



ABERDEEN HARBOUR  
EXPANSION PROJECT  
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Appendices*

# APPENDIX 22-A COMMERCIAL FISHERIES TECHNICAL REPORT



# ABERDEEN HARBOUR EXPANSION PROJECT: BASELINE ASSESSMENT FOR COMMERCIAL FISHERIES

Report No: 14/J/3/06/2582/1774

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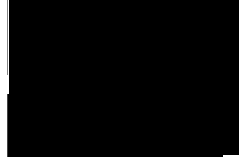
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## **1. INTRODUCTION**

### **1.1 Project background**

Aberdeen Harbour Board (AHB) proposes expansion of current harbour operations through development of Nigg Bay, a shallow water, sediment embayment located directly south of Aberdeen. To achieve this, a series of technical environmental studies have been commissioned to support the necessary consent applications and associated Environmental Statement (ES).

Information derived from these studies will be used to inform the Environmental Impact Assessment (EIA), with respect to predicted effects of the construction, operation and decommissioning of the new port facilities and to assist in the development of mitigation measures where agreed and appropriate. This will aid in the development of the ES in support of the consent application.

To address these aspects, Fugro EMU Limited (Fugro EMU) was commissioned to undertake a desk based review of the commercial fishing in the proposed development area and local surrounds. Accordingly this document presents the data collected and gives a characterisation of the fishing conditions within and around the harbour proposals in terms of the spatial and temporal distributions of the typical gear types, the locations and extents of any critical fish habitat and the occurrence and use of the area by important species.

### **1.2 Aims and objectives**

The aim of this report is to provide baseline characterisation of commercial fisheries activities that will support the EIA process for the Aberdeen Harbour Expansion Project.

## **2. METHODOLOGY**

### **2.1 Desk based review of existing data**

The aim of the desk based review of existing data is to collect sufficient data to allow impacts on commercial fishing to be assessed in a robust and defensible manner.

The following data sets have been collected, analysed interpreted and then described in the environmental baseline for commercial fishing:

- Marine fisheries statistical data from Marine Scotland, which are recorded according to activity / catches from relevant International Council for the Exploration of the Sea (ICES) rectangles according to fishery type, species, values and other variables;
- ScotMap (<15m fishing vessel activity);
- Vessel Monitoring System (VMS) data maps produced and provided by Marine Scotland Science (based on Kafas *et al*, 2012 method) ;
- Marine fisheries statistical data from vessels associated with Aberdeen Harbour (i.e. vessels registered or landing there);

- Freshwater fisheries statistical data, specifically salmon and trout catch statistics (Marine Scotland, 2013);
- Scotland's Marine Atlas: Information for the National Marine Plan (Baxter et al., 2011);
- Other published information and technical reports associated with nearby developments, such as Beatrice Offshore Wind Farm;
- ICES fish landings data.

Other principal data sources include the following as a minimum:

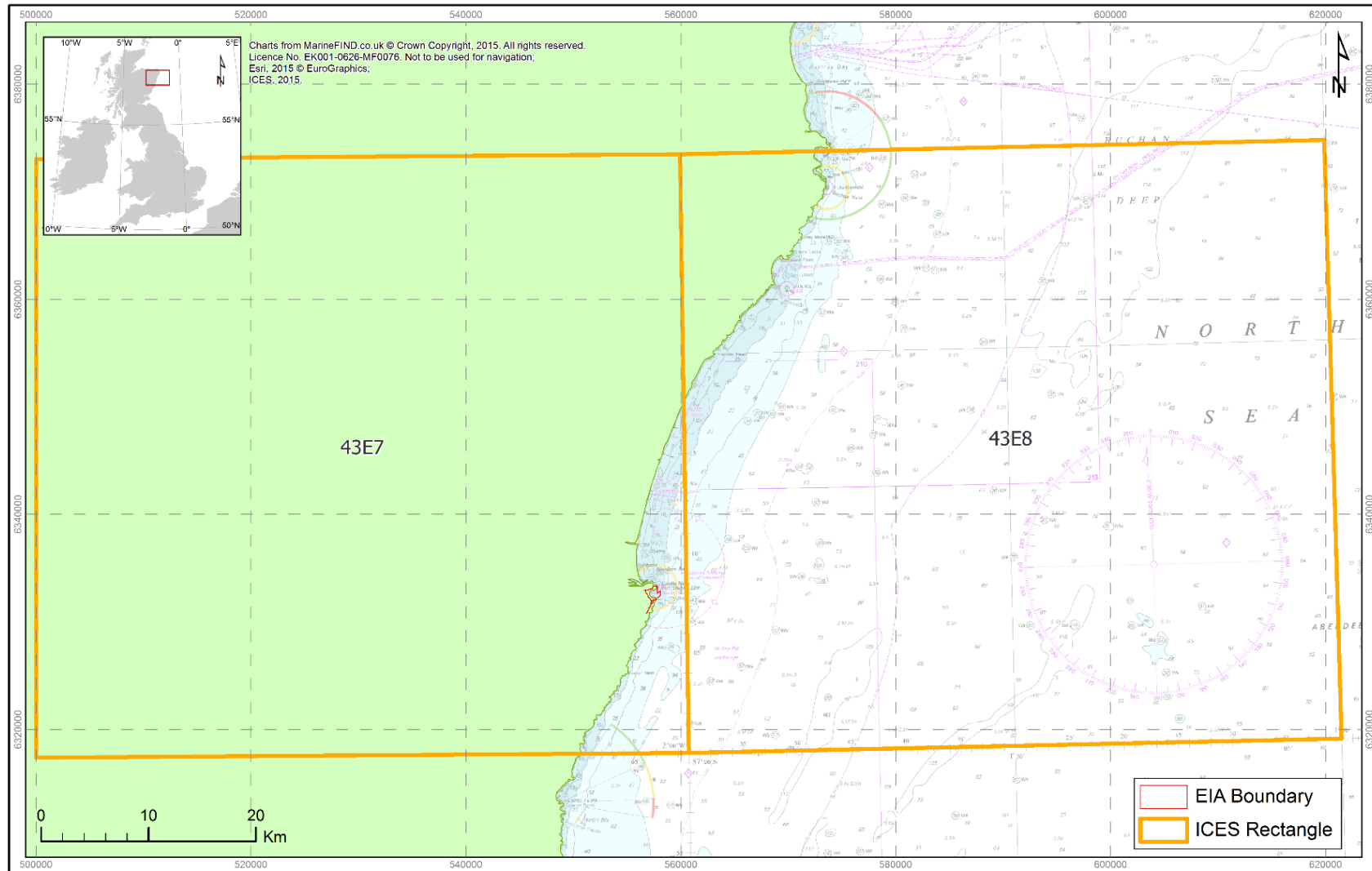
- Benthic ecology survey and desk based assessment (information on benthic communities and their support of commercial fishing stocks);
- Fish ecology desk based assessment (information on the likely presence of ecological impacts on commercial fish species which could impact stocks);
- ICES;
- EU Fisheries Committee publications and datasets (Europa and Eurolex);
- Marine Scotland;
- Seafish;
- Scottish Fishermen's Federation;
- Dee District Salmon Fishery Board;
- Association of Salmon Fishery Boards;
- Salmon Net Fishing Association of Scotland;
- Atlantic Salmon Trust;
- East of Scotland Inshore Fisheries Group;
- Other regional affiliated fishermen's associations and producers organisations, such as the Aberdeen Fish Producers Organisation;
- Local port merchants and agents;
- Aberdeen Harbour Board Harbour Masters;
- Non-UK National Fisheries Datasets (if available).

## **2.2 Consultation**

Spatial fishing intensity data has been collected and plotted, however, due to the limitations of these datasets it is necessary to supplement these with consultation with fishing groups and individuals known to be active in the development area, and the adjacent area which could be disrupted through a change to shipping patterns. The study area has been defined as ICES rectangles 43E7 and 43E8 as shown in Figure 2.1.



# ABERDEEN HARBOUR EXPANSION PROJECT: BASELINE ASSESSMENT FOR COMMERCIAL FISHERIES



Map Document: (V:\J3132582\_Nigg\_Bay\_EIA\3\_Plots\2\_Draft\Commercial\_Fisheries\Q2582\_Nigg\_Commercial\_Fisheries\_MLBoundary\_FullPage\_HXS.mxd)  
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Figure 2.1 ICES rectangles used to define minimum area of study (ICES rectangles 43E7 and 43E8)

The consultation was designed as a two part process, undertaken through a local fisheries liaison. Having a local and respected fisheries liaison officer encourages positive engagement from the fishing community and increases the effectiveness and value of the information collected. A questionnaire was circulated to known fishing groups active in the region (Questionnaire is shown in Appendix A); the aim of this questionnaire was to collect preliminary information about the types of vessels potentially impacted by the development and to gauge the requirement for further consultation and mitigation. Information collected in the questionnaire has been used in the characterisation of the fishing effort and to validate the more quantitative data collected through vessel tracking and landings data, and detailed throughout. The questionnaire was distributed through the following groups:

- The Scottish Fishermen's Federation;
- Scottish White Fish Producers Association;
- East Coast Inshore Fishery Group;
- The Scallop Association;
- Aberdeen Fish Producers Association;
- The Aberdeen Salmon Fishery Board;
- Other regional affiliated fishermen's associations and producers organisations, such as the Aberdeen Fish Producers Organisation;
- Local port merchants and agents;
- Aberdeen Harbour Board Local Harbour Master.

Further, distribution was also undertaken, through contacts of the Fisheries Liaison to ensure, as best as reasonably practical, that all fishing vessels concerned were included even where not affiliated to a federation or organisation. This was considered especially important for local shellfish creel fishermen who operate in this region. Consultation was, and will continue to be, recorded through the use of a project specific register of local fishermen's groups, associations and individuals contacted.

It was understood a second stage of consultation may have been undertaken during the writing of the Environmental Statement dependent upon the level of response to the questionnaire. As the number of interested parties was low and it was considered sufficient information was gathered during the first consultation, the second stage of consultation was not carried out.

**3. DESK BASED REVIEW OF EXISTING DATA**

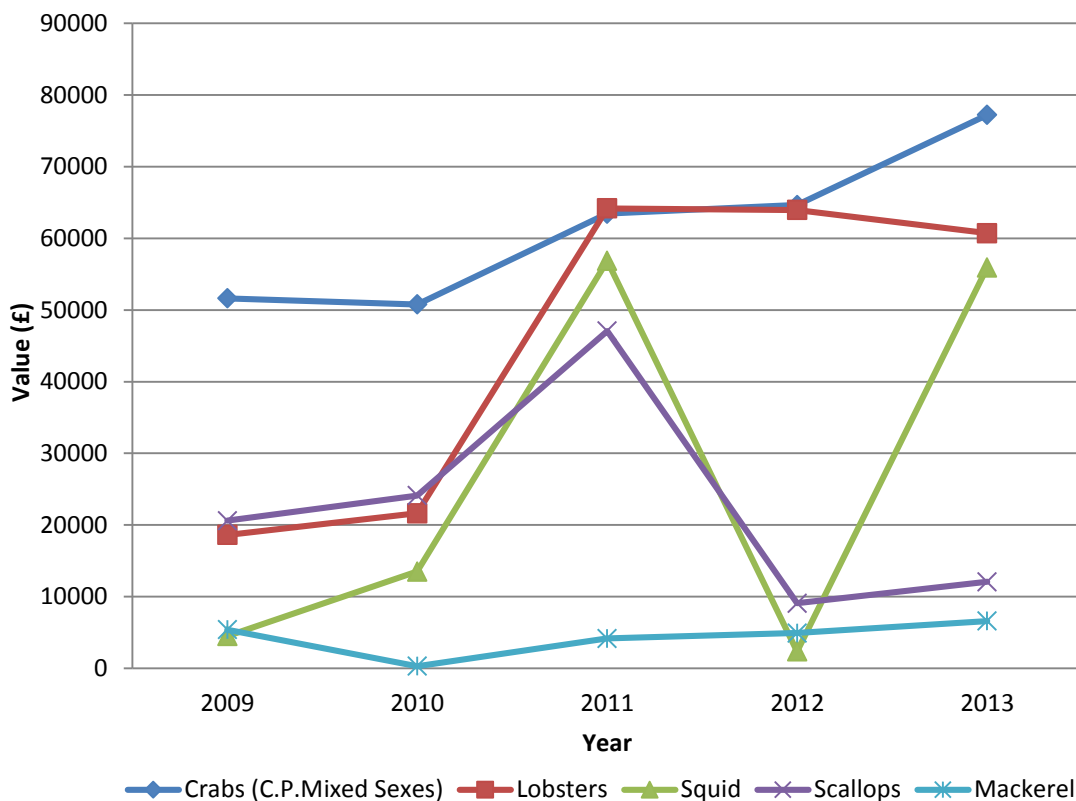
**3.1 Key species**

This section provides an overview of key species by value and weight to characterise the commercial fishing undertaken in the project area.

