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Glossary

10 - 15 metre	Category of fishing vessels that is between 10 and 15 metres in length.
12 nm limit	Territorial waters of European Union (EU) Member States extend to 12 nm. The coastal Member State manages these waters exclusively within the limits.
6 nm limit	UK vessels have exclusive access to fish within 6 nm of the coast.
6 nm - 12 nm limit	Some access is allowed for certain EU Member States in identified areas around the UK coast, based upon historic access.
Baseline	Existing environmental conditions
Creeling	The Scottish designation for potting, also referred to as static gear. The use of small cages or baskets to capture shellfish such as crabs or lobster.
Demersal	Fishing activities or species located near or on the seabed.
Fisheries Liaison Officer (FLO)	An individual who works as an intermediary between a wind farm developer and the fishing communities ensuring good communication.
Fisheries Industry Representative	A member of the fishing community, who assists the Fisheries Liaison Officer in disseminating information to local skippers and gives feedback on the project.
ICES Rectangle	ICES rectangles create a grid dividing up the earth's surface. They are each aligned to 1° of longitude and 30' of latitude and, for the most part, cover an area of approximately 900 nm ² .
Over-15 metres	Category of fishing vessels that are greater than 15 metres in length.
Pelagic	Fishing activities or species located in the water column.
Quota	A measure of the quantity of a species that can legally be landed within a set period as determined through the Common Fisheries Policy.
Territorial water	0-12 nautical miles from the coast baseline
Under-10 metre	Category of fishing vessels that are less than 10 metres in length.

Abbreviations and Acronyms

Cefas	Centre for Environment, Fisheries and Aquaculture Science
CfD	Contract for Difference
CFWG	Commercial Fisheries Working Group
CIA	Cumulative Impact Assessment
CFMS	Commercial Fisheries Mitigation Strategy
CMP	Construction Management Plan
CMS	Construction Method Statement
CPA	Coastal Protection Act
Defra	Department for Environment, Food and Rural Affairs
DFO	District Fishery Office
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
EMP	Environmental Management Plan
ES	Environmental Statement
EU	European Union
FEPA	Food and Environmental Protection Act
FIR	Fishing Industry Representative
FLO	Fisheries Liaison Officer
FLOWW	Fisheries Liaison and Offshore Wind and Wet Renewables Group
FTOWDG	Forth and Tay Offshore Wind Developers Group
IALA	International Association of Lighthouse Authorities
ICES	International Council for the Exploration of the Sea
ICOL	Inch Cape Offshore Limited
IFG	Inshore Fisheries Group
LMP	Lighting Management Plan

m	metre
MASTs	Marine Alliance for Science and Technology for Scotland
MCA	Maritime and Coastguard Agency
MCEU	Marine Consents and Environment Unit
MMO	Marine Management Organisation
MS	Marine Scotland
MS-LOT	Marine Scotland Licensing Operations Team
MSS	Marine Scotland Science
NLB	Northern Lighthouse Board
nm	nautical mile
NRA	Navigation Risk Assessment
NSP	Navigational Safety Plan
OfTW	Offshore Transmission Works
OMP	Operations and Maintenance Plan
OnTW	Onshore Transmission Works
OSP	Offshore Substation Platforms
OSPAR	Convention for the Protection of the Marine Environment of the North East Atlantic
O&M	Operations and Maintenance
PEMP	Project Environmental Management Plan
SFF	Scottish Fishermen's Federation
SNH	Scottish Natural Heritage
SSC	Suspended Sediment Concentrations
TCE	The Crown Estate
TAC	Total Allowable Catch
UK	United Kingdom
UKFIM	UK Fisherman's Information Mapping Data
UKFEN	UK Fisheries Economic Network

VMP	Vessel Management Plan
VMS	Vessel Monitoring System (satellite tracking data)
WTG	Wind Turbine Generators

14 Commercial fisheries

14.1 Introduction

- 1 This chapter provides an assessment of the potential impacts of the construction, operation and decommissioning of the Inch Cape Wind Farm and Offshore Transmission Works (OfTW) (the Development) upon commercial fishing activities. An assessment of the potential cumulative impacts arising from the Development in conjunction with other projects is also included.
- 2 Commercial fishing is defined as any legal fishing activity undertaken for declared taxable profit.
- 3 The following appendices and chapters should be read in conjunction with this chapter and the introductory chapters 1-8:
 - Appendix 14A: Commercial Fisheries baseline technical report;
 - Appendix 14B: Salmon and Seatrout baseline technical report;
 - Appendix 14C: Commercial Fisheries Baseline Development Area (from Inch Cape 2013 Environmental Statement (ES))
 - Chapter 9: Natural Fish and Shellfish; and
 - Chapter 15: Shipping and Navigation.
- 4 Salmon and seatrout fisheries are not considered in this chapter as they were scoped out of the assessment (Table 14.1) although the baseline information for these fisheries was updated (*Appendix 14B*).

14.1.1 Commercial Fisheries Working Group

- 5 At the time of writing, the Commercial Fisheries Working Group (CFWG), comprising of representatives from fishing organisations and fishing communities in the Forth and Tay area, Inch Cape Offshore Limited (ICOL), Seagreen, Neart na Gaoithe, and Marine Scotland Science (MSS), are scheduled to hold a CFWG meeting in August 2018. The reactivation of this group will offer developers in the Forth and Tay and the fishing industry a forum for collaborative discussions. Further information on ICOL's commitment to participate in the group is provided in *Section 14.5.2: Embedded Mitigation* below.

14.2 Consultation

14.2.1 Commercial Fisheries

- 6 ICOL has engaged with the local and wider fishing industry in order to ensure the baseline information for this assessment reflects current practices. In order to facilitate effective dialogue, ICOL will appoint a Fisheries Liaison Officer (FLO) and Fishing Industry Representatives (FIRs) with an understanding of fisheries in the region of the Development

Area. Regular consultation has been undertaken to date and is ongoing with the organisations listed below:

- Scottish Fishermen's Federation (SFF)¹;
- Marine Scotland Licensing Operations Team (MS-LOT);
- Marine Scotland Science (MSS);
- North & East Coast Regional Inshore Fisheries Group (IFG);
- Fife Fishermen's Mutual Association (Pittenweem) Ltd;
- Fife Creel Fishermen's Association;
- Arbroath and Montrose Static Gear Association;
- Dunbar Fishermen's Association;
- Anglo-Scottish Fishermen's Association (St Abbs Region);
- Scottish White Fish Producers Association;
- Ten Metre and Under Association (Pittenweem);
- Cockenzie and Port Seton Fishermen's Association;
- Eyemouth Fishermen's Representative;
- Mallaig and North West Fishermen's Mutual Association;
- Scallop Committee of Scottish White Fish Producers Association;
- Fife Fishermen's Mutual Association;
- Scottish Pelagic Fishermen's Association;
- Aberdeen District Fishery Office (DFO);
- Anstruther DFO;
- Eyemouth DFO;
- Individual fishermen.

