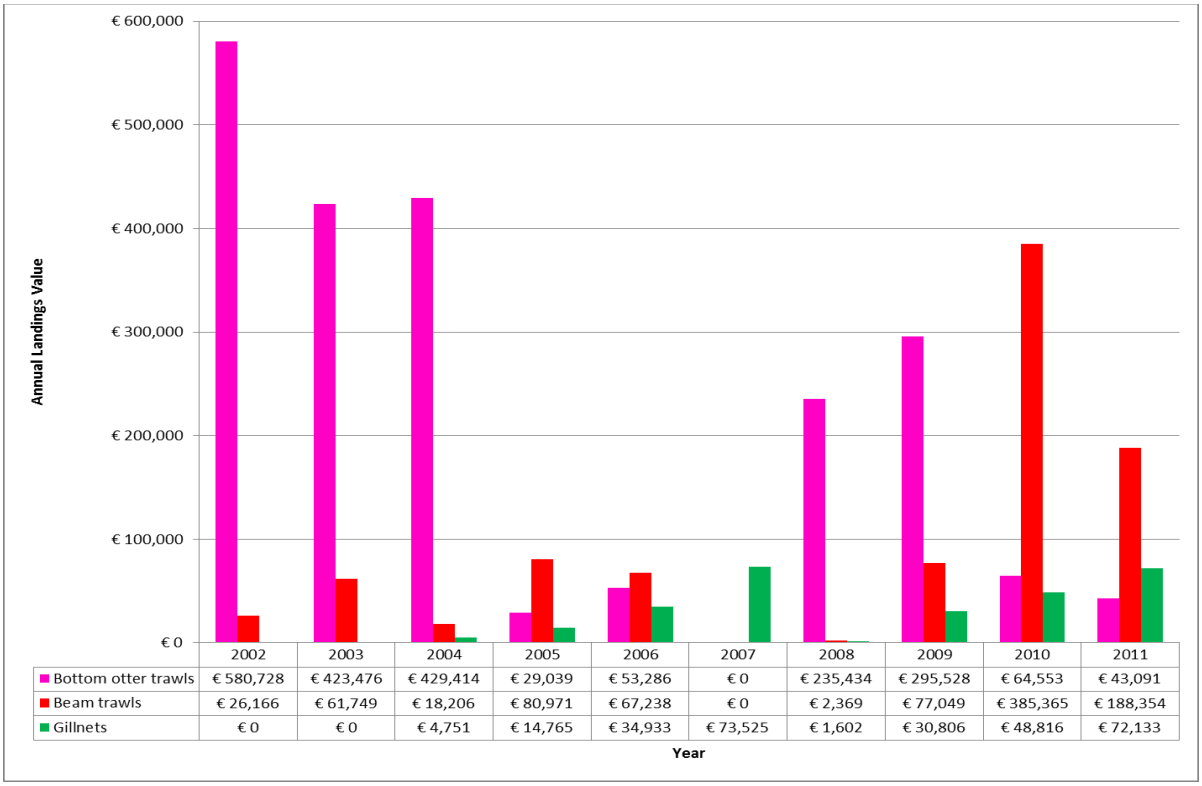
231. Annual landings from the German fleet in the offshore cable analysis area are shown by species and method in *Diagram 14.48* and *Diagram 14.49* respectively. Horse mackerel landings (of higher value than all other species), peaked in 2002 (€580,728), then declined in subsequent years. These values are mirrored exactly by landings of demersal otter trawls indicating that this method is used to the exclusion of all others to target the fishery. With the exception of 2008, landings of beam trawled sole have shown a pattern of increasing value, particularly in the latter part of the dataset. Gillnets follow a similar distribution, tracking fluctuations in sole landings from 2004 onwards.

232. The seasonal distribution of landings values from German vessels by species and method are shown in *Diagram 14.50* and *Diagram 14.51.* Landings of sole are recorded from the beam trawl and gillnet fisheries throughout the year with an initial peak in value during the spring (April; €27,863) followed by a secondary, more marked rise in the autumn (September; €53, 733). By contrast, the season for demersal trawl targeted horse mackerel is more constrained occurring from December (€2,950) to February (€5,137) with a distinct peak during January (€31,379).