**3.1.1 ICES Rectangle 43E7 key species by value**

ICES landings data for the period 2009 – 2013 (Table 3.1) showed that the most valuable species in 43E7 are crabs followed by lobsters, with squid and scallops of similar price ranked third and fourth most valuable species. Below these species, the value drops off dramatically suggesting these four species are the predominant target species for the wider development area. This is consistent with consultation responses which identify the area as important for creel potting for lobster and crab.

Figure 3.1 show the trends for catch value of the top five species over the previous five years for which statistics were available. Crab and lobsters are consistently the two most valuable catches with scallop and squid more variable year to year. Mackerel is the fifth most value catch but is consistently the least valuable of the top five. Squid and scallop have a significant peak for catch value in 2011.



**Figure 3.1 ICES Rectangle 43E7 five highest value species yearly landings 2009-2013**

**Table 3.1 Ten highest value species for ICES Rectangle 43E7 (2009-2013)**

| Species                                           | 2009-2013 Value (£) |
|---------------------------------------------------|---------------------|
| Crabs (C.P.Mixed Sexes)                           | 307,679             |
| Lobsters                                          | 229,086             |
| Squid                                             | 133,188             |
| Scallops                                          | 112,947             |
| Mackerel                                          | 21,416              |
| Haddock                                           | 16,344              |
| Nephrops (Norway Lobster)                         | 11,686              |
| Crabs - Velvet (Swim)                             | 11,499              |
| Plaice                                            | 6,545               |
| Lemon Sole                                        | 5,084               |
| <b>Note:</b><br>Numbers rounded nearest UK pound. |                     |

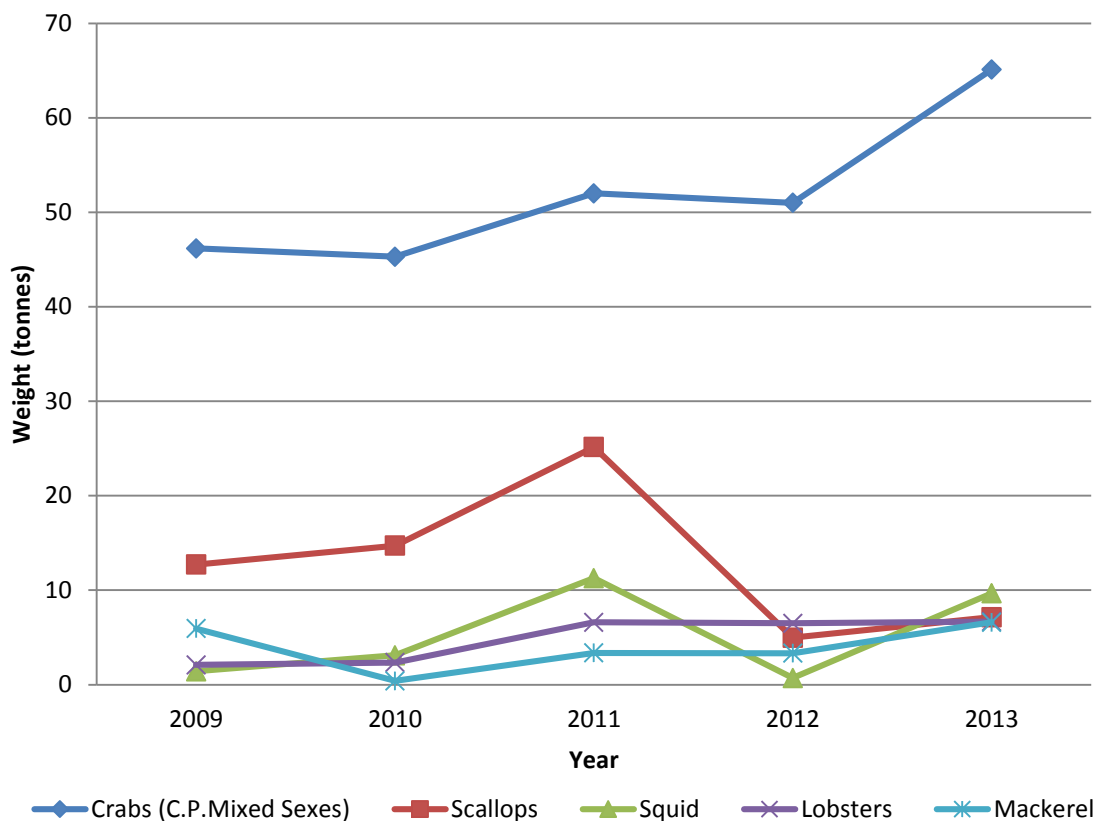
### 3.1.2 ICES Rectangle 43E7 key species by weight

Crabs are by far the largest catch landed by weight (Table 3.2) with almost five times the tonnage over the five year period as scallops, the second most landed catch by weight. Squid and lobsters have a similar caught weight over the five years (Figure 3.2) of around 25 tonnes, however their difference in market price is evident in the landed value.

The yearly trends show that although mackerel is consistently the lowest value of the top five species, in terms of landed weight it is often similar to lobster, squid and for 2012 and 2013 scallops.

**Table 3.2 Ten highest landed weight species for ICES Rectangle 43E7 (2009-2013)**

| Species                   | 2009-2013 Landed Weight (tonnes) |
|---------------------------|----------------------------------|
| Crabs (C.P.Mixed Sexes)   | 259.55                           |
| Scallops                  | 64.71                            |
| Squid                     | 26.20                            |
| Lobsters                  | 24.21                            |
| Mackerel                  | 19.66                            |
| Haddock                   | 14.36                            |
| Crabs - Velvet (Swim)     | 5.66                             |
| Plaice                    | 5.48                             |
| Nephrops (Norway Lobster) | 3.65                             |
| Cod                       | 2.00                             |



**Figure 3.2 ICES Rectangle 43E7 five highest landed weight species from yearly landings 2009-2013**

### 3.1.3 ICES Rectangle 43E8 key species by value

Rectangle 43E8 covers an area further offshore than 43E7 within which the development sits; however, it gives a good indication of the species that are important surrounding the shipping routes.

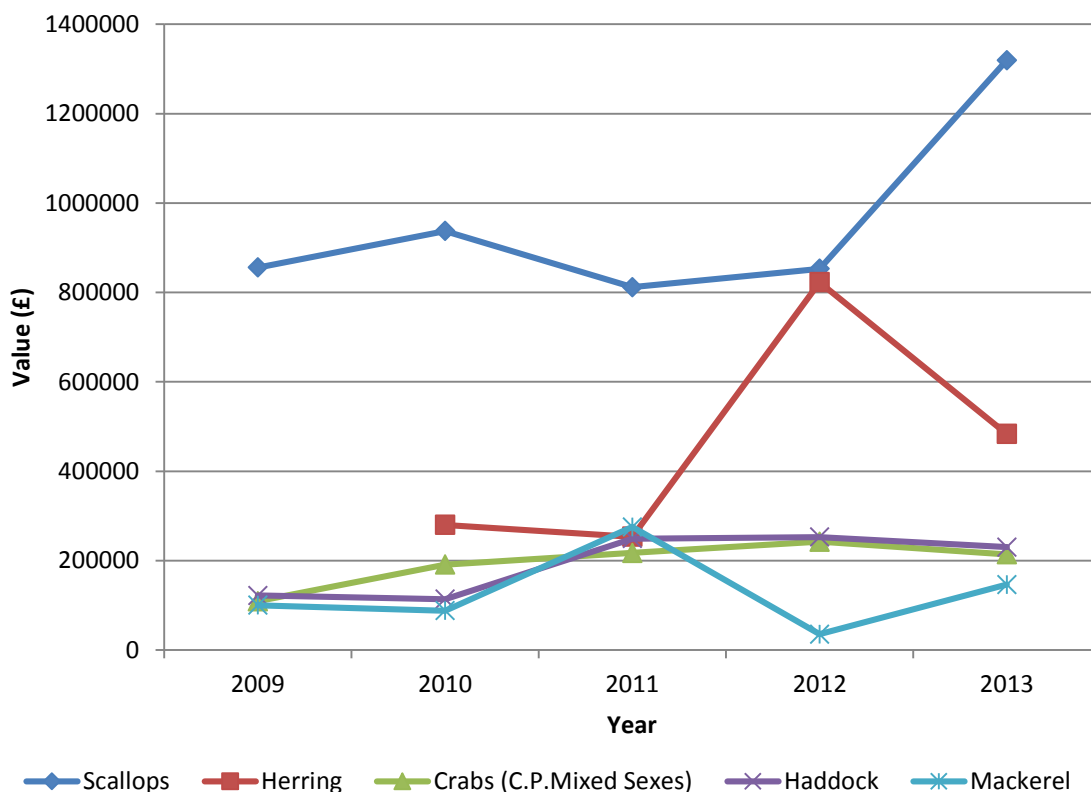
In this area scallops (£4,777,100) are the most valuable species; twice as valuable as the second most species, herring (£1,839,361) (see Table 3.3). The other species landed were valued at less than £1M during the five year period 2009 - 2013.

Figure 3.3 shows the yearly trends for the top five species by value. Scallops are consistently the most valuable catch; however, they do show a particularly large value in 2013 of over £1.3 million.