- 7 Following submission of the Scoping Report in April 2017, a scoping meeting was held on 26 May 2017 to discuss the scope of the commercial fish assessment. The SFF, MS-LOT and MSS were in attendance at the meeting, minutes of which were agreed and sent to MS-LOT.
- 8 Table 14.1 below summarises issues that were highlighted by the consultees in the Scoping Opinion, and provides a response from ICOL on each of these, where relevant if addressed in the Environmental Impact Assessment (EIA) Report this has been noted. This table also

¹ SFF represent; Anglo-Scottish Fishermen's Association; Fife Fishermen's Association; Fishing Vessel Agents & Owners Association (Scotland) Limited; Scottish Pelagic Fishermen's Association Limited; Orkney Fisheries Association; Mallaig and North-West Fishermen's Association Limited; Shetland Fishermen's Association and Scottish White Fish Producers' Association

includes a summary of other consultation which has been undertaken in relation to the assessment of the impacts of the Inch Cape Wind Farm and OfTW with relevant stakeholders. Prior to the submission of the EIA a further meeting was held to discuss the outcomes of the assessments and to identify any gaps within the assessment ahead of submission. The outcomes of these discussions have also been summarised in the table below. Please note consultation information raised by commercial fisheries stakeholders relating to natural fish and shellfish receptors is provided in *Chapter 9, Section 9.2*.

Table 14.1: Scoping responses and actions for commercial fisheries

Consultees	Scoping Response	ICOL Response
Scottish Ministers & SFF	Both the SFF and Scottish Ministers agree that the EIA should only concentrate on those receptors which may be subject to significant effects from the Development. The Scottish Ministers recommend that ICOL consider in detail the points raised by SFF.	Noted. Continued engagement with SFF has occurred in order to deal with specific points. Please see responses below for details.
Scottish Ministers, MSS & SFF	<p>1.Scottish Ministers noted they were satisfied with the proposal to update the commercial fish baseline and advise the inclusion of data from the UK Fishermen's Information Mapping Data (UKFIM) database at the Crown Estate (TCE) and any relevant data from Scotmap.</p> <p>2.SFF recommend inclusion of 7-10 years of data for scallops to take account of fluctuations in the population.</p> <p>3.The Scottish Ministers advise ICOL to obtain validation of the data from the fishing industry and to discuss with the SFF how this could best be done. SFF suggested, this could potentially be done through the CFWG.</p> <p>4.MSS provided a series of references that could be used to update the baseline data.</p> <p>5. The Scottish Ministers advise that the proposal to update the commercial fish baseline is acceptable and advise ICOL to take account of the detail of SFF's comments and the data sources listed above.</p>	<p>1.ICOL agreed that commercial fisheries baseline will be updated to cover the time period 2011-2016, and this updated baseline will be used to inform the assessment. The Commercial Fisheries Baseline Technical Report (<i>Appendix 14A</i>) for the Development will, therefore, follow on from the commercial fisheries baseline collected for the Inch Cape 2013 Application, which covered the time period 2001-2010. UKFIM database is not publicly available, however ICOL agreed that fishing distribution maps would be validated with the SFF who have access to the UKFIM. This approach was agreed with SFF as being appropriate.</p> <p>2. ICOL agreed that data from the both the updated baseline (<i>Appendix 14A</i>) and the baseline for the Development (<i>Appendix 14C</i>), will be used in the assessment on scallop fishing to ensure 7-10 years' worth of data will be drawn upon.</p> <p>3. Data collected will also be validated through consultation with the fishing industry. Through meetings with the SFF it was agreed this would be through validation meetings for the</p>

Consultees	Scoping Response	ICOL Response
		<p>under 15m fleet and through consultation with associations for the over 15m fleet. The re-establishment of the CFWG is due in August 2018, with the first meeting planned then.</p> <p>4. References provided by MSS will be used to assist the assessment.</p> <p>5. SFF comments have been taken into account and discussed with SFF in order to reach agreement over the scope of the assessment.</p>
SFF	<p>1.SSF disagree that all relevant receptors have been scoped into the EIA. This includes: The effect of smothering by suspended sediment has not been fully assessed for either <i>Nephrops</i> or scallops;</p> <p>2.Further analysis of the new design being proposed will be required to ascertain that temporary or permanent loss of access to fishing grounds, safety issues for fishing vessels and displacement of fishing activity is significantly less than for the original design;</p> <p>3.The SFF recommend a report prepared for TCE 'Changes to fishing practices around the United Kingdom (UK) as a result of the development of offshore windfarms';</p> <p>4.Interference with fishing vessels, in terms of vessel movements and queuing, will be a bigger issue and should be scoped in;</p> <p>5.The SFF want to be consulted on the Construction Management Plan (CMP), particularly in relation to defined navigation routes;</p> <p>6.The SFF do not accept that any of the worst case scenarios are Negligible or Minor or Moderate and want all the potential impacts scoped in until the baseline and projections can be shown to back up the claim;</p> <p>7.The SFF also note that the export cable corridor was decided without considering fishing activity and recommend a rerouting exercise takes place or that this is scoped in and that the affected local industry is consulted properly.</p>	<p>1. Within the Scoping Report for the Development, ICOL proposed that ecological impacts on fishing receptors was assessed within the Natural Fish Chapter (9), rather than the this Chapter. ICOL had proposed that the effects of smothering by suspended sediment was scoped out of this EIA as these impacts were not expected to be significant. Scottish Ministers asked ICOL to evaluate the potential impact of suspended sediment on scallops and <i>Nephrops</i>, should gravity bases be used, through a literature review of impacts on different life stages of these species, suspended plume modelling and examination of fishing patterns. Agreement reached with MSS that this could take the form of a discussion paper. In addition, as there is no connectivity between <i>Nephrops</i> and increased suspended sediments from gravity basis, it was agreed with MS- LOT that no further assessment is required on this species. Details of this discussion paper are provided in <i>Chapter 9 (Appendix 9D)</i>.</p> <p>2. The Scoping Report for the Development included validation of any impacts scoped out and this has been agreed by MS-LOT.</p> <p>3.ICOL agreed to take into</p>