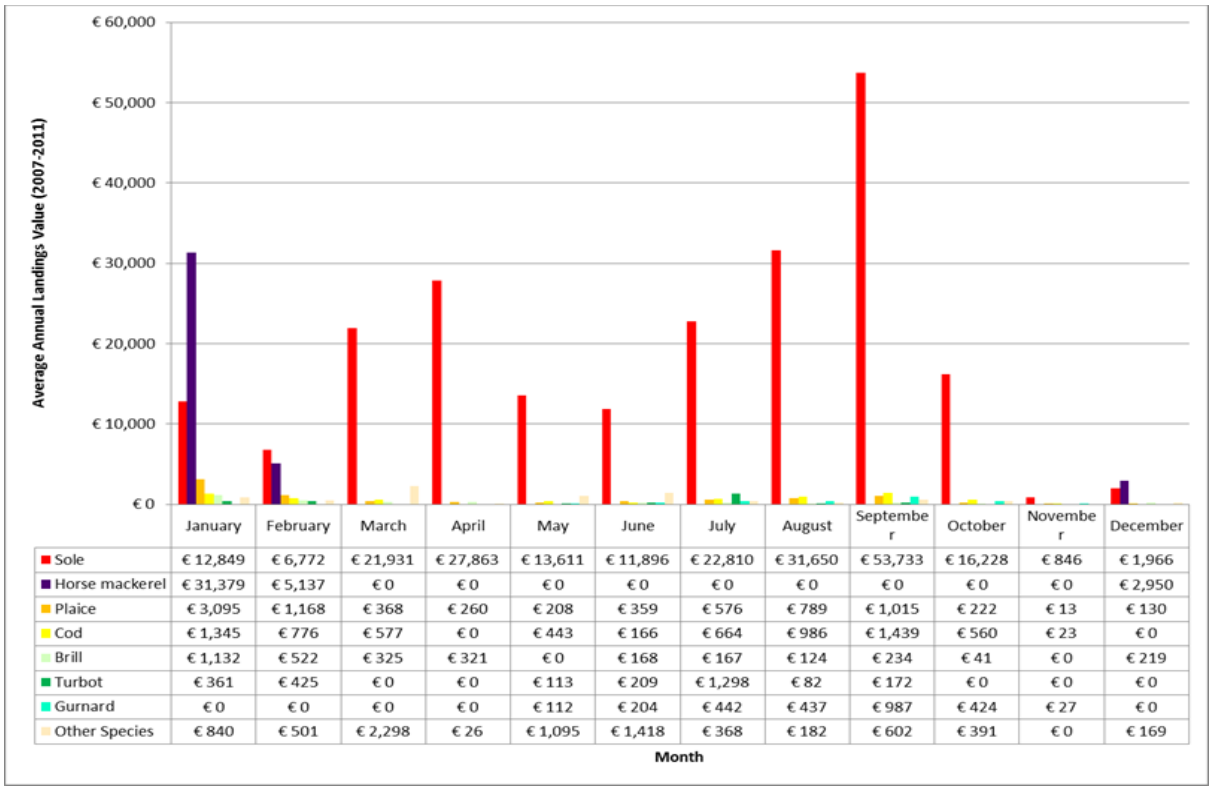
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Horse mackerel	€ 580,728	€ 412,694	€ 429,461	€ 29,039	€ 53,286	€ 0	€ 235,434	€ 295,528	€ 64,553	€ 43,091
Sole	€ 18,123	€ 37,626	€ 10,148	€ 76,777	€ 84,949	€ 61,901	€ 2,009	€ 70,543	€ 239,011	€ 192,609
Plaice	€ 4,819	€ 15,156	€ 7,718	€ 5,067	€ 3,233	€ 393	€ 643	€ 19,184	€ 84,633	€ 23,167
Cod	€ 1,324	€ 12,206	€ 881	€ 3,758	€ 1,669	€ 822	€ 93	€ 7,886	€ 41,901	€ 11,468
Brill	€ 485	€ 2,169	€ 0	€ 4,891	€ 4,069	€ 2,151	€ 352	€ 3,628	€ 22,334	€ 11,749
Rays	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 1,344	€ 33,905	€ 10,723
Turbot	€ 456	€ 3,197	€ 0	€ 697	€ 2,294	€ 4,497	€ 636	€ 2,534	€ 4,351	€ 2,091
Other species	€ 959	€ 2,178	€ 4,162	€ 4,546	€ 5,958	€ 3,760	€ 239	€ 2,736	€ 8,046	€ 8,679