**Table 3.3 Ten highest landed value species for ICES Rectangle 43E8 (2009-2013)**

| Species                   | 2009-2013 Value (£) |
|---------------------------|---------------------|
| Scallops                  | 4,777,100           |
| Herring                   | 1,839,361           |
| Crabs (C.P.Mixed Sexes)   | 974,123             |
| Haddock                   | 967,469             |
| Mackerel                  | 645,381             |
| Lobsters                  | 552,717             |
| Nephrops (Norway Lobster) | 193,346             |
| Crabs - Velvet (Swim)     | 189,765             |
| Squid                     | 182,236             |
| Horse Mackerel            | 136,998             |

**Note:**  
Numbers rounded nearest UK pound.



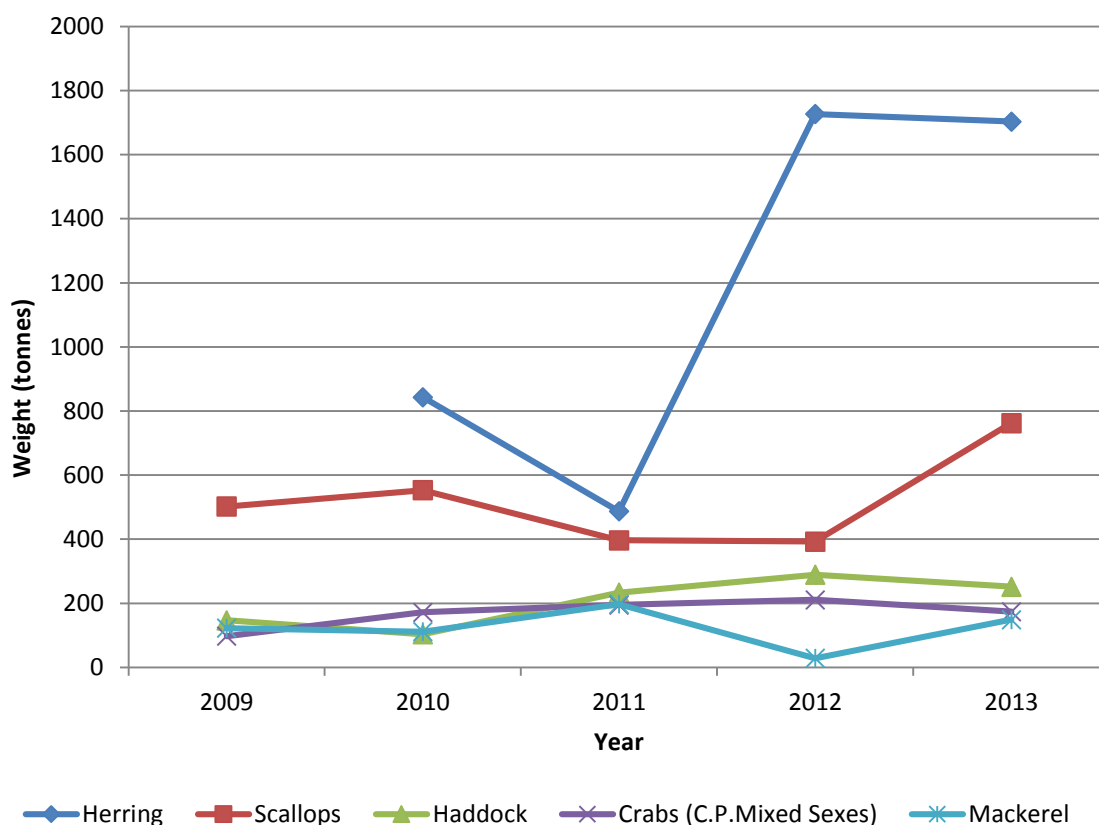
**Figure 3.3 ICES Rectangle 43E8 five highest value species yearly landings 2009-2013**

### 3.1.4 ICES Rectangle 43E8 key species by weight

Despite being the most valuable species in ICES rectangle 43E8, scallops were only landed in just over half (2,607 tonnes) the weight of herring (4,760 tonnes). Figure 3.4 shows the yearly trends of landings by weight where scallops are consistently the second largest catch by weight. It is notable that whilst the weight of herring landed in 2012 than 2013 remained relatively similar, there was significant drop in value that can be seen in Figure 3.3.

**Table 3.4 Ten highest landed weight species for ICES Rectangle 43E8 (2009-2013)**

| Species                   | 2009-2014 Landed Weight (tonnes) |
|---------------------------|----------------------------------|
| Herring                   | 4760.49                          |
| Scallops                  | 2607.03                          |
| Haddock                   | 1025.42                          |
| Crabs (C.P.Mixed Sexes)   | 849.72                           |
| Mackerel                  | 609.03                           |
| Horse Mackerel            | 169.13                           |
| Crabs - Velvet (Swim)     | 95.61                            |
| Whiting                   | 62.54                            |
| Nephrops (Norway Lobster) | 56.74                            |
| Lobsters                  | 52.59                            |



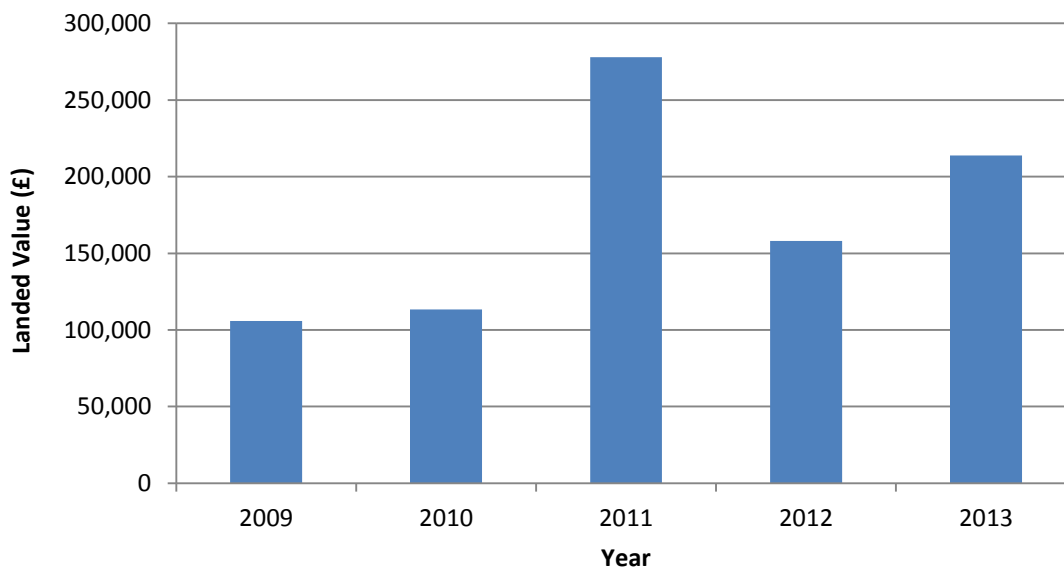
**Figure 3.4 ICES Rectangle 43E8 five highest landed weight species from yearly landings 2009-2013**

### 3.2 Temporal trends in landed catch

#### 3.2.1 Five year temporal trends for ICES Rectangle 43E7

Figure 3.5 shows the landed value of catch from ICES rectangle 43E7 for five years from 2009 to 2013 for all species. Overall there is a general trend of increasing values but within the variance of years this is not significant. The value of catch for 2011 stands out as being particularly high and a doubling

of the value of the previous year. This increase can be attributed to comparatively increased landed catches of squid, lobster and scallop (Figure 3.1).



**Figure 3.5 Yearly landed value of ICES Rectangle 43E7 (2009-2013)**

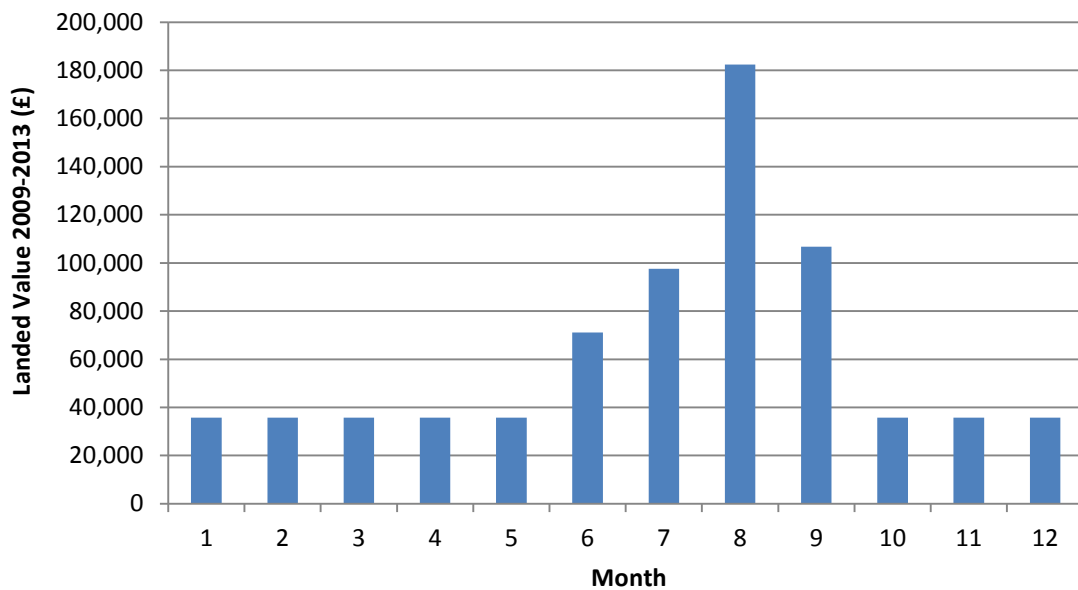
### **3.2.2 Seasonality of ICES Rectangle 43E7**

To enable a detailed assessment of seasonality, monthly data is assessed; however it is acknowledged there are limitations in the datasets, as where less than five vessels contribute to the statistics these are undisclosed.

Due to the suppression of this data much of the monthly data for total value of catch is unavailable. Values are shown for months where more than five vessels contribute and the remaining yearly value distributed evenly across the remaining months in Figure 3.6. This shows that the key months for fishing activity are June to September with the peak in August. However, without species specific data it is impossible to tell which fishery this is attributable to and whether all species follow a similar trend.

The consultation data indicated that within the development area, fishing activity targeting lobster and crab with creel pots is undertaken all year round.

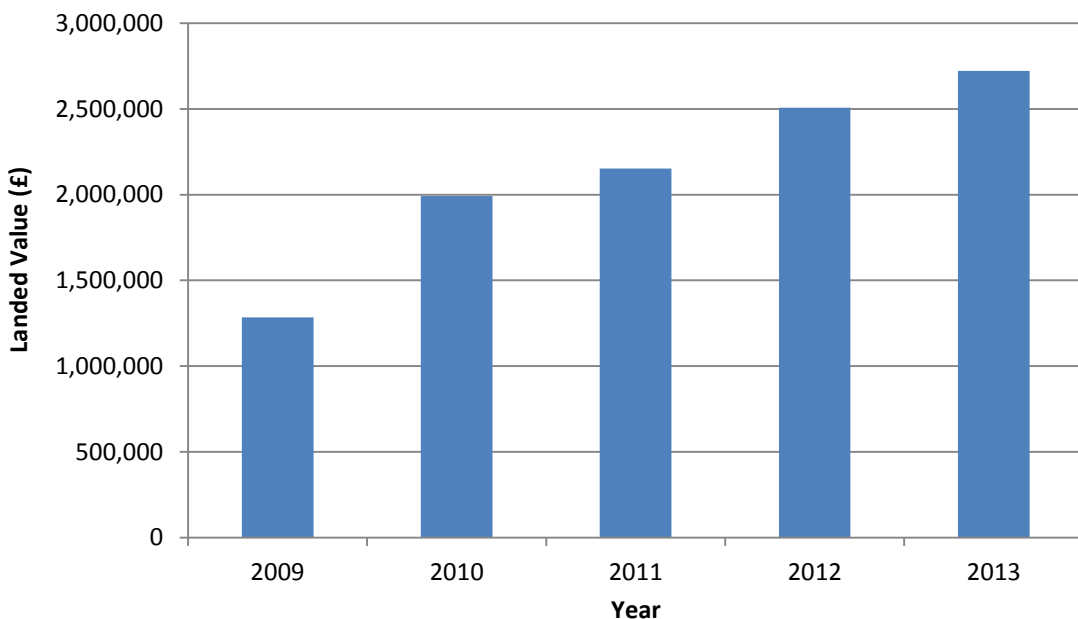




**Figure 3.6 Seasonality of catch in ICES Rectangle 43E7 (2009-2013 total monthly value). The value for undisclosed months (total yearly value minus value for disclosed months) is spread evenly across those months**