Consultees	Scoping Response	ICOL Response
		<p>account the suggested Crown estate reference.</p> <p>4. Interference to fishing vessels from construction vessels is scoped in to the assessment.</p> <p>5. It is expected that the CMP would form part of the consent conditions, should the application receive consent. MS-LOT will advise at this time on which stakeholders they would require to consult on.</p> <p>6. The Scoping Report for the Development included validation of any impacts scoped out and this has been agreed by MS-LOT</p> <p>7. The impact of the cable route on fishing activity is scoped in to the assessment.</p>
Scottish Ministers & SFF	<p>1. SFF do not agree with what has been scoped out for the <u>CONSTRUCTION (& DECOMMISSIONING) PHASE</u>:</p> <p>Scottish Ministers suggest the following:</p> <p><i>Direct temporary habitat disturbance:</i></p> <p>The Scottish Ministers consider that the Original Development ES provided sufficient evidence for scoping out impacts which were considered not to be significant. The Scottish Ministers advise ICOL to discuss with SFF which data the SFF consider inadequate and update the baseline accordingly.</p> <p><i>2. Indirect disturbance as a result of sediment deposition</i></p> <p><i>Temporary increases in suspended sediment concentrations (SSC)</i></p> <p>The Scottish Ministers have suggested an approach for assessing the potential impact of smothering of <i>Nephrops</i> and scallops by suspended sediment in the Natural Fish and Shellfish chapter.</p> <p><i>3. Barrier effects, disturbance or physical injury associated with construction noise</i></p> <p>The Scottish Ministers have outlined an approach to assessing the impact of particle motion in the Natural Fish and Shellfish chapter. The impacts on hearing specialists will be scoped in and assessed for the Natural Fish and Shellfish receptor. The Scottish Ministers consider that the effects associated with construction noise are therefore dealt</p>	<p>1. ICOL has discussed <i>Direct temporary habitat disturbance</i> with SFF and agreement has been reached that this can be scoped out.</p> <p>2. Impacts from suspended sediment and deposition have been addressed though the acceptance of a discussion papers submitted to MS (see above) as part of the <i>Chapter 9 ,Appendix 9D</i>. Therefore this can be scoped out of the Commercial Fisheries assessment.</p> <p>3. Assessing the Impacts from barrier effects, disturbance or physical injury has been agreed with MS. It was agreed that any impact on ecological receptors should be dealt with within the Natural fish and shellfish chapter and its associated discussion papers, rather than in the Commercial fisheries chapter. Hence the Scope of commercial fisheries chapter assessment is agreed in full and will not consider these impacts.</p> <p>4. It is expected that the VMP would form part of the consent conditions, should the application receive consent. MS-</p>

Consultees	Scoping Response	ICOL Response
	<p>with appropriately.</p> <p><i>4.Safety issues for fishing vessels, obstacles on the seabed</i></p> <p><i>Obstacles on the seabed</i></p> <p><i>Interference to fishing activities arising from navigational conflict</i></p> <p>The Scottish Ministers consider that these should be scoped out of the Commercial Fisheries chapter and included in the Shipping and Navigation chapter. The Scottish Ministers recommend that ICOL have ongoing consultation with the SFF to ensure their concerns are taken into account in Vessel Management Plans (VMP) and the Navigational Risk Assessment (NRA).</p>	<p>LOT will advise at this time on which stakeholders they would require to consult. A new Navigation Risk Assessment (NRA) is not required as a validation exercise was carried out, and it was agreed with Maritime and Coastguard Agency (MCA) and Northern Lighthouse Board (NLB) that the Inch Cape 2013 ES NRA remained valid following a validation exercise (discussed further in <i>Chapter 15</i>). Both the Marine Traffic Validation Study and the original NRA can be found in <i>Appendix 15A: Marine Traffic Validation Survey</i> and <i>15C.1: Navigational Risk Assessment (NRA)</i> respectively.</p>
Scottish Ministers & SFF	<p>1.SFF do not agree with what has been scoped out of the assessment for the <u>OPERATION AND MAINTENANCE PHASE</u>:</p> <p>Scottish Ministers suggest the following:</p> <p><i>Long term loss of original habitat</i></p> <p>SFF consider this impact should be scoped in as evidence from other developments indicates that this impact is significant (see Crown Estate reference above for more information). The Scottish Ministers advise ICOL to consider the reference and have further discussion with SFF as to whether this changes the effect of the potential impact.</p> <p>The Scottish Ministers agree that temporary or complete loss, or restricted access to fishing grounds should be scoped in as outlined in Table 9-29. The Scottish Ministers recommend that ICOL use TCE document as suggested by SFF to inform the scope of work on this. The Scottish Ministers agree that displacement of fishing activity and increased steaming times to fishing grounds should be scoped in as outlined in Table 9-29.</p> <p><i>2.Behavioural responses to Electromagnetic Fields (EMF) associated with cabling</i></p> <p><i>Disturbance or physical injury associated with operational noise</i></p> <p><i>Effect on fish and shellfish resources due to reduced fishing effort within Development Area</i></p> <p><i>Creation of new habitat due to presence of</i></p>	<p>1.ICOL has discussed <i>Long term loss of original habitat</i> with SFF and agreement has been reached that this can be scoped out. TCE paper referred to relates to Displacement of fishing activity, rather than habitat loss, hence this report will be taken into account in the assessment of Displacement of Fishing Activity. Increased steaming times will be assessed.</p> <p>2.Scope of assessment now agreed in full during subsequent consultation.</p>

Consultees	Scoping Response	ICOL Response
	<p><i>project specific infrastructure</i></p> <p>This was discussed further with SFF (telephone call 20 July 2017 and follow up email of 25 July 2017) and SFF agreed these could be scoped out as outlined in Table 9-29.</p> <p>SFF raised some concern about the effect of development impacts on fishing and suggested that to fully assess the effect on fish and shellfish resources there would need to be monitoring of all catches. The Scottish Ministers referred back to the Inch Cape 2013 ES and note that this potential impact is related to the effect on the fish and shellfish resource if there were a change in fishing pressure i.e. if there was a reduction in fishing activity within the Development Area due to the presence of infrastructure there may be an impact on existing fish and shellfish resources. The Inch Cape 2013 ES suggested this would be negligible/minor (positive). The impact on the activity of fishing rather than the resource is scoped in (Complete or restricted access to fishing grounds) which would take into account SFF's concerns.</p>	
Scottish Ministers & SFF	<p><i>1. Temporary habitat disturbance via Operations and Maintenance (O&M) activities</i></p> <p>This was discussed further with SFF (telephone call 20 July 2017 and follow up email of 25 July 2017) and SFF noted that as long as the effects were temporary then this effect could be scoped out. The Scottish Ministers advise ICOL to have ongoing discussion with SFF to confirm the temporary nature of the disturbance.</p> <p><i>2. Safety issues for fishing vessels, obstacles on the seabed</i></p> <p><i>Interference to fishing activities arising from navigational conflict</i></p> <p>As discussed above for construction. SFF noted that there had been issues at the Beatrice Offshore Wind Limited site in relation to vessels 'queuing' while waiting to undertake work on the site. The Scottish Ministers agree this effect can be scoped out and advise ICOL to discuss with SFF how this issue can be dealt with in the Shipping and Navigation chapter.</p> <p>The Scottish Ministers note that for the export cable the effects on anchoring operations and snagging risk for commercial fishing vessels are scoped in to the Development EIA for the Shipping and Navigation chapter. ICOL should note the concerns of the SFF and ensure that</p>	<p>1. Should the Development be constructed ICOL will continue to liaise with SFF over O&M activity.</p> <p>2. Should the Development be consented, SFF will be consulted and their concerns taken into account within the VMPs, which take into account appropriate mitigation measure, and the NRA, that will be produced as part of the Marine Licence requirements.</p> <p>3. ICOL will work with SFF and other relevant stakeholders to agree Marine Licence conditions. ICOL acknowledges the Scottish Ministers comment that the production of a Fisheries Management and Mitigation Plan /Strategy pre-application would save time post consent. As the detailed information on construction to meaningfully inform this is not yet known, ICOL commit to the strategy as part of a consent condition, which will be subject to</p>