Diagram 14.48 German Annual Landings Values (€) by Species in the in the Offshore Cable Analysis Area (33F2; 2002 to 2011, Source: BLE, 2012)



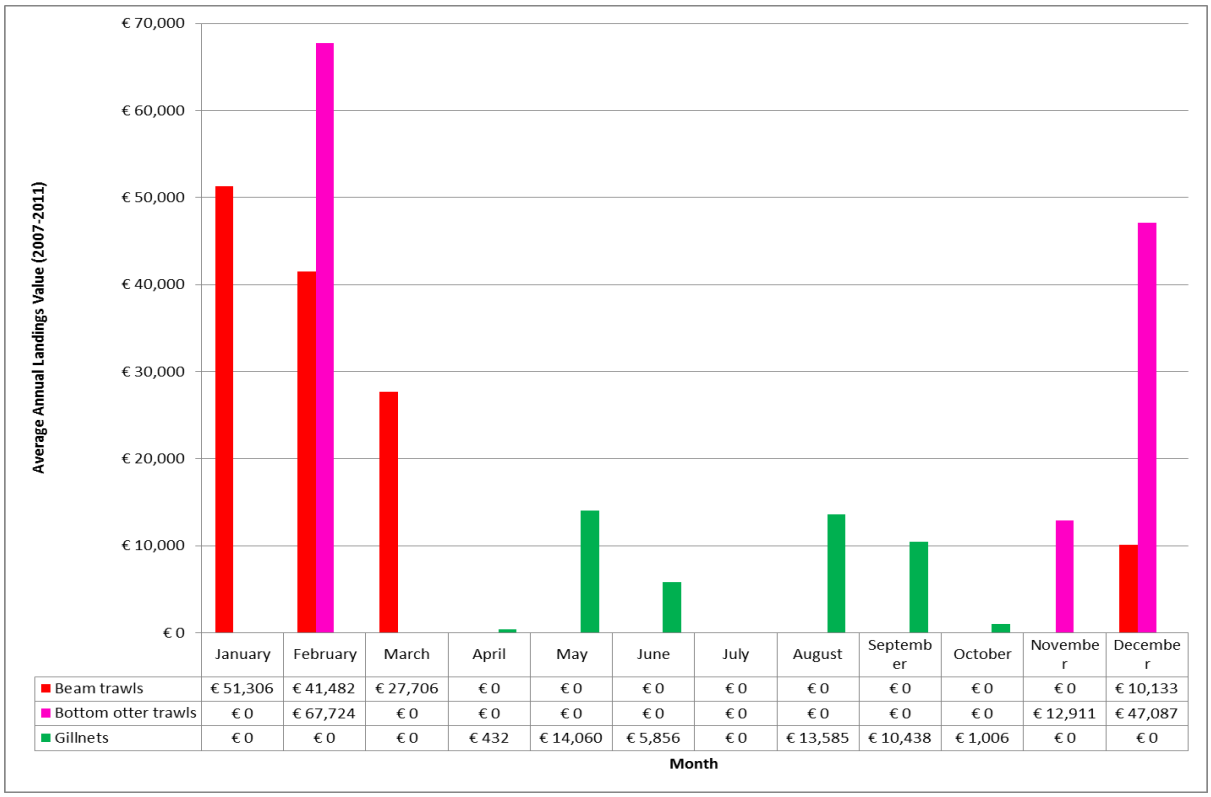
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bottom otter trawls	€ 580,728	€ 423,476	€ 429,414	€ 29,039	€ 53,286	€ 0	€ 235,434	€ 295,528	€ 64,553	€ 43,091
Beam trawls	€ 26,166	€ 61,749	€ 18,206	€ 80,971	€ 67,238	€ 0	€ 2,369	€ 77,049	€ 385,365	€ 188,354
Gillnets	€ 0	€ 0	€ 4,751	€ 14,765	€ 34,933	€ 73,525	€ 1,602	€ 30,806	€ 48,816	€ 72,133