### 3.2.3 Five year temporal trends for ICES Rectangle 43E8

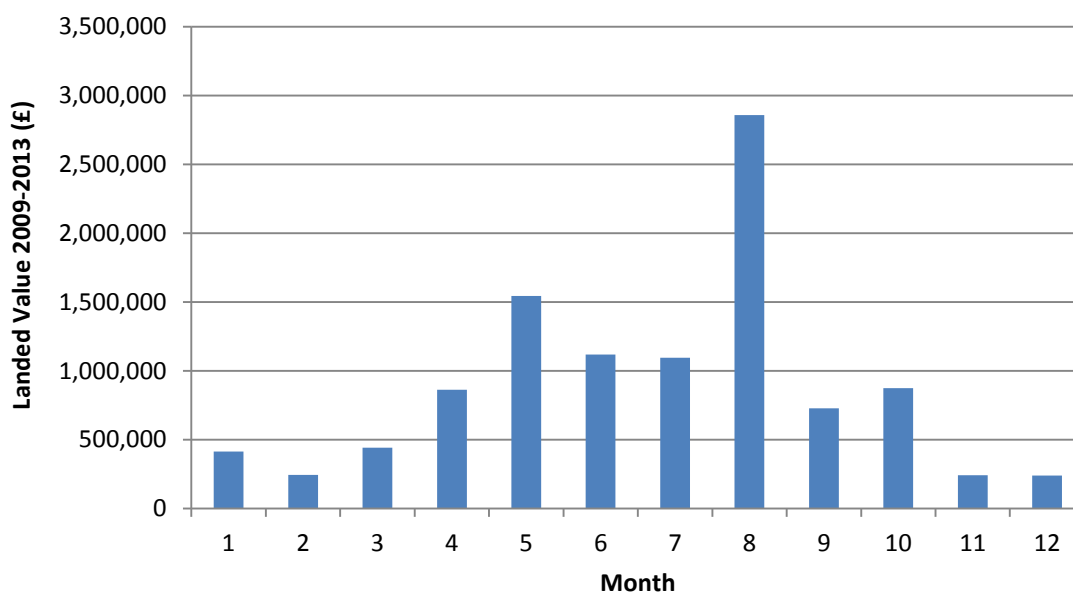
ICES rectangle 43E8 has shown a steady rise in yearly landed value from £1,284,653 in 2009 to £2,721,739 in 2013, as can be seen in Figure 3.7. Cross referencing to Figure 3.3, this increase can be attributed to increases in value of landed catch of scallops and herring, the two most valuable species in ICES rectangle 43E8.



**Figure 3.7 Yearly landed value of ICES Rectangle 43E8 (2009-2013)**

### 3.2.4 Seasonality of ICES Rectangle 43E8

Within ICES rectangle 43E8 a greater number of vessels contribute to the statistics and therefore there are less months undisclosed, presenting a more accurate overview of activity throughout the year. Largely it is the summer months that see the highest value of catch with peaks in May and August. However, without data for individual species it is not possible to conclude whether this is a trend across all species or whether the values are being dominated by the higher value catches.



**Figure 3.8 Seasonality of catch in ICES Rectangle 43E8 (2009-2013 total monthly value). The value for undisclosed months (total yearly value minus value for disclosed months) is spread evenly across those months**

### 3.3 Gear types and ports

Table 3.5 presents the numbers and size classes of commercial fishing vessels utilising home ports within the study area, according to the Marine Scotland (2014) data.

According to consultation responses the dominant gear type used within and around Nigg Bay is creel fishing; a type of basket pot used to catch crab and lobster. These are typically deployed from smaller vessels (<10 m in length) using home ports along the Scottish East Coast ports.

The larger vessels utilising the Scottish East Coast ports (> 10m in length) are typically either Nephrops trawlers or demersal trawlers.

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**Table 3.5 Number of active Scottish based vessels by main fishing method (1) as at 31st December: 2004 to 2013 (Scottish Government, 2014)**

| District                  | 10m & under     |         |                    |       | Pelagic (>10m) |               |       |       | Demersal (>10m)    |       |       |                    |       | Shellfish (>10m) |         |       |       | Over  |       |
|---------------------------|-----------------|---------|--------------------|-------|----------------|---------------|-------|-------|--------------------|-------|-------|--------------------|-------|------------------|---------|-------|-------|-------|-------|
|                           | <i>Nephrops</i> | Creel   | Other <sup>2</sup> | Total | Purse seine    | Pelagic trawl | Other | Total | Trawl <sup>3</sup> | Seine | Lines | Other <sup>4</sup> | Total | <i>Nephrops</i>  | Creel   | Other | Total | 10 m  | Total |
|                           | trawls          | fishing |                    |       |                |               |       |       |                    |       |       |                    |       | trawls           | fishing |       |       | Total |       |
| <b>Aberdeen</b>           | 2               | 75      | 1                  | 78    | -              | -             | -     | -     | -                  | -     | -     | -                  | -     | 4                | 3       | 1     | 8     | 8     | 86    |
| <b>Anstruther</b>         | 8               | 83      | -                  | 91    | -              | -             | -     | -     | -                  | -     | -     | -                  | -     | 11               | 1       | -     | 12    | 12    | 103   |
| <b>Buckie</b>             | 9               | 37      | 4                  | 50    | -              | -             | -     | -     | 12                 | 3     | 1     | -                  | 16    | 3                | 2       | 5     | 10    | 26    | 76    |
| <b>Eyemouth</b>           | 10              | 75      | 4                  | 89    | -              | -             | -     | -     | 5                  | 1     | -     | -                  | 6     | 11               | 3       | -     | 14    | 20    | 109   |
| <b>Fraserburgh</b>        | 1               | 75      | 20                 | 96    | 1              | 9             | -     | 10    | 48                 | 5     | -     | 1                  | 54    | 33               | 1       | 2     | 36    | 100   | 196   |
| <b>Peterhead</b>          | 1               | 48      | 2                  | 51    | 2              | 2             | -     | 4     | 32                 | 4     | -     | -                  | 36    | 5                | -       | 1     | 6     | 46    | 97    |
| <b>Scrabster</b>          | 1               | 81      | -                  | 82    | -              | -             | -     | -     | 1                  | 2     | -     | -                  | 3     | -                | 6       | 1     | 7     | 10    | 92    |
| <b>Total – East Coast</b> | 32              | 474     | 31                 | 537   | 3              | 11            | -     | 14    | 98                 | 15    | 1     | 1                  | 115   | 67               | 16      | 10    | 93    | 222   | 759   |

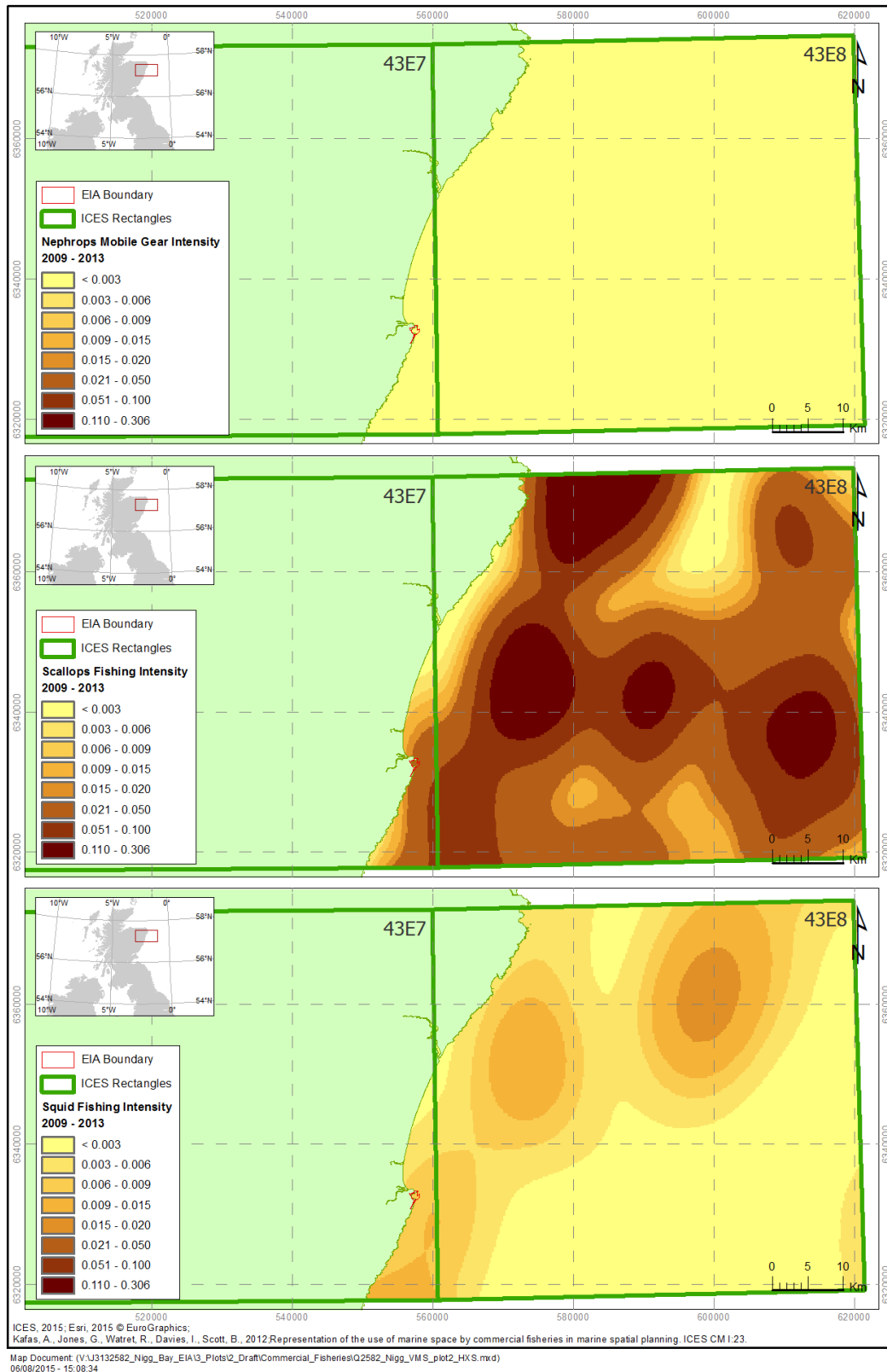
### **3.4 Spatial trends in activity**

Data used to inform a spatial activity includes VMS tracking. Boats over 15 m in length are required to carry a VMS tracker to record their position. As a result there are limitations to interpreting the data set as it can't be assumed that small boat activity mirrors that of larger vessels. The VMS data used in this report has been supplied by Marine Scotland (2009-2013) based upon work done by Marine Scotland Science staff (Kafas, A., Jones, G., Watret, R., Davies, I., Scott, B., 2012). In the treatment of the data a gaussian kernel density estimation with a data-driven bandwidth selection approach (smoothed cross-validation) had been used to produce high quality contour maps with the aim to form a better estimate of the spatial extent of fishing activity and intensity. However, in this process of smoothing the data some of the finer resolution is lost.