Consultees	Scoping Response	ICOL Response
	<p>they are consulted.</p> <p>SFF provided detailed information on the relevance of the consent conditions but note that they do not accept that the potential impacts on fisheries would be less in the Development and would expect to see a full and proper assessment done. SFF notes the importance of consulting SFF and ensuring that mitigation measures are agreed. The SFF notes that the Fisheries Liaison Officer must fully understand and engage in the responsibilities outlined for their role. SFF also raises concerns regarding the route of the OfTW.</p> <p>3. The Scottish Ministers advise ICOL to work with the SFF, other relevant stakeholders and the Scottish Ministers to agree the text of the consent conditions. The Scottish Ministers note that, where possible, agreeing e.g. the Fisheries Management and Mitigation Plan prior to submitting the application will save time post consent.</p>	<p>consultation at the Scottish Minister's discretion (see section 14.5.2).</p>
Scottish Ministers & SFF	<p>1.SFF recommend including the 2B Energy Development (included as Forthwind Offshore Wind Demonstration Array – Phase 1 and 2) and the Levenmouth demonstration turbine (now known as Offshore Renewable Energy Catapult). SFF want the displacement effect of other projects around the UK on the nomadic scallop fleet to be taken into account along with the impact of East coast projects on the wider squid fleet. The SFF note that the different restrictions imposed by Forth Ports which impact on the space needed for fishing activity need to be included.</p> <p>The Scottish Ministers recommend the following projects are included in the cumulative impact assessment (CIA):</p> <p>Worst case scenario of Neart na Gaoithe (2014 as consented) or Neart na Gaoithe (2017 scoping report)</p> <p>Worst case scenario of Seagreen Alpha and Bravo (2014 as consented) or Seagreen (2017 scoping report)</p> <ul style="list-style-type: none"> • Kincardine Offshore Windfarm • Forthwind Offshore Windfarm (2016 consent) • Forthwind Offshore Wind Demonstration Project • Offshore Renewable Energy Catapult 	<p>1.The projects recommended by Scottish Ministers will be included in the CIA, (<i>Section 14.11</i>)</p>

Consultees	Scoping Response	ICOL Response
	<p>Levenmouth</p> <p>In addition the Scottish Ministers agree, with some additions, with the list of projects provided by ICOL for assessing the cumulative impact on the nomadic scallop fleet. The Scottish Ministers note that these projects may be relevant for assessment the cumulative impact on the squid fishery.</p> <ul style="list-style-type: none"> • European Offshore Wind Deployment Centre • Hywind Scotland Pilot Park • Blyth Offshore Windfarm – 2 turbines • Blyth Offshore Wind Demonstration Project – 15 turbines • Beatrice Offshore Windfarm • Moray Offshore East Development • Moray East Offshore Windfarm – Alternative Design • Moray Firth Offshore Wind Western Development Area • Rampion Offshore Windfarm 	
Scottish Ministers	The Scottish Ministers agree that the cumulative impacts on Commercial Fisheries of loss or restricted access to fishing grounds, increased steaming times to fishing grounds and displacement of fishing vessels into other areas should be scoped in and other impacts scoped out.	Noted
SFF	Table 5-4 in 5.7.4 needs to include the many different restrictions Forth Ports are imposing on their area which impact on the space needed for fishing activity.	These restrictions will be considered in the EIA Report as far as reasonably possible.

Table 14.2: Post-scoping consultation for commercial fisheries

Consultation	Consultees involved	Summary
SFF meeting, Aberdeen 21/7/2017	SFF	<p>Information about the Development was presented by ICOL to the SFF.</p> <p>Information on approach to data collection was also presented, whereby existing data sources will be updated and validated with the industry, with the main focus of the validation being on under 15m fleet as there is less data available for this.</p> <p>Information was also provided on the scope</p>

Consultation	Consultees involved	Summary
		<p>of the assessment.</p> <p>SFF agreed with the approach to data collection.</p> <p>SFF raised concern on:</p> <ul style="list-style-type: none"> The location of the cable route, and issues for the <i>Nephrops</i> fleet, particularly in relation to clay berms left after cable installation. Construction vessels 'queuing' while waiting to deliver infrastructure on other sites and the issues caused to fishing; Ecological impacts arising from The Development.
<p>Commercial Fisheries under 15 validation meeting</p> <p>14/9/2017 - Montrose</p> <p>15/9/2017 - Abroath</p> <p>23/9/2017 - Pittenweem</p> <p>27/9/2017 - Cockenzie / Port Seton</p>	<p>Invitations were sent to 42 organisations (for full details see Annex 18A.A), as well as individual fishermen known to be active fishermen in the area. Meetings were also advertised at local harbours, libraries and in the Kingfisher Bulletin. Attendees who could not attend meetings were provided with questionnaire.</p> <p>Attendees:</p> <ul style="list-style-type: none"> SFF Marine Scotland (MS) - DFOs Arbroath and Montrose Static Gear Association 10m and Under Association Fishermen's Mutual Association Fife Creel Fisherman's Association Eyemouth Fisheries Representative Fisherman's Mutual 	<p>Information about the Development was presented. Data was then presented on the different data sources available for the assessment and consultees were invited to comment on the validity of the data, provide additional information and to raise any concerns:</p> <p>In terms of validation of data:</p> <p>Consultees generally agreed landings data provided an accurate representation of fishing in the region.</p> <p>In general attendees agreed that the most accurate representation of the spatial distribution of fishing effort was from:</p> <ul style="list-style-type: none"> Creeling Effort Study for creeling; VMS for scallop dredging; Scotmap and Vessel Monitoring System (VMS) for <i>Nephrops</i> trawling for the under 15 m fleet and over 15m fleet respectively; Squid is unpredictable between years and landings are dependent upon both stock and effort with areas targeted varying between year. Consultees felt that no data source exactly reflected the distribution of effort as it varied so much, however the Scotmap 'Not <i>Nephrops</i> Trawls': No. of Vessels (MS, 2012) map did tally with areas known to be targeted for squid; and Consultees also provided information on the distribution of other fisheries such as whelk fishing, clams and hand