Diagram 14.49 German Annual Landings Values (€) by Method in the Offshore Cable Analysis Area (33F2; 2002 to 2011, Source: BLE, 2012)



	January	February	March	April	May	June	July	August	September	October	November	December
Sole	€ 12,849	€ 6,772	€ 21,931	€ 27,863	€ 13,611	€ 11,896	€ 22,810	€ 31,650	€ 53,733	€ 16,228	€ 846	€ 1,966
Horse mackerel	€ 31,379	€ 5,137	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 2,950
Plaice	€ 3,095	€ 1,168	€ 368	€ 260	€ 208	€ 359	€ 576	€ 789	€ 1,015	€ 222	€ 13	€ 130
Cod	€ 1,345	€ 776	€ 577	€ 0	€ 443	€ 166	€ 664	€ 986	€ 1,439	€ 560	€ 23	€ 0
Brill	€ 1,132	€ 522	€ 325	€ 321	€ 0	€ 168	€ 167	€ 124	€ 234	€ 41	€ 0	€ 219
Turbot	€ 361	€ 425	€ 0	€ 0	€ 113	€ 209	€ 1,298	€ 82	€ 172	€ 0	€ 0	€ 0
Gurnard	€ 0	€ 0	€ 0	€ 0	€ 112	€ 204	€ 442	€ 437	€ 987	€ 424	€ 27	€ 0
Other Species	€ 840	€ 501	€ 2,298	€ 26	€ 1,095	€ 1,418	€ 368	€ 182	€ 602	€ 391	€ 0	€ 169

Diagram 14.50 German Seasonal Landings Values (€) by Species in the Offshore Cable Analysis Area (33F2; Average, 2007 to 2011, Source: BLE, 2012)



	January	February	March	April	May	June	July	August	September	October	November	December
Beam trawls	€ 51,306	€ 41,482	€ 27,706	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 10,133
Bottom otter trawls	€ 0	€ 67,724	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 0	€ 12,911	€ 47,087
Gillnets	€ 0	€ 0	€ 0	€ 432	€ 14,060	€ 5,856	€ 0	€ 13,585	€ 10,438	€ 1,006	€ 0	€ 0

Diagram 14.51 German Seasonal Landings Values (€) by Method in the Offshore Cable Analysis Area (34F2; Average, 2007 to 2011, Source: BLE, 2012)

14.1.4.20 German Vessels, Gears and Operating Practices

233. Due to the low level of German fishing activity in the vicinity of the proposed East Anglia THREE project, consultation to gather information on gears and operating practices was not undertaken.

14.1.4.21 Danish Fishing Activity - Overview

234. *Figure 14.90* shows VMS density for the Danish static netting fleet in the North Sea. Activity tends to be highest in the eastern half of the central North Sea off the coast of Denmark. Further areas of high activity are located off the Dutch and Belgian coasts, with smaller, more localised regions located within German waters.

14.1.4.22 Danish Fishing Activity – Regional

235. Danish landings have been made available to BMM only by sea area (e.g. IVc) as opposed to ICES rectangles. As this provides no additional information on the nature of fishing activity in the vicinity of the proposed East Anglia THREE project, this dataset has not been included within the report.

14.1.4.22.1 Surveillance Sightings

236. MMO surveillance sightings of Danish vessels (all gear types) are shown in *Figure 14.91.* From 2010 to 2014, activity by the Danish fleet in the vicinity of the proposed East Anglia THREE project has generally been low. The most frequent observations have been of Danish gillnetters. Throughout the period for which data is shown only a single vessel has been recorded within the East Anglia THREE site. Higher numbers have been observed south and west of the proposed East Anglia THREE project.