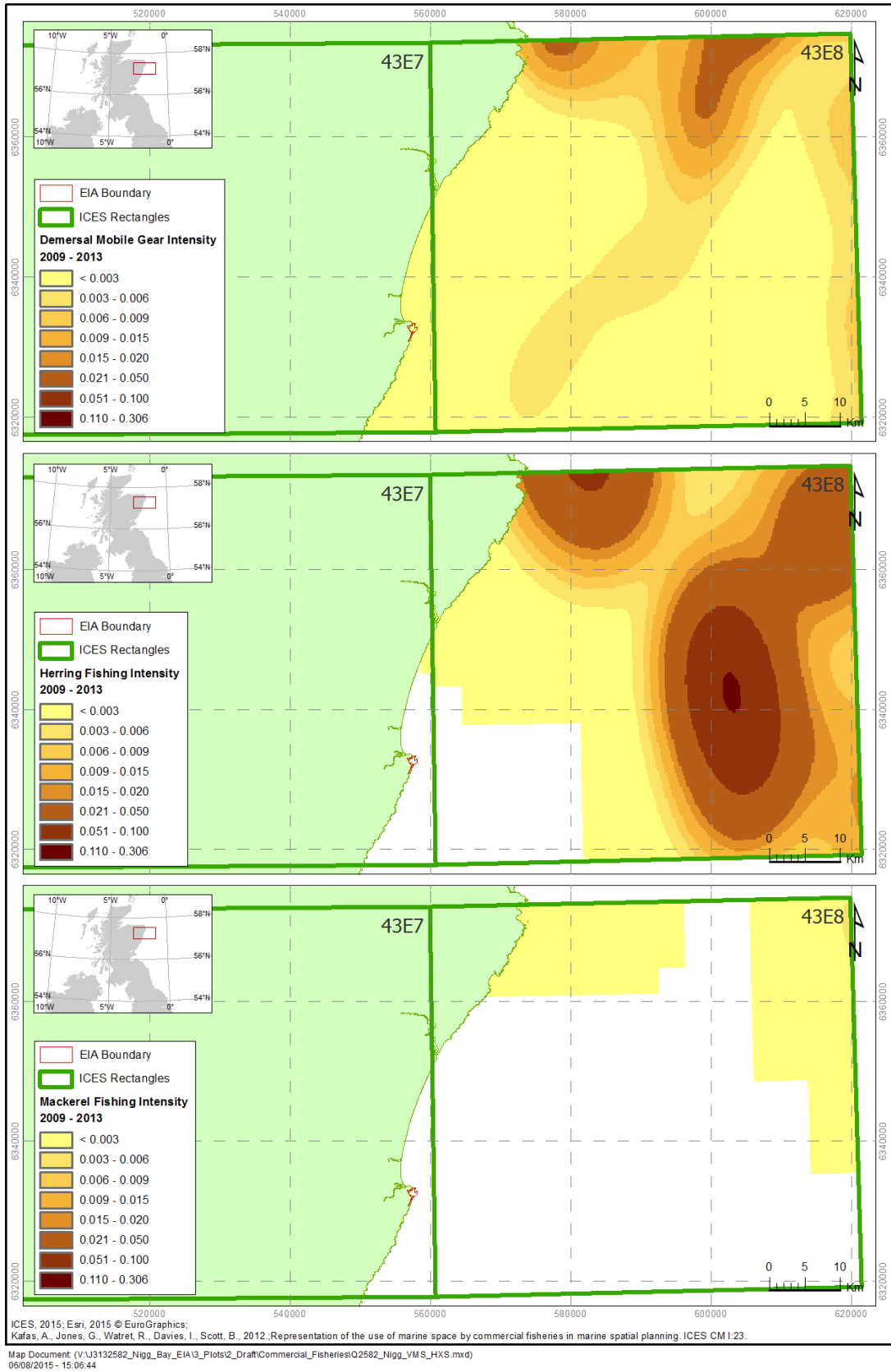
The VMS data show Nigg Bay is average or above average for the region in terms of fishing intensity from VMS data for *Nephrops*, scallops and squid as shown in Figure 3.9. The Nigg Bay development area has below average VMS intensity for demersal mobile gear and there are no recordings for herring and mackerel (Figure 3.10). However, for both *Nephrops* and Demersal gear it is not possible to draw conclusion about the activity relative to its immediate surroundings.

ScotMap is a Marine Scotland project which provides spatial information on the fishing activity of Scottish-registered commercial fishing vessels under 15 m in overall length. The data was collected during face-to-face interviews with individual vessel owners and operators and relates to fishing activity for the period 2007 to 2011. The data is aggregated and analysed to provide information on the monetary value, relative importance (relative value) and the usage (number of fishing vessels and crew) of seas around Scotland. However, the data has limitations in that not all of the targeted fishermen were able to contribute and not all chose to disclose earnings.

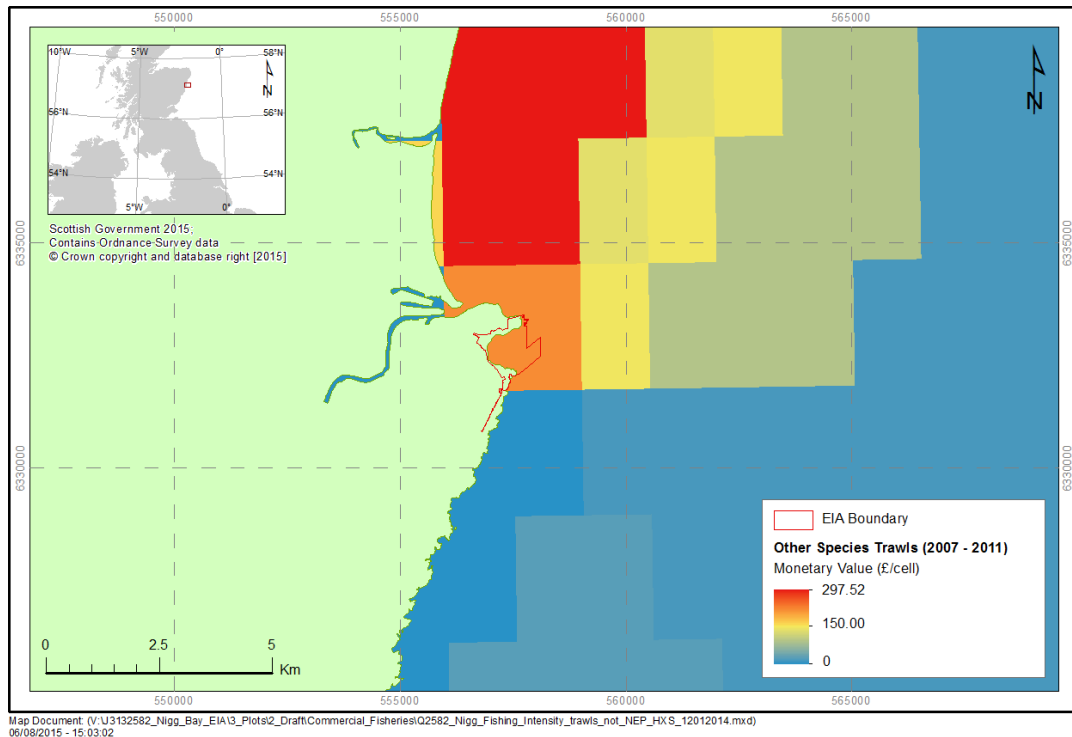
The ScotMap cells within which Nigg Bay sits are above average for other species trawls (Figure 3.11), lobster and crab pots (Figure 3.12) and mackerel lines (Figure 3.13). However, of these three the highest values are lobster and crab pots which are recorded as up to £5,000 per annum per cell where other species and mackerel are recorded in the region of hundreds of pounds rather than thousands. This correlates with consultation responses where at least two local vessels are reported to fish with creel type pots.



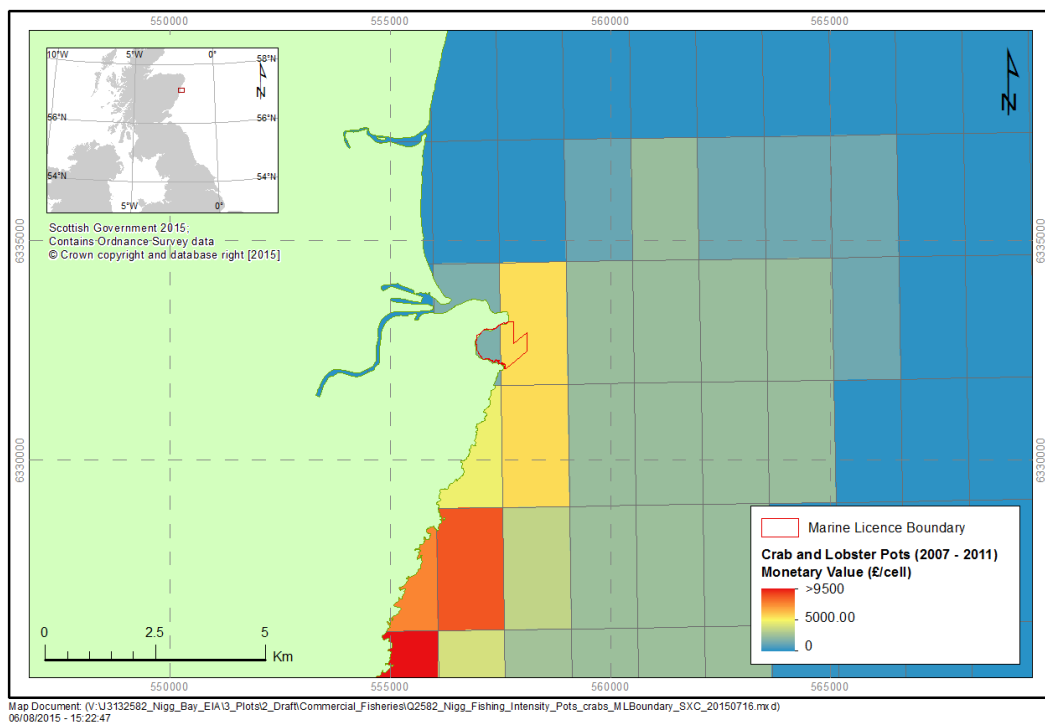
**Figure 3.9 VMS fishing intensity (vessel / day / km<sup>2</sup>) for Nephrops mobile gear, scallops fishing, and squid fishing based upon amalgamated layer for 2009-2013 (provided by Marine Scotland based upon Kafas et al, 2012).**



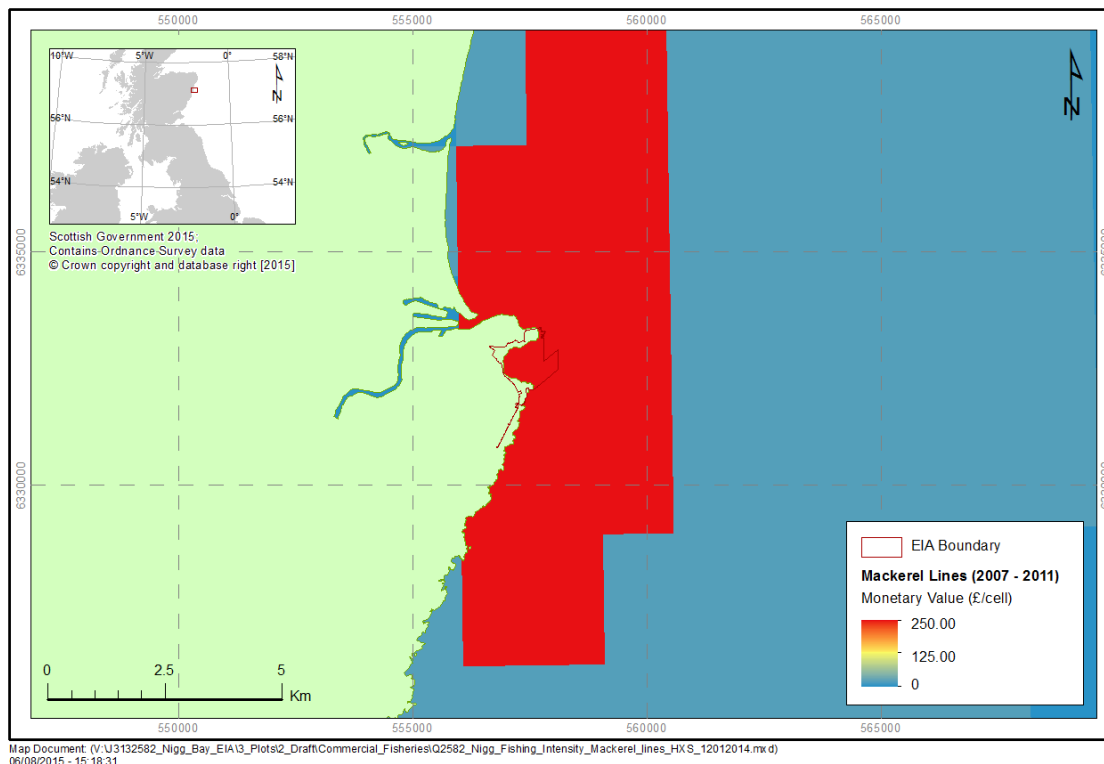
**Figure 3.10 VMS fishing intensity (vessel / day / km<sup>2</sup>) for demersal mobile gear, herring fishing, and mackerel; fishing based upon amalgamated layer for 2009 -2013 (provided by Marine Scotland based upon Kafas et al, 2012)**



**Figure 3.11 ScotMap fishing value of catch for other species trawls from small vessels (2007-2011)**



**Figure 3.12 ScotMap fishing value of catch for lobster pots from small vessels (2007-2011)**



**Figure 3.13 ScotMap fishing value of catch for other mackerel lines from small vessels (2007-2011)**

### 3.5 Salmon and sea trout

Atlantic salmon and sea trout are both anadromous migratory species which live in both freshwater and marine habitats during their life cycle. Salmon and sea trout fisheries target these species principally in river environments and also in some coastal areas known to be present in the area.