Consultation	Consultees involved	Summary
	<p>Association Port Seton</p> <ul style="list-style-type: none"> • Dunbar Fisherman Association • Cockenzie and Port Seton Fishermen's Association • Individual fishermen x 19 	<p>lining;</p> <p>Consultees also expressed concern over:</p> <ul style="list-style-type: none"> • The location for the cable route for <i>Nephrops</i> fishing due to the direction of towing; • Ecological impacts of the Development to species they catch; • The impact of the loss of fishing area due to the Development. <p>Consultees also provided information of trends in fishing, such as:</p> <ul style="list-style-type: none"> • Increasing importance of creeling; • The general trend for creeling further offshore as larger vessels enter the fishery; • Changes in fishing gear types and how it's rigged; and • Potential new fisheries.
<p>Commercial Fisheries over 15 m validation meeting</p> <p>1/2/2018 – Edinburgh</p>	<p>Attendees:</p> <ul style="list-style-type: none"> • SFF • Mallaig and North West Fishermen's Mutual Association • Fife Fishermen's Mutual Association • Scallop Committee of Scottish White Fish Producers Association <p>Scottish White Fish Producers Association</p>	<p>Consultees generally agreed landings data provided an accurate representation of fishing in the region.</p> <p>Consultees agreed that the VMS data used for the assessment provided an accurate representation of the spatial distribution of fishing effort;</p> <p>Consultees expressed concern over:</p> <ul style="list-style-type: none"> • The location for the cable route for <i>Nephrops</i> fishing due to the direction of towing; • The potential impact of clay berms left over after cable installation on the safety and loss of fishing ground for <i>Nephrops</i> trawler; • Ecological impacts of the Development to species they catch; • The impact of the loss of fishing area due to the Development; • The economic impact of the Development on fishing communities; and • The potential impact of queuing construction vessels on creeling. <p>Attendees also provided changes in fishing</p>

Consultation	Consultees involved	Summary
		<p>practices.</p> <p>SFF explained how the UKFIM was currently being updated by TCE, hence was not available to validate the data, however they were satisfied that VMS data gave an accurate representation of fishing patterns.</p>
<p>Commercial Fisheries and Natural Fisheries Pre – submission meeting</p> <p>14/2/2018</p> <p>MS, Aberdeen</p>	<p>Attendees:</p> <ul style="list-style-type: none"> • MS-LOT • MSS • Scottish Natural Heritage (SNH) • SFF • Scottish White Fish Producers Association 	<p>Information on information used in and the scope of the assessment for both the natural fish and commercial fisheries chapters was presented.</p> <p>All consultees agreed on the scope of assessment, remaining focused to those receptors and impacts that have the potential of a significant effect.</p> <p>It was agreed that the baseline validation exercise to inform the assessment was appropriate.</p> <p>MSS agreed to provide ICOL with data on recent average 10 year data sets for scallop fishing intensity.</p> <p>SFF raised concerns on:</p> <ul style="list-style-type: none"> • CIA; • Commitments of contractors during the construction work and ensuring that commitments made now and within the EIA are filtered down appropriately; and • ICOL's commitment to safety zones was discussed.

14.3 Scope of Assessment

- 9 As part of this application ICOL have drawn on the details presented in the Scoping Report, MS-LOT's Scoping Opinion and subsequent correspondence (with SFF and MS-LOT) refining the detail on the scope of the assessment. Therefore, this chapter focusses on those impacts on Commercial Fisheries that have been agreed throughout this process as being necessary to be assessed, detailed in Table 14.3. The reason for the potential impacts being scoped into the assessment are due to the need to have an up-to-date commercial fisheries baseline in order to properly assess the magnitude of the impact on the fisheries.

- 10 For clarity, those impacts that have been agreed to be scoped out of the EIA Report are included below (Table 14.4). For further information reference should be made to the Scoping Report and the Scoping Opinion which can be found on Marine Scotland's website².

Table 14.3: Scope of assessment covered in this chapter

Potential Impact	Scope of Assessment
Construction (& Decommissioning) Phase – Wind Farm	
Temporary loss or restricted access to fishing grounds	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • Squid fishery • Creel fishery
Increased steaming times to fishing grounds	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • Squid fishery • Creel fishery
Displacement of fishing vessels into other areas	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • Squid fishery • Creel fishery
Construction (& Decommissioning) Phase – Offshore Export Cable Corridor	
Temporary loss or restricted access to fishing grounds	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • <i>Nephrops</i> fishery • Squid fishery • Creel fishery
Increased steaming times to fishing grounds	The impact will be assessed against all fisheries.
Displacement of fishing activity into other areas	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • <i>Nephrops</i> fishery • Squid fishery • Creel fishery

² At the time of writing these documents can be found at this link:

<http://www.gov.scot/Topics/marine/Licensing/marine/scoping/ICOLRevised-2017> [Accessed 17/04/2018].

Potential Impact	Scope of Assessment
Operation & Maintenance Phase – Wind Farm	
Complete Loss or Restricted access to fishing grounds	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • Squid fishery • Creel fishery
Increased steaming times to fisheries grounds	The impact will be assessed against all fisheries.
Displacement of fishing vessels into other areas	The impact will be assessed against the following fisheries: <ul style="list-style-type: none"> • Scallop fishery • Squid fishery • Creel fishery
Operation & Maintenance Phase – Offshore Export Cable Corridor	
Complete loss or restricted access to fishing grounds	The impact will be assessed against all fisheries.
Increased steaming times to fishing grounds	The impact will be assessed against all fisheries.
Displacement of fishing activity into other areas	The impact will be assessed against all fisheries.