14.1.4.22.2 VMS data

237. *Figure 14.92* shows VMS density of static netting activity in vicinity of the proposed East Anglia THREE project. Activity throughout most of the East Anglia Zone is low, including within the East Anglia THREE site and the majority of the offshore cable corridor. Higher activity is recorded (from ten to over 80 pings per year) immediately north and south of the north-eastern section of the offshore cable corridor. Further areas of relatively high VMS ping densities are located outside the East Anglia Zone to the east and south.

14.1.4.23 Danish Vessels, Gears and Operating Practices

238. The Danish fleet comprises principally of industrial sandeel trawlers, seine netters and gillnetters. Activity by the industrial sandeel fleet tends to be highest in areas such as the Dogger Bank (Central North Sea) and Norwegian sector (Northern North Sea) and although not limited to these areas, is considerably lower in the Southern North Sea, including the vicinity of the proposed East Anglia THREE project. Vessels from the sandeel fleet may periodically target sprat in the vicinity of the East Anglia

THREE project (H. Lund Pers. comm.) Danish seine netters also tend to operate in Northern and Central North Sea. As demonstrated by VMS datasets, the gillnetting fleet is the most active in the vicinity of the proposed East Anglia THREE project.

239. Danish gillnetters target a range of demersal species in the North Sea: cod, hake, plaice, sole and turbot (Ulrich and Andersen, 2004). The fishery is relatively selective as different size meshes are employed to target different species. For example meshes of 120mm minimum size are used to target turbot and brill, which yield a smaller bycatch of plaice and cod.

14.1.4.24 Norwegian Fishing Activity - Overview

240. VMS data showing the distribution of Norwegian registered vessels (over-15m only) in the North Sea (UK waters only) is provided in *Figure 14.93*. The highest activity is recorded in the Northern North Sea, a significant proportion of which is by pelagic vessels targeting herring and mackerel. Smaller, discrete areas of high activity are located in the Central North Sea along the western edge of the Dogger Bank. Activity in the Southern North Sea is much lower, including within the vicinity of the proposed East Anglia THREE project.

14.1.4.25 Norwegian Fishing Activity – Regional

14.1.4.25.1 Surveillance Sightings

241. *Figure 14.94* shows that surveillance sightings have observed only two unspecified trawlers between 2010 and 2014, both of which have been over the north-eastern section of the offshore cable corridor.

14.1.4.25.2 Landings Values

242. *Figure 14.95* and *Figure 14.96* show landings values (in Norwegian Kroner (Kr)) by species and method, respectively. Landings in all rectangles in the vicinity of the proposed East Anglia THREE project, with the exception of 35F1, are dominated by sprat and are targeted principally by purse seines. Vessels operating midwater otter trawls and demersal otter trawls record lower values. With respect to the proposed East Anglia THREE project, landings recorded from the windfarm analysis area and offshore cable analysis area are worth the equivalent[15] of 1,060,070Kr and 1,145,731Kr, respectively. Norwegian vessels targeting species such as sprat land large quantities of fish on a single voyage. It is therefore considered that these values will be derived from a relatively low number of trips and that activity by this fleet is generally low in the proposed East Anglia THREE project area.

[15] 1 Kr is the equivalent of 0.1 GBP

14.1.4.25.3 VMS data

243. *Figure 14.97* confirms the notion that activity by the Norwegian fleet in the vicinity of the proposed East Anglia THREE project is low, showing that in most areas (including the East Anglia THREE site and offshore cable corridor) an average of two to five VMS pings are recorded per year.

14.1.4.26 Norwegian Vessels, Gears and Operating Practices

244. Due to the low level of Norwegian fishing activity in the vicinity of the proposed East Anglia THREE project, consultation to gather information on gears and operating practices was not undertaken.

14.1.4.27 Existing Environment – Summary

245. The East Anglia THREE site and the offshore and inshore areas of the cable corridor are fished to varying degrees by the following fleets:

- Dutch beam trawlers, demersal otter trawlers, pelagic trawlers, fly seiners and netters
- Belgian beam trawlers and demersal otter trawlers;
- UK beam trawlers, otter trawlers, long-liners, fixed and drift netters and potters;
- French otter trawlers (demersal and pelagic)
- German beam trawlers and demersal otter trawlers
- Danish Gillnetters
- Norwegian purse seiners, midwater otter trawls and demersal otter trawls.