The main methods for catching salmon and sea trout in Scotland are (Marine Scotland, 2012):

- Rod and line catch (retained) – generally not used at sea and only within rivers;
- Rod and line catch (released, or catch and release) – generally not used at sea and only within rivers;
- Fixed engine (bag and stake nets) – restricted to coastal areas, not permitted in estuary limits;
- Net and coble – generally used in lower estuaries but sometimes in coastal areas.

The most recent catch records are those for 2013 and recorded by Marine Scotland with the data for the north east region, as presented in Table 3.6 to Table 3.8.

In the north east region the majority of salmon caught and retained is from fixed engine in the May – December season, with 4,942 caught from all methods in 2013. A further 6,423 grilse (salmon that have returned to fresh water after a single winter at sea) are caught taking the total to 11,365. Comparatively few sea trout are caught and retained at only 1,719 with the majority of these being targeted with net and cobble (749) followed by rod and line (596).



Nigg Bay is located within the Dee (Aberdeenshire) district. Table 3.7 shows that the Dee is relatively less important for caught and retained salmon and sea trout making up just 0.74% and 3.6% respectively of the region's total. In contrast the Dee is extremely important for the salmon and sea trout caught and returned making up 63% and 56.6% respectively of the regions total in 2013.

**Table 3.6 Number of wild salmon, grilse and sea trout caught and retained for the north east salmon fishery region during 2013 by method**

| Method                                                                                                                                                                                                     | Jan-Apr | May-Dec | Annual | Grilse | Salmon + Grilse | Sea Trout |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|--------|--------|-----------------|-----------|
| Rod and Line                                                                                                                                                                                               | 53      | 471     | 524    | 391    | 915             | 596       |
| Net and Coble                                                                                                                                                                                              |         | 992     | 992    | 1,635  | 2,627           | 749       |
| Fixed Engine                                                                                                                                                                                               | 81      | 3,345   | 3,426  | 4,397  | 7,823           | 374       |
| All Methods                                                                                                                                                                                                | 134     | 4,808   | 4,942  | 6,423  | 11,365          | 1,719     |
| <b>Note:</b><br>The data used in this table are Crown copyright, used with the permission of Marine Scotland Science. Marine Scotland is not responsible for interpretation of these data by third parties |         |         |        |        |                 |           |

**Table 3.7 Number of wild salmon, grilse and sea trout caught and retained for the north east salmon fishery region during 2013 by district**

| District                                                                                                                                                                                                   | Jan-Apr | May-Dec | Annual | Grilse | Salmon + Grilse | Sea Trout |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|--------|--------|-----------------|-----------|
| South Esk                                                                                                                                                                                                  | 6       | 3,143   | 3,149  | 4,136  | 7,285           | 198       |
| North Esk and Bervie                                                                                                                                                                                       | 100     | 1,331   | 1,431  | 2,021  | 3,452           | 1,009     |
| Dee (Aberdeenshire)                                                                                                                                                                                        | 10      | 44      | 54     | 31     | 85              | 62        |
| Don                                                                                                                                                                                                        | 16      | 85      | 101    | 71     | 172             | 20        |
| Ythan                                                                                                                                                                                                      | 1       | 165     | 166    | 128    | 294             | 350       |
| Ugie                                                                                                                                                                                                       | 1       | 40      | 41     | 36     | 77              | 80        |
| Totals                                                                                                                                                                                                     | 134     | 4,808   | 4,942  | 6,423  | 11,365          | 1,719     |
| <b>Note:</b><br>The data used in this table are Crown copyright, used with the permission of Marine Scotland Science. Marine Scotland is not responsible for interpretation of these data by third parties |         |         |        |        |                 |           |

**Table 3.8 Number of wild salmon, grilse and sea trout caught and released for the north east salmon fishery region from rod and line fisheries during 2013 by district**

| District             | Jan-Apr | May-Dec | Annual | Grilse | Salmon + Grilse | Sea Trout |
|----------------------|---------|---------|--------|--------|-----------------|-----------|
| South Esk            | 77      | 243     | 320    | 104    | 424             | 194       |
| North Esk and Bervie | 205     | 747     | 952    | 307    | 1259            | 157       |
| Dee (Aberdeenshire)  | 945     | 2924    | 3869   | 993    | 4862            | 845       |
| Don                  | 172     | 525     | 697    | 336    | 1033            | 107       |
| Ythan                | 1       | 88      | 89     | 39     | 128             | 168       |
| Ugie                 |         |         |        | 3      | 3               | 20        |
| <b>Totals</b>        | 1400    | 4527    | 5927   | 1782   | 7709            | 1491      |

**Note:** The data used in this table are Crown copyright, used with the permission of Marine Scotland Science. Marine Scotland is not responsible for interpretation of these data by third parties

#### 4. CONSULTATION

The consultation was undertaken between and 10 December 2014 and 12 January 2015. Project details and a response questionnaire were circulated by Fisheries Liaison Office Jennifer Moat of Agire Consultancy. The following organisations were contacted in addition to individual members known to operate from Aberdeen Harbour:

- The Scottish Fishermen's Federation;
- Scottish White Fish Producers Association;
- East Coast Inshore Fishery Group;
- The Scallop Association;
- Aberdeen Fish Producers Association;
- The Aberdeen Salmon Fishery Board.

Responses of 'no comment' were received from the Scottish White Fish Producers Association, The Scallop Association and The Scottish Fishermen's Federation who had in turn passed the communication on to their constituent associations.

In addition a number of individual fishermen were contacted who were known to use the development area. One response was received from a local fisherman reporting the use of the area by his and one other vessel. Both vessels target lobster and crab with creel pots, with up to 600 pots set along the coast between Aberdeen and Newtonhill. Their fishery is targeted on a year round basis. Of specific interest were rock areas at the north and south of Nigg Bay. It was also stated that the area could be an important nursery and breeding ground for lobster and crab. There was also belief that grounds further offshore could be affected by increased vessel traffic.

The consultation responses agree with VMS, ScotMap and ICES landings statistics that the development area is targeted for crab and lobster by smaller vessels.

## **5. CALCULATION OF FISHING VALUE**

### **5.1 Methodology: Calculation of fishing value**

#### **5.1.1 Value based on ICES landings data and VMS tracking**

The landings and VMS recording and sightings data, enable the interpretation of how different fisheries operate within the study area. Compiling an accurate economic evaluation is limited due to the nature of fishing activities, but by using VMS and surveillance data to show a spatial distribution of effort this can be used in collaboration with landings data to produce effort as a proxy for landed value. This is known as the effort as a proxy for landed value technique as detailed in Seafish's Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (2012) and requires 5 years of landings data. It is a recommended approach of Seafish; however, it can be constrained by the accuracy and coverage of VMS data.

The calculations assign a value estimation to the development area by taking the effort (expressed as vessels per day) for the full ICES Rectangle, and the effort for the development area, and calculating the proportional value of the development. As this methodology uses the proportional effort (based on VMS data) rather than the proportional area it is not skewed by the land based area of the ICES rectangle.

Nigg Bay is located totally within ICES Rectangle 43E7 from which landings are used to estimate value. (as shown in Figure 2.1). The estimated value of the project development area will therefore be calculated as the value of landings from the area weighted by effort to give a calculated value for the development. These can then be used in conjunction with data gathered through other sources, including consultation.

#### **5.1.2 Value based on ScotMap inshore fisheries data**

ScotMap inshore fisheries data layers are based upon consultation with inshore fishing fleets in Scottish waters. Based upon reported value of catch taken from known fishing grounds a GIS data layer is produced in 4.21 km<sup>2</sup> cells.

The Marine EIA boundary area straddles two cells, therefore its value can be estimated from its proportion contribution to the total fishable area in each cell.

### **5.2 Calculation**

#### **5.2.1 Value based on ICES landings data and VMS tracking**

The average annual value of landings from ICES rectangle 43E7, within which the development is located, is £173,848.78 for the years 2009 – 2013.

The Marine Licence Boundary covers an area of 0.77 km<sup>2</sup> (Figure 5.1) within ICES rectangle 43E7 (3,361 km<sup>2</sup>). Using the standard methodology outlined above of multiplying these areas by the average intensities within each gives a 'vessels per day', or effort value. The effort within the Marine Licence Boundary area is 0.026 vessels / day whilst the effort for the wider 43E7 area is 6.478 vessels /day. By proportioning out the total value of ICES rectangle 43E7 (£173,848.78) by the relative effort

an estimation for value of £693.18 per annum for the Marine Licence Boundary area is made. This calculation is provided below.

$V_{Nigg}$  = Value of Nigg bay Marine Licence Area

$V_{43E7}$  = Mean annual value of ICES rectangle 43E7

$E_{Nigg}$  = Effort within Nigg Bay Marine Licence Area (vessels /day)

$E_{43E7}$  = Effort within ICES Rectangle 43E7 (vessels / day)

$$V_{Nigg} = \left( \frac{V_{43E7}}{E_{43E7}} \right) \times E_{Nigg}$$

$$V_{Nigg} = \frac{£173,848.78}{6.478} \times 0.026 = £693.18$$

Therefore using Seafish's Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (2012) and using 5 years of landings data, the intensity weighted annual value of the development area to the commercial fishing fleet is £693.18.

Additional effects may be felt outside of the Marine Licence Boundary area where new shipping routes transit out of the new harbour. Baseline shipping routes from the existing harbour and predicted future shipping routes from the new harbour identified from ES Appendix 21-A: Shipping and Navigation are displayed in Figure 5.2. This additional area covers 2.4 km<sup>2</sup> (Figure 5.2) within ICES rectangle 43E7 (3,361 km<sup>2</sup>). Using the same methodology outlined above, the effort within the transit routes area is 0.101 vessels / day, whilst the effort for the wider 43E7 area is 6.478 vessels /day. By proportioning out the total value of ICES rectangle 43E7 (£173,848.78) by the relative effort an estimation for value of £2,863.11 for the additional area covered by transit routes which may be subject to secondary effects. This calculation is provided below.