Table 14.4: Impacts scoped out of this chapter

Potential Impact	Scoped out of the EIA Report
Construction (& Decommissioning) Phase – Wind Farm	
Direct temporary habitat disturbance.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Indirect disturbance as a result of sediment deposition and temporary increases in SSC.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Barrier effects disturbance or physical injury associated with construction noise.	Agreed with consultees following further consultation post Scoping Opinion. Impacts on hearing specialists will be assessed in <i>Chapter 9</i> . As impacts on a single species which is not considered to be a major focus of the commercial fishery fleets in the area are unlikely to significantly impact commercial fishery receptors, it is recommended that 'Barrier effects disturbance or physical injury associated with construction noise be scoped out of the commercial fishery assessment.
Safety issues for fishing vessels.	Assessed and mitigated for in project safety and management documentation. Agreed with consultees following further consultation post

Potential Impact	Scoped out of the EIA Report
	<p>Scoping Opinion.</p> <p>Taking into account embedded mitigation (Lighting Management Plan [LMP], Navigational Safety Plan [NSP], VMP, and Construction Method Statement [CMS]) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Obstacles on the seabed.	<p>Assessed and mitigated for in project safety and management documentation.</p> <p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Taking into account embedded mitigation (Project Environmental Management Plan [PEMP], Environmental Management Plan [EMP], and CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Interference to fishing activities arising from navigational conflict.	<p>Assessed and mitigated for in project safety and management documentation.</p> <p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Taking into account embedded mitigation (NSP, VMP) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Construction (& Decommissioning) Phase – Offshore Export Cable Corridor	
Direct temporary habitat disturbance via Export Cable installation.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Indirect disturbance as a result of sediment deposition and temporary increases in SSC via Export Cable installation.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Disturbance or physical injury associated with construction noise (Export Cable installation).	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Safety issues for fishing vessels.	<p>Assessed and mitigated for in project safety and management documentation.</p> <p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Taking into account embedded mitigation (LMP, NSP, VMP, and CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Obstacles on the seabed.	Assessed and mitigated for in project safety and management

Potential Impact	Scoped out of the EIA Report
	<p>documentation.</p> <p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Taking into account embedded mitigation (LMP, NSP, VMP, and CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Interference with Fishing Vessels arising from Navigational Conflict.	<p>Assessed and mitigated for in project safety and management documentation.</p> <p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Taking into account embedded mitigation (NSP, VMP) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Operation & Maintenance Phase – Wind Farm	
Long term loss of original habitat.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA as it is unlikely to lead to significant effects.
Behavioural responses to EMF associated with cabling.	<p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Embedded mitigation measures will ensure cabling is suitable shielded and buried, or will be protected by other means.</p> <p>Further assessment of this potential impact is therefore scoped out of the EIA Report.</p>
Disturbance or physical injury associated with operational noise	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Effect on fish and shellfish resources due to reduced fishing effort within Development Area.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Creation of new habitat due to presence of project specific infrastructure.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Temporary habitat disturbance via O&M activities.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Safety issues for fishing vessels.	<p>Assessed and mitigated for in project safety and management documentation.</p> <p>Agreed with consultees following further consultation post Scoping Opinion.</p> <p>Taking into account embedded mitigation (LMP, NSP, VMP, and CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is</p>

Potential Impact	Scoped out of the EIA Report
	therefore scoped out of the EIA Report.
Obstacles on the seabed.	Assessed and mitigated for in project safety and management documentation. Agreed with consultees following further consultation post Scoping Opinion. Taking into account the embedded mitigation (LMP, NSP, VMP, CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report
Interference with fishing activities arising from navigational conflict.	Assessed and mitigated for in project safety and management documentation. Agreed with consultees following further consultation post Scoping Opinion. Taking into account the embedded mitigation (NSP, VMP) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.
Operation & Maintenance Phase – Offshore Export Cable Corridor	
Long term loss of original habitat (Export Cable).	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Behavioural responses to EMF associated with cabling (Export Cable).	Agreed with consultees following further consultation post Scoping Opinion. Embedded mitigation measures will ensure cabling is suitable shielded and buried, or will be protected by other means. Further assessment of this potential impact is therefore scoped out of the EIA Report.
Creation of new habitat due to presence of cable protection.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Temporary habitat disturbance from O & M activities.	Agreed by MS-LOT in their Scoping Opinion that this potential impact does not need to be assessed in the EIA Report as it is unlikely to lead to significant effects.
Safety issues for fishing vessels.	Assessed and mitigated for in project safety and management documentation. Agreed with consultees following further consultation post Scoping Opinion. Taking into account the embedded mitigation (LMP, NSP, VMP, and CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.
Obstacles on the seabed.	Assessed and mitigated for in project safety and management documentation. Agreed with consultees following further consultation post Scoping Opinion.

Potential Impact	Scoped out of the EIA Report
	Taking into account the embedded mitigation (LMP, NSP, VMP, and CMS) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.
Interference with fishing vessels arising from navigational conflict.	Assessed and mitigated for in project safety and management documentation. Agreed with consultees following further consultation post Scoping Opinion. Taking into account the embedded mitigation (NSP, VMP) the Development is considered unlikely to lead to significant effects and assessment of this potential impact is therefore scoped out of the EIA Report.

14.4 Regulation and Guidance

- 11 There is no specific legislation which covers the scope of an impact assessment on commercial fisheries. There is guidance which provides information on how to assess impacts to fisheries from offshore wind farms.
- 12 In order to provide a detailed and robust baseline description of fisheries operating within the site and the wider region surrounding the area, the following guidance has been considered:
 - *Guidance note for Environmental Impact Assessment In respect of Food and Environmental Protection Act (FEPA) and Coastal Protection Act (CPA) requirements, Version 2* (Centre for Environment, Fisheries and Aquaculture Science, (Cefas), 2004));
 - *Recommendations for Fisheries Liaison: FLOWW* (Fishing Liaison with Offshore Wind and Wet Renewables Group) (BERR, 2008);
 - Best practice guidance for fishing industry financial and economic impact assessments Sea Fish Industry Authority and UK Fisheries Economic Network (UKFEN 2012);
 - Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (FLOWW, 2014);
 - Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Cefas contract report: ME5403 – Module 15 submitted to Department for Environment, Food and Rural Affairs (Defra) and the MMO (Cefas, 2012);
 - Guidance on Environmental Considerations for Offshore Wind Farm Development. Reference Number: 2008-3 (Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR), 2008); and
 - Scoping Opinion responses (Table 14.1).

14.5 Design Envelope and Embedded Mitigation

- 13 As the design of the Development is not fixed and flexibility in the design envelope is required, the following key parameters, detailed in Tables 14.5 and 14.6, represent the worst case scenario for impacts on commercial fisheries interests.
- 14 Adverse effects arise from the potential for the Wind Farm and OfTW to constitute a physical obstacle and/or safety risk to the continuation of normal fishing activities as described in the baseline. Adverse effects may also arise from the potential for the Wind Farm and OfTW to impact on the fish and shellfish of commercial importance, however any impact on ecological receptors will be assessed within *Chapter 9*.
- 15 Commercial fishing will not be excluded from the Development Area or along the Offshore Export Cable Corridor entirely during the construction phase, however a rolling safety zones of 500 m will be in place around major construction vessels. It is possible that installed infrastructure will have safety zones of 50 m (or an appropriate size to incorporate infrastructure). In the case of the operational phase, it is expected that fishing activities will be able to be resumed to some degree within the Development Area, although it is recognised that certain fishing methods, by virtue of gear configuration and mode of deployment, may be restricted in their ability to operate as normal.
- 16 Taking into account the potential for fishing vessels to regain some degree of access in the operational phase, it is considered that the structures with the combined biggest footprint poses the worst case scenario to fishing activities. This includes the maximum duration of construction activities, and associated safety zones, the highest number of Wind Turbine Generators (WTGs) with the smallest spacing, and the maximum number of additional infrastructure such as OSPs and sub-sea cables, etc.