246. The highest levels of activity and landings values within the East Anglia THREE site and in the offshore area of the cable corridor are, by a substantial margin, from the Dutch beam trawl fleet. The vessels fishing these areas are predominantly the larger vessels from the Dutch fleet (38-42m), a high proportion of which are from Texel/Den Helder and operate pulse wing trawls with sole the principal target species. Other methods such as demersal trawling, fly seining, netting and pelagic trawling record considerably lower activity in the vicinity of the proposed East Anglia THREE project.

247. As shown by *Figure 14.12 to Figure 14.21,* Dutch fishing activity extends over significant areas of the central and southern North Sea as well as into the Channel. Levels of activity within the East Anglia THREE site and the north eastern area of the offshore cable corridor are of moderate to high intensity at the scale of the North Sea. The highest intensity grounds are located in the north west of the East Anglia

Zone and to the immediate south. Due to an absence of Dutch historic rights within the UK 6-12 nm limit, all activity by this fleet occurs outside this boundary.

248. The second highest level of activity occurring in the offshore areas of the proposed East Anglia THREE project is by Belgian vessels. This is predominantly beam trawling, although otter trawling also occurs albeit to a lesser extent. *Figure 14.30* and *Figure 14.31* show that activity by the Belgian fleet occurs over wider areas than the Dutch including the central and southern North Sea, the Channel, Western Approaches and in the Celtic and Irish Seas. With reference to the proposed East Anglia THREE project, based on the data obtained, the majority of Belgian activity is by the larger class of vessels (over 300bhp) and occurs predominantly over the offshore section of the offshore cable corridor outside the 12nm limit as these vessels have access to historic rights only if using demersal otter trawls (*Figure 14.30*). Activity by the Eurocutter fleet (*Figure 14.31*) is higher inside the 6-12nm limit and occurs over a smaller central area of the export cable corridor. Activity from both fleets within the East Anglia THREE site is very low.

249. Activity by UK registered vessels within the vicinity of the offshore section of the offshore cable corridor and the East Anglia THREE site is considerably lower than that of the Dutch and Belgian fleets. Although there is activity by UK registered over 15m vessels in these areas, from the information obtained it is apparent that the majority of these are Dutch owned and operated beam trawlers fishing UK quota. A limited number of local vessels occasionally undertake longlining and to a lesser extent, netting within the vicinity of the East Anglia THREE site. However, the majority of the local fleet target a variety of species using longlines, drift and fixed nets, pots and trawls along various sections of the offshore cable corridor with the highest activity occurring within the 6nm limit. These vessels are predominantly small (under 10m) and limited in their operational range and the grounds available to them.

250. Available data on French fishing activity is limited. Based on consultation and the official information available, activity by the French fleet within the East Anglia THREE site is low. Low to moderate levels of activity by trawlers operating either demersal or pelagic otter trawls (or a combination of both) are recorded over the central area of the offshore cable corridor.

251. The available data indicates that activity by the German fleet in the East Anglia THREE site is negligible. Levels of activity increase recorded around the north eastern extremity of the offshore cable corridor. Sole and horse mackerel are the principal species and are targeted with beam trawls and otter trawls (respectively).

252. Danish activity follows a similar pattern to that of the German fleet being negligible within the East Anglia THREE site increasing (albeit to relatively low levels), in the north eastern area of the offshore cable corridor. The majority of Danish activity is by the gill netting fleet which may target a range of species including cod and flatfish such as plaice, turbot and brill. Vessels from the Danish sandeel fleet, which depends heavily on central North Sea grounds such as the Dogger Bank during the spring and summer, occasionally target sprat in the vicinity of the proposed East Anglia THREE project during the winter months.

253. Low numbers of Norwegian vessels may also occasionally target grounds within the vicinity of the proposed East Anglia THREE project. Based on VMS data provided by the Norwegian FMC very low levels of activity occur within the East Anglia THREE site, increasing marginally immediately east and west of the boundary. Similar levels of activity are apparent over the north eastern area of the East Anglia THREE offshore cable corridor. FMC statistics indicate that sprat accounts for the vast majority of landings values and is mainly targeted with pelagic methods (otter trawls and purse seines) although demersal otter trawls are also account for some landings. Because species such as sprat are landed in high volumes on a single trip it is expected that these values represent a low number of trips and that activity by this fleet is generally low in the proposed East Anglia THREE project area. This is supported by low VMS transmission densities in the proposed East Anglia THREE project area.