$V_{routes}$  = Value of the area covered by new routes

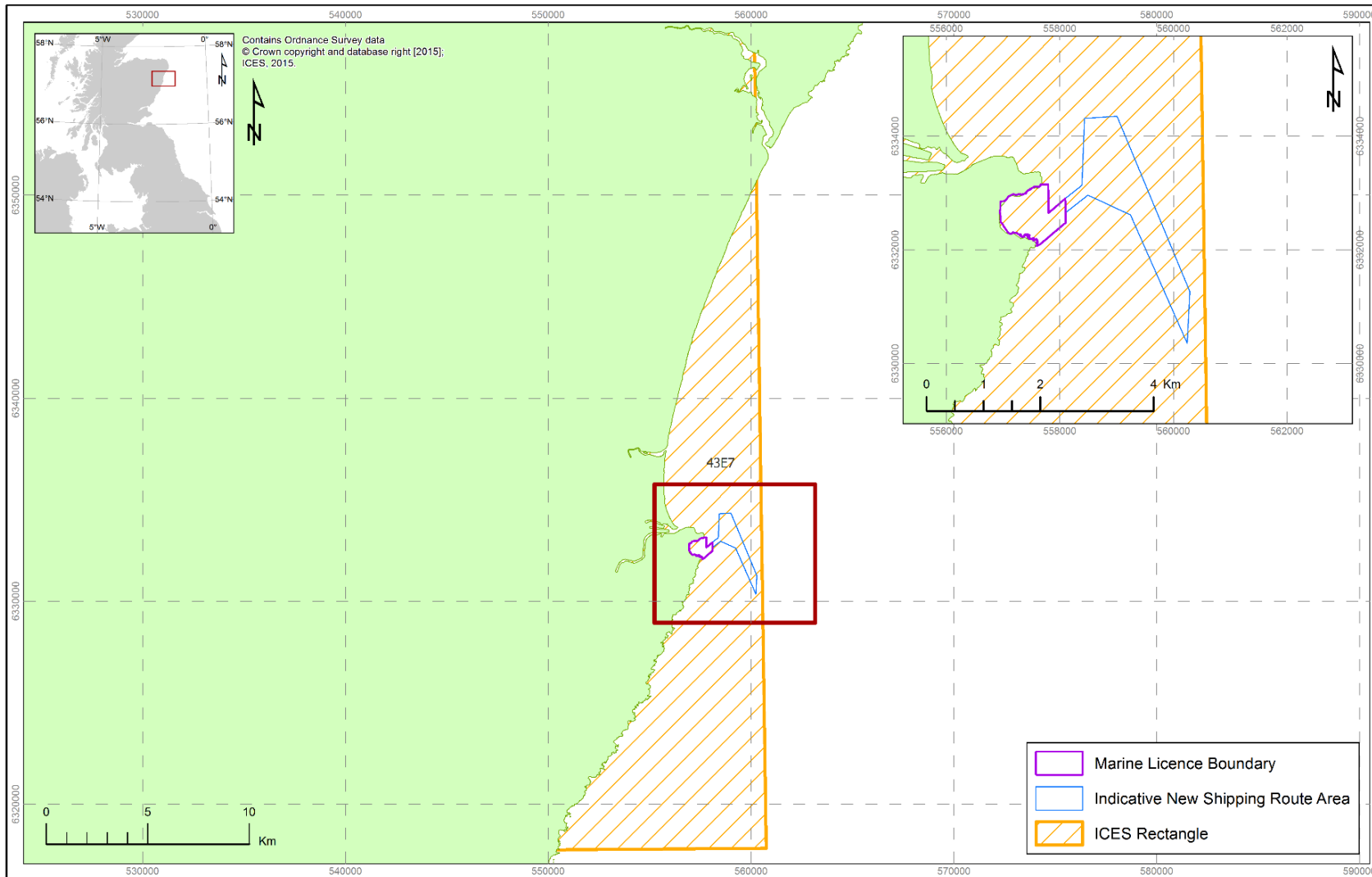
$V_{43E7}$  = Mean annual value of ICES rectangle 43E7

$E_{routes}$  = Effort within the area covered by new routes (vessels /day)

$E_{43E7}$  = Effort within ICES Rectangle 43E7 (vessels / day)

$$V_{routes} = \left( \frac{V_{43E7}}{E_{43E7}} \right) \times E_{routes}$$

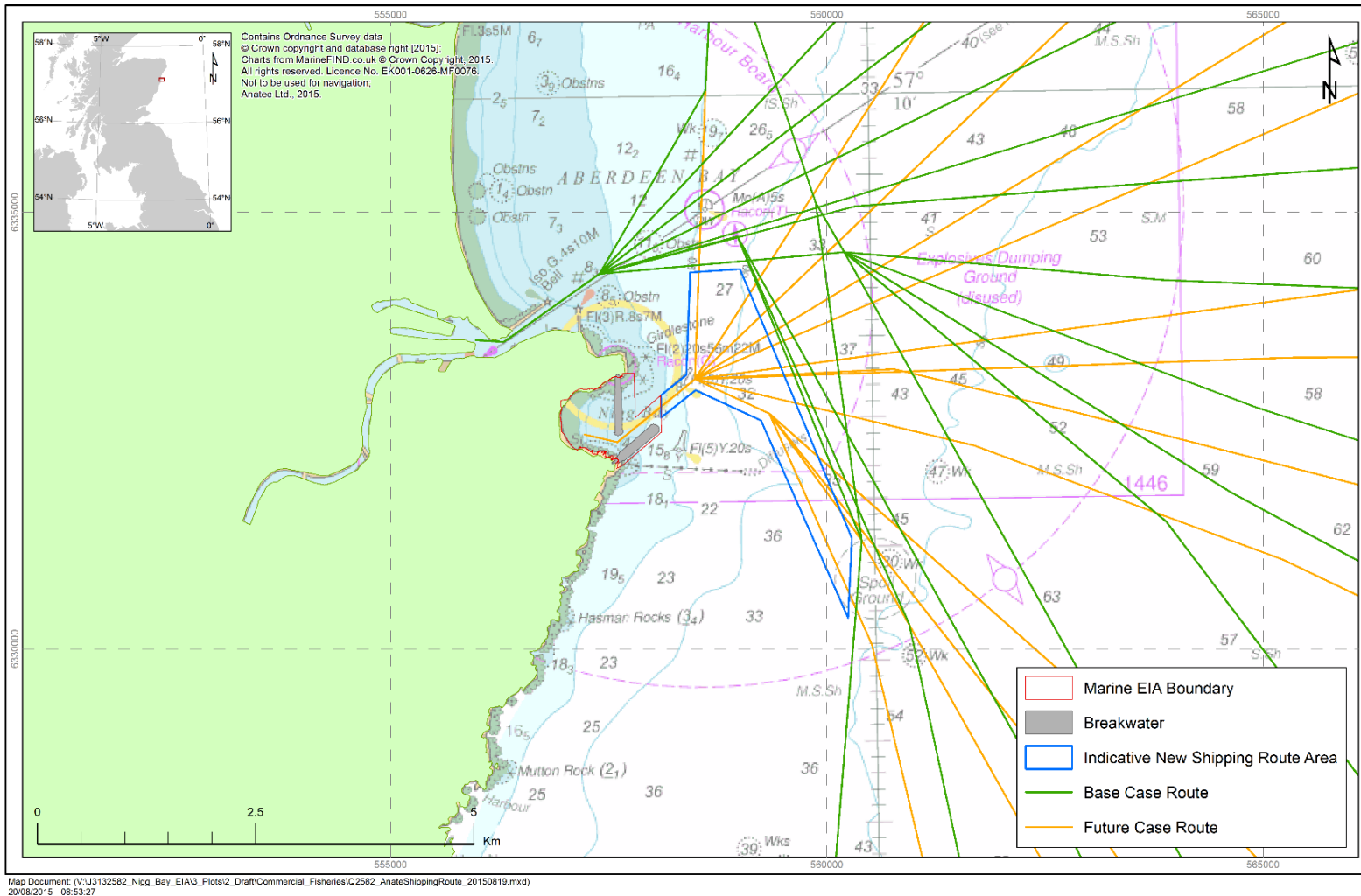
$$V_{Nigg} = \frac{£173,848.78}{6.478} \times 0.107 = £2,863.11$$



Map Document: (V:\J3132582\_Nigg\_Bay\_EI\A13\_Plots2\_Draft\Commercial\_Fisheries\Q2582\_Nigg\_Fishing\_Loc\_SXC\_20150814.mxd)  
21/08/2015 - 09:17:29

**Figure 5.1 Areas used in the calculation of fishing value based upon ICES landings and VMS tracking data**

**ABERDEEN HARBOUR EXPANSION PROJECT:  
BASELINE ASSESSMENT FOR COMMERCIAL FISHERIES**



**Figure 5.2 Identification of area impacted by new shipping routes**

### 5.2.2 Value based on ScotMap inshore fisheries data

The Marine Licence Boundary area sits within two cells of the ScotMap data (Figure 5.3, a and b). The western of the two cells has a value of £2,055.32 and a sea area of 1.47 km<sup>2</sup>, of which 0.36km<sup>2</sup> is within the Marine Licence Boundary area. The eastern of the two cells has a value of £5,985.50 and a sea area of 4.16km<sup>2</sup>, of which 0.41km<sup>2</sup> is within the Marine Licence Boundary area. Proportioning the value of each ScotMap cell by the amount of its fishable area covered by the Marine Licence Boundary area gives an estimation of value for the fishing of £1,097.52. This calculation is provided below.

$V_{Nigg}$  = Value of Nigg Bay Marine Licence Area

$V_a$  = Value of ScotMap western cell

$V_b$  = Value of ScotMap eastern cell

$A_a$  = Fishable area of western ScotMap cell

$A_b$  = Fishable area of eastern ScotMap cell

$A_{Nigga}$  = Area of Nigg Bay Marine Licence area within western ScotMap cell

$A_{Niggb}$  = Area of Nigg Bay Marine Licence area within eastern ScotMap cell

$$V_{Nigg} = \left( \frac{V_a}{A_b} \times A_{Nigga} \right) + \left( \frac{V_b}{A_b} \times A_{Niggb} \right)$$

$$V_{Nigg} = \left( \frac{£2,055.32}{1.47km^2} \times 0.36 km^2 \right) + \left( \frac{£5,985.50}{4.16km^2} \times 0.41km^2 \right) = £1,097.52$$

Additional effects may be felt outside of the Marine Licence Boundary area where new shipping routes transit out of the new harbour. This additional area covers 2.4 km<sup>2</sup> (Figure 5.2) over three cells of the ScotMap data (Figure 5.3, b, c and d). Cell b has a value of £5,985.48 and a sea area of 4.16 km<sup>2</sup>, of which 0.95 km<sup>2</sup> is within the new shipping routes area. Cell C has a value of £2,735.35 and a sea area of 4.21km<sup>2</sup>, of which 1.03km<sup>2</sup> is within the new shipping routes area. Cell D has a value of £5,921.15 and a sea area of 4.21km<sup>2</sup>, of which 0.42km<sup>2</sup> is within the new shipping routes area.

Proportioning the value of each ScotMap cell by the amount of its fishable area covered by the new shipping routes area gives an estimation of value for the fishing of £2,626.81. This calculation is provided below.