14.5.1 Design Envelope

- 17 Tables 14.5 and 14.6 gives the worst case design parameters for the relevant aspects of the Development during the construction, operational and decommissioning phases for commercial fisheries.

Table 14.5: Worst case scenario definition - Development Area

Potential Impact	Design Envelope Scenario Assessed
Construction (& Decommissioning) Phase – Wind Farm	
Temporary loss or restricted access to fishing grounds	<p>Infrastructure and procedures resulting in the maximum loss of fishing grounds:</p> <ul style="list-style-type: none"> • 24 months construction within a 3 year period; • Total Development Area: 150 km² (with 4.24 km² in total disturbed during construction); • Progressive installation of up to 72 WTGs and up to two Offshore

Potential Impact	Design Envelope Scenario Assessed
	<p>Substation Platforms (OSPs);</p> <ul style="list-style-type: none"> • Dimensions of infrastructure: WTG - gravity foundations of 90 m diameter per foundation with 125 m scour protection. Total area per foundation including scour protection 12,272 m². <p>OSPs - foundations of up to 130 m diameter per foundation with 180 m scour protection. Total area per OSP including scour protection 70,650 m². Total area affected (two OSPs) – 0.14 km².</p> <ul style="list-style-type: none"> • Nominal minimum spacing between WTGs: 1278 m; • Maximum inter-array cable length: 190 km (90-100% buried); • 500 m safety zones around construction works; • Consideration of 50 m safety zones around fully and partially installed infrastructure; • Progressive installation of inter-array cables across the Development Area for the duration of construction (i.e. fishing activities cannot be undertaken in the area of inter-array cable installation); • Ongoing cable burial and protection works throughout the construction phase (at this stage it is anticipated that the target burial depth for the array cables will be approximately one metre); and • Unburied inter-array cables, protected by other means (i.e. rock placement).
Increased steaming times to fishing grounds	<p>Maximum number of construction safety zones and infrastructure in the Development Area resulting in the maximum disruption to established steaming routes and potential increases in operating costs.</p> <p>24 months construction within a 3 year period.</p>
Displacement of fishing vessels into other areas	See 'Temporary loss or restricted access to fishing grounds'. Infrastructure resulting in the maximum loss of fishing grounds.
Operational Phase	
Complete loss or restricted access to fishing grounds	<p>Infrastructure resulting in the maximum loss of fishing ground.</p> <ul style="list-style-type: none"> • Installation of 72 WTGs and up to two OSPs; • Dimensions of infrastructure: WTG - gravity foundations of 125 m diameter including scour protection. Total area per foundation 12,272 m². <p>Total area affected 0.88 km²;</p> <p>OSPs - foundations of up to 130 m diameter per foundation with 180 m scour protection. Total area per OSP 25,447 m². Total area affected (two OSPs) – 0.05 km².</p> <p>50 m safety zones around fully and partially installed infrastructure (or an appropriate size to incorporate infrastructure);</p> <ul style="list-style-type: none"> • Nominal minimum spacing between WTGs: 1,278 m;

Potential Impact	Design Envelope Scenario Assessed
	<ul style="list-style-type: none"> • Maximum inter-array cable length: 190 km • Approximate target cable burial depth one metre (90-100% buried); and • Unburied inter-array cables, protected by other means (i.e. rock placement).
Increased steaming times to fisheries grounds	Maximum number of infrastructure and associated safety zones in the Development Area resulting in the maximum disruption to established steaming routes.
Displacement of fishing vessels into other areas	See 'Complete loss or restricted access to fishing grounds'. Infrastructure resulting in the maximum loss of fishing grounds.

Table 14.6: Worst case scenario definition - Offshore Export Cable Corridor

Potential Impact	Design Envelope Scenario Assessed
Construction (and Decommissioning) Phase	
Temporary loss or restricted access to fishing grounds	<p>Infrastructure resulting in the maximum loss of fishing ground.</p> <ul style="list-style-type: none"> • Approximately nine month duration of installation over a three year period; • Total export cable length: 83.3 km; • Maximum number of export cable trenches: two; • Approximate target cable burial depth one to three metres, (80-100% buried); • Unburied cable length, protected by other means (i.e. rock placement), where burial is not feasible; • Safety zones around installation works; and • Progressive installation of cable for the duration of construction (i.e. fishing activities cannot be undertaken in the area of export cable installation until cable burial and protection operations have been completed)
Increased steaming times to fishing grounds	Maximum number of construction safety zones resulting in the maximum disruption to established steaming routes and potential increases in operating costs.
Displacement of fishing activity into other areas	See 'Temporary loss or restricted access to fishing grounds'. Infrastructure resulting in the maximum loss of fishing grounds.
Operational Phase	

Potential Impact	Design Envelope Scenario Assessed
Complete loss or restricted access to fishing grounds	Infrastructure resulting in the maximum loss of fishing ground. <ul style="list-style-type: none"> • Maximum length of export cable: 83.3 km; • 80-100% of operational target cable burial to approximately one to three metres where feasible.
Increased steaming times to fishing grounds	None
Displacement of fishing activity into other areas	See 'Complete loss or restricted access to fishing grounds'. Infrastructure resulting in the maximum loss of fishing grounds.

14.5.2 Embedded Mitigation

18 A range of embedded mitigation measures to minimise environmental effects are captured within the Design Envelope. Where relevant these may be secured through consent conditions. A summary of these and other embedded mitigation measures which have been taken into account during the assessment, are provided below:

- A Construction Management Plan (CMP) will be developed in consultation with FIRs which establishes a protocol for engagement between ICOL and the fishing industry. This will include details on:
 - Communication channels between the fishing community and ICOL through all phases;
 - Protocol for the navigation of construction and operation / maintenance vessels to and from the site (e.g. use of transit lanes that will reduce interaction with fishing activities); and
 - Procedures in the event of interactions between wind farm construction and operation and fishing activities.
- 500 m 'rolling' safety zones around working areas during construction, decommissioning and major maintenance activities will be applied for to prohibit vessels not associated with the works. Consultation will be undertaken with relevant stakeholders to ensure effective implementation and management of safety zones.
- Structures within the Development Area will be marked and lit in accordance with International Association of Lighthouse Authorities' (IALA) *Recommendation O-139 on the Marking of Man-Made Offshore Structures* (IALA, 2008). The final lighting and marking scheme will be agreed with the relevant stakeholders prior to construction.
- Cables will be suitably buried or will be protected by other means when burial is not practicable which will reduce the risk to fishing vessels from snagging.
- Cable burial plan, which will include monitoring and reporting of any exposures.
- Grid or offset grid layout of the WTG and OSPs.