14.1.5 Acronyms

AIS - Automatic Identification System

ALARP – As low as is reasonably practicable

BERR - Business Enterprise & Regulatory Reform

BMM – Brown and May Marine Limited

BWEA - British Wind Energy Association

Cefas - Centre for Environment, Fisheries and Aquaculture Science

CFP - Common Fisheries Policy

CNPMEM - Comité National des Pêches Maritime et des Elevages Marins

CPA - Coast Protection Act

CRPMEM - Comité Régional des Pêches Maritimes et des Elevages Marins

DECC - Department of Energy and Climate Change

DEFRA - Department for Environment, Food and Rural Affairs

DTI - Department of Trade and Industry

EAOW - East Anglia Offshore Wind Limited

EC - European Commission

EEZ - Exclusive Economic Zone

EIA – Environmental Impact Assessment

EU - European Union

FEPA - Food and Environment Protection Act

FIN - Fisheries Information Network

FLOWW - Fishing Liaison with Offshore Wind and Wet Renewables Group

FQA - Fixed Quota Allocation

ICES – International Council for the Exploration of the Seas

IFCA - Inshore Fisheries and Conservation Authority

IFREMER - L'Institut Français de Recherche pour l'Exploitation de la Mer

IMARES - Institute for Marine Resources and Ecosystem Studies

ILVO - Institute for Agricultural and Fisheries Research

LEI - Landbouw Econmisch Instituut

MCEU - Marine Consents and Environment Unit

MCZ - Marine Conservation Zone

MMO – Marine Management Organisation

MPA - Marine Protected Area

NFFO - National Fishermen's Federation Organisation

NPS – National Policy Statement

NtM – Notice to Mariners

OIFA - Orford Inshore Fishermen's Association

PO – Producer Organisation

RTC - Real Time Closures

TAC - Total Allowable Catch

SAC - Special Area of Conservation

UKFEN - UK Fisheries Economic Network

UKHO – UK Hydrographic Office

VCU - Vessel Capacity Unit

VMS – Vessel Monitoring System

14.1.6 References

Blyth-Skyrme, R.E, 2010. Options and opportunities for marine fisheries mitigation associated with wind farms. Final report for Collaborative Offshore Wind Research into the Environment contract FISHMITIG09. COWRIE Ltd, London;

British Wind Energy Association (BWEA), 2004. Recommendations for fisheries liaison

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.

Centre for Environment, Fisheries and Aquaculture Science (Cefas), 2012. Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403, May 2012.

Department for Business Enterprise & Regulatory Reform (BERR) (2008) Recommendations for Fisheries Liaison: FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group).

International Cable Protection Committee, (IPPC) 2006. Fishing and Submarine Cables - Working Together.

Lee, J., South, A. B., and Jennings, S. 2010. Developing reliable, repeatable, and accessible methods to provide high-resolution estimates of fishing-effort distributions from vessel monitoring system (VMS) data. - ICES Journal of Marine Science, 67: 1260-1271.

Marine Licensing requirements (replacing Section 5 Part II of the Food and Environment Protection Act (FEPA) 1985 and Section 34 of the Coast Protection Act (CPA) 1949).

Renewable UK, 2013. Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms.

Sea Fish Industry Authority and UK Fisheries Economic Network (UKFEN), 2012. Best practise guidance for fishing industry financial and economic impact assessments.

The Planning Inspectorate, 2012. SCOPING OPINION Proposed East Anglia THREE Offshore Windfarm.

UK Oil and Gas, 2008. Fisheries Liaison Guidelines - Issue 5.

Ulrich, C and Andersen, B.S. 2004. Dynamics of fisheries, and the flexibility of vessel activity in Denmark between 1989 and 2001. ICES Journal of Marine Science, 61: 308 -322.

Appendix 14.1 ends here