$V_{Route}$  = Value of new shipping routes area

$V_b$  = Value of ScotMap cell b

$V_c$  = Value of ScotMap cell c

$V_d$  = Value of ScotMap cell d

$A_b$  = Fishable area of ScotMap cell b

$A_c$  = Fishable area of ScotMap cell c

$A_d$  = Fishable area of ScotMap cell d

$A_{Routeb}$  = Area of new shipping routes area within ScotMap cell b

$A_{Routec}$  = Area of new shipping routes area within ScotMap cell c

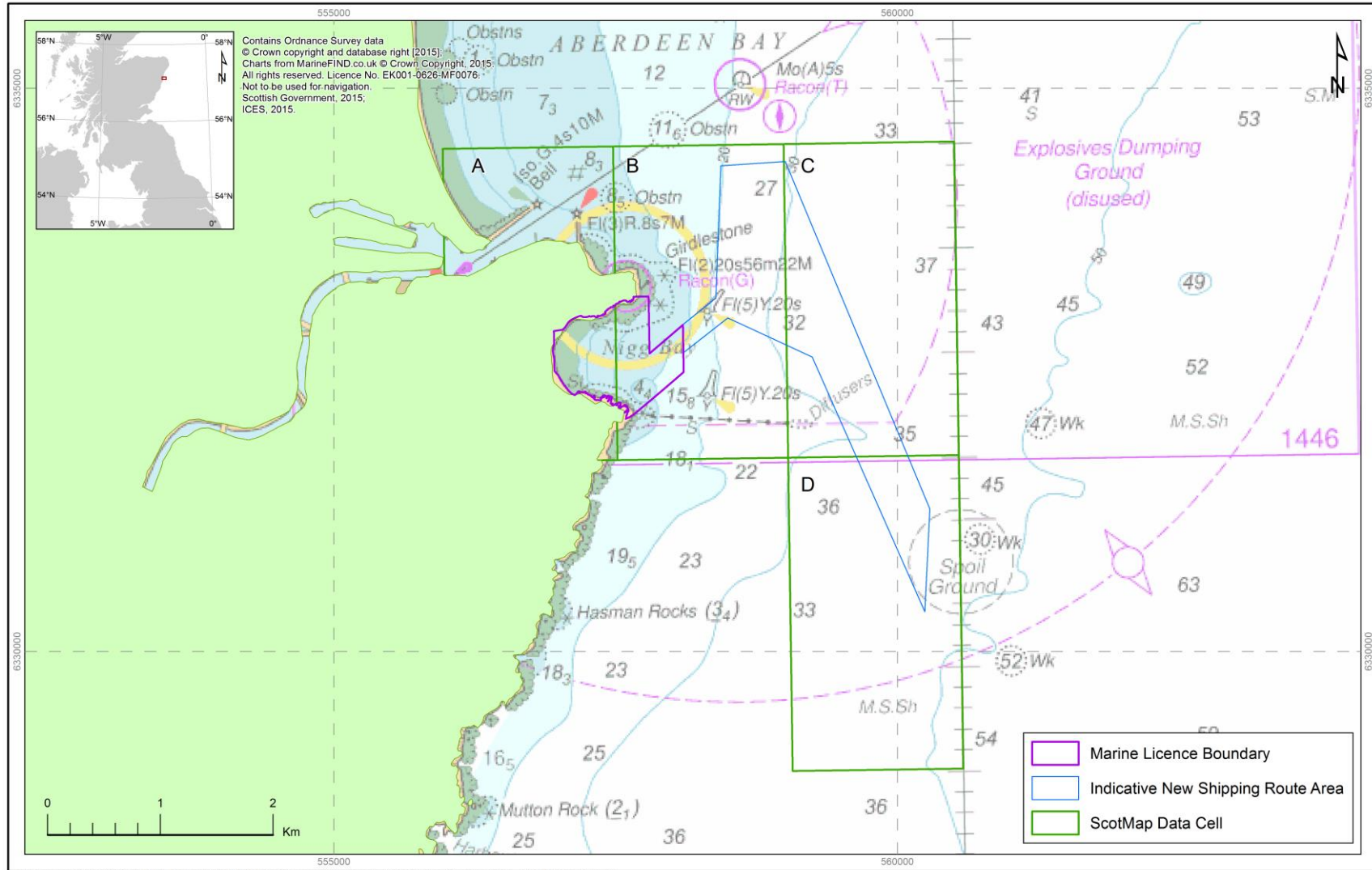
$A_{Routed}$  = Area of new shipping routes area within ScotMap cell d

$$V_{Route} = \left( \frac{V_b}{A_b} \times A_{Routeb} \right) + \left( \frac{V_c}{A_c} \times A_{Routec} \right) + \left( \frac{V_d}{A_d} \times A_{Routed} \right)$$

$$V_{Route} = \left( \frac{£5,985.50}{4.16km^2} \times 0.95 km^2 \right) + \left( \frac{£2,735.35}{4.21km^2} \times 1.03km^2 \right) + \left( \frac{£5,921.15}{4.21km^2} \times 0.42km^2 \right) = £2,626.81$$



**ABERDEEN HARBOUR EXPANSION PROJECT:  
BASELINE ASSESSMENT FOR COMMERCIAL FISHERIES**



**Figure 5.3 Overview of ScotMap cells and Marine Licence Boundary**

## **6. OVERVIEW OF POTENTIAL IMPACTS**

### **6.1 Implications for fisheries during the construction phase**

During the construction phase fishing vessels will be displaced from the development area. This has the potential to impact upon adjacent fishing grounds as local vessels will be forced to use other areas, where space allows. The magnitude of the impact is considered to be low as the displacement area is small. The sensitivity of receptor is considered to be low as comparatively few vessels target the area and there are similar grounds located along the coast to the south. Ongoing dialogue is recommended with the consultation respondents to mitigate any likely impacts on their activity as a direct result of the development.

Indirect impacts may arise where there is potential for key fish and shellfish habitats to be impacted. Consultation responses indicated that the stony reefs in the North and South of the Bay are key breeding grounds for lobster and crab. The EIA will ensure that a thorough assessment of likely impacts on these grounds is undertaken.

The navigational safety and indirect impacts on commercial fishing resource will be considered in the ES in context of the findings of the navigation and shipping assessment.

### **6.2 Implications for fisheries during operational phase**

Post construction, exclusion areas may be instigated by AHB to ensure navigational safety within the harbour and on the approach to the harbour. Additionally, the physical changes may impact on the baseline activity, specifically the potting focusing on lobsters and crabs which target the rock bottom where the increase in the number of vessels utilising the area and routes out of the harbour has the potential to produce a physical barrier to fishing activity. This will cause a loss of fishing resource and increased pressure on other similar areas. The magnitude of the impact is low as the area lost is small in comparison to the available grounds. The value of the commercial fishing in the area is low in context of the wider region and therefore the sensitivity of the receptor is low. However ongoing consultation with local fishermen is recommended to identify any specific concerns.

### **6.3 Adverse impacts on commercially exploited fish and shellfish populations**

This technical report considers the direct impact on commercial fishing activity. Indirect impact from effects on commercial fish populations will be considered in relation to the fish ecology impact assessment as part of the ES. Salmon and sea trout are not fished directly within the development area and therefore there will be no direct impact; however, the possible indirect impact will be considered in reference to the fish and shellfish ecology impact assessment within the ES.

## **7. CONCLUSIONS**

The area of the development is small and contributes to inshore fisheries targeting lobsters and crabs using creel gear; however, similar grounds are available in the vicinity. The offshore commercial fishing fleets do not target the development area. The value of the area is low and therefore the majority of impacts are considered to be minor, impacting upon a few local vessels.

**8. REFERENCES**

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## APPENDIX A

### Nigg Bay – Aberdeen Harbour Development

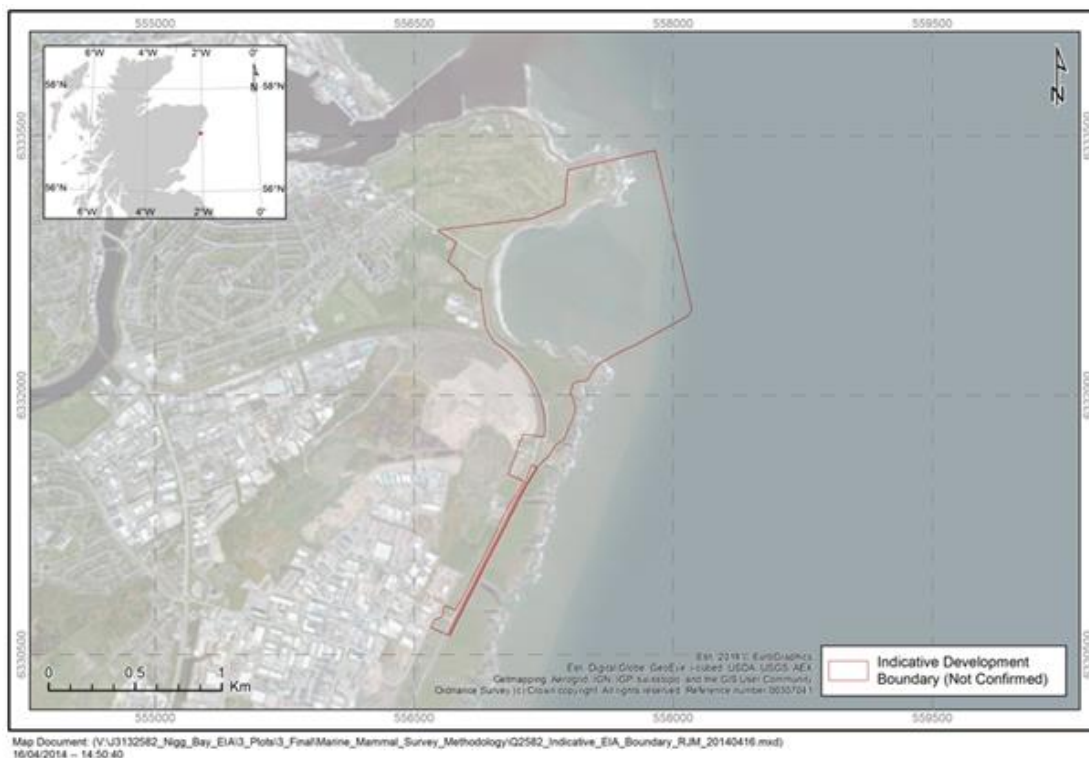
#### Background

Due to a rapid expansion of activities in and around Aberdeen Harbour the Harbour Board is looking to expand its capacity and facilities.

The proposed Aberdeen Harbour Development (AHD) would occupy a large proportion of Nigg Bay, comprising approximately 1400m of new quays (13-14 new berths). The indicative site boundary of the AHD, including for the extent of plant and associated operational areas, is illustrated below.

The facility will be designed to accommodate the following:

- Offshore construction/decommissioning/dive support vessels of up to 145m in length;
- Platform support vessels in excess of 90m in length;
- Cruise vessels;
- Passenger and vehicle ferries – new generation ferries;
- Liquid bulk vessels – primarily small product carriers of fuels up to 10,000 dwt;
- General cargo vessels.



This is an important stage of the project whereby we are looking to gather as much information as possible from you regarding your activities in and around this area. This will all feed into the planning process. **Please email back your responses by the 12<sup>th</sup> January 2015.**

|                                   |  |
|-----------------------------------|--|
| Name                              |  |
| Vessel Name and number            |  |
| Contact Details (phone and email) |  |

|                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Question 1</b>                                                                                                                                         |
| Can you please describe any commercial fishing activity which you undertake in the proposed development area? (please feel free to mark on the map above) |
|                                                                                                                                                           |

|                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------|
| <b>Question 2</b>                                                                                                          |
| Can you please indicate as to whether this proposed development will hinder your access to areas where you currently fish? |
|                                                                                                                            |

Question 3

Can you please indicate which species you currently fish for and at which times of year?

Question 4

Can you please indicate any other effect which you believe this development could have on your commercial activities?

Question 5

Is there anyone else that you believe should be contacted regarding their commercial fishing activities in this area?

| Question 6                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------|
| We are interested to know how you could like to be kept informed regarding progress with this development? Please tick which you prefer? |
| <br>By Letter<br><br><br>Open Meeting<br><br><br>By phone                                                                                |

Thank you for completing the questionnaire.