- Commitment of use of concrete matting or rock dumping to reflect seabed conditions, where practical and appropriate.
- Commitment to picking up 'drop objects' from the seabed floor where possible³.
- Commitment to an over-trawl-ability assessment.
- Promulgation of information and appropriate liaison will be carried out to ensure information on the works are circulated through agreed procedure e.g. Notices to Mariners, Kingfisher and other appropriate media to allow vessels to effectively and safely navigate around the proposed sites.
- Suitable and sufficient assessment will be undertaken to ensure that all safety risks are reduced as far as reasonably practicable.
- Modifications to bottom towed fishing gear are being investigated in consultation by the offshore renewables industry and the fishing industry which may better enable fishing activities within and around operational wind farms.
- Defined navigational routes will be used by vessels. This will reduce the risk of disturbance to static gear.
- Participation in a regional CFWG to provide a forum for collaborative discussion and action in relation to offshore wind farm developments in the Forth and Tay area and their interactions with commercial fishing activities. ICOL will ensure the principle of the commitments (as identified below) will be:
 - Provide regular contact for representatives of commercial fishermen and the Forth and Tay Offshore Wind Developers Group (FTOWDG) developers to promote communication and understanding;
 - Provide a forum to manage engagement through a project(s) lifecycle with particular focus on consenting, pre-construction planning and construction activities;
 - Provide input to general approaches, procedures and protocols with respect to CMPs and potential mitigation options, promoting standardisation where possible;
 - Agree specific offshore working practices relating to Marine Licence conditions where required;
 - Agree and maintain a current regional assessment of commercial fishing activities;
 - Identify and develop opportunities between the fishing/renewables industries in the Forth and Tay area; and
 - Establish a protocol for the removal of temporary works post-construction including appropriate verification.

³ A protocol for cases where retrieval of dropped objects is not possible will be developed. It is expected this would take the form of a marine licence condition which would require the production of a dropped objects procedure which would agree reporting and retrieval requirements for dropped objects, in terms of length and weight. This would be carried out in line with the updated Dropped Objects Policy and Guidance being prepared by Marine Planning and Policy, once finalised.

Consent Conditions

- 19 As well as the embedded mitigation measures, ICOL proposes to commit to the purpose of the relevant consent conditions granted for the Inch Cape 2014 Consent, as they are still relevant to this application. This will provide reassurance to stakeholders that the relevant issues will be addressed and secured by way of appropriate conditions.
- 20 ICOL recognises that the wording and detail of the consent conditions will be at the discretion of the Scottish Ministers. For Commercial Fisheries interests, ICOL propose that the consent conditions address matters surrounding, but not limited to, the following;
- Production of a Vessel Management Plan (VMP);
 - Production of a Navigational Safety Plan (NSP);
 - Production of an Operations and Maintenance Plan (OMP);
 - Production of a Cable Plan;
 - Production of a Commercial Fisheries Mitigation Strategy (CFMS);
 - Appointment of a Fisheries Liaison Officer (FLO);
 - Appointment of an Environmental Clerk of Works (ECoW); and
 - Participation in relevant groups (such as CFWG).

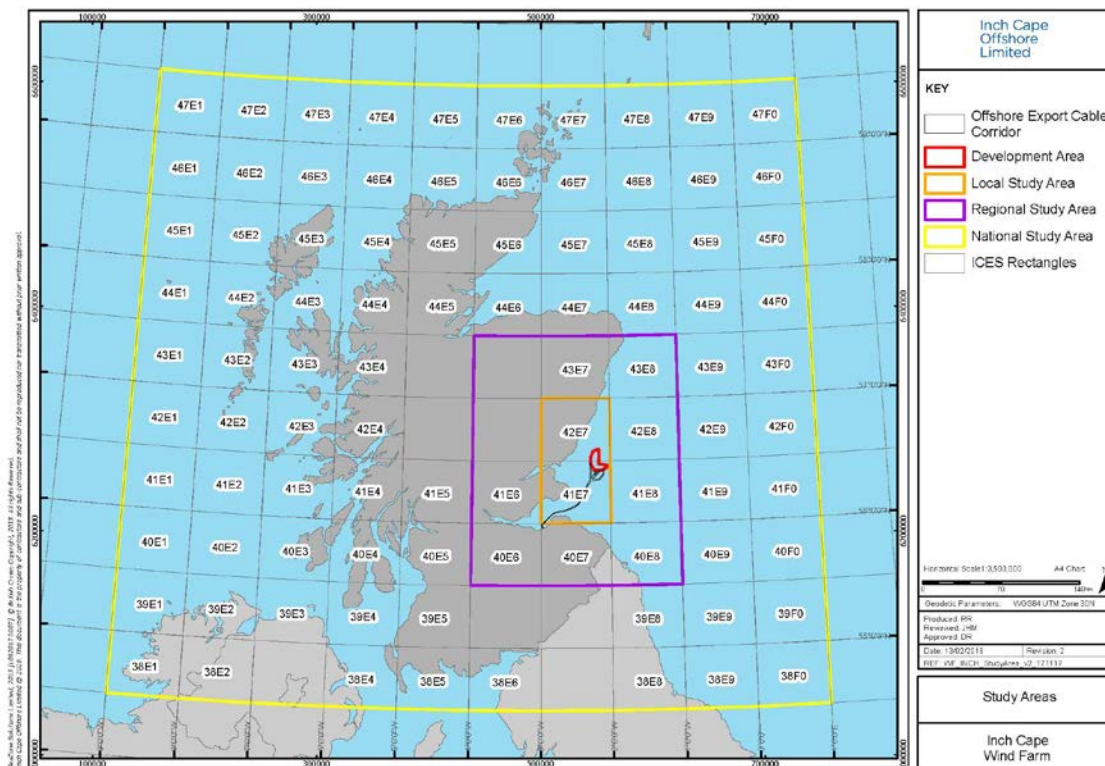
14.6 Baseline Environment

- 21 Baseline data was updated for both marine and freshwater fisheries at a national, regional and local level (*Appendix 14A*) for the period 2011 to 2016. This time duration was deemed appropriate for the purposes of categorising fishing activity for the EIA, with the exception of the scallop fishery, where 7-10 years' worth of data was required. Information for the previous 3 years is provided in the Inch Cape 2013 ES baseline (*Appendix 14C*). As marine commercial fisheries are the only fisheries for which a potential impact may exist it is only this type of fishery (and the range of fish species targeted) that will be considered in this chapter.

14.6.1 Definition of the Study Area

- 22 In line with the *Chapter 9*, the study area used for this assessment (and setting of the baseline) corresponds to relevant International Council for the Exploration of the Sea (ICES) statistical rectangles which overlap with the Development Area and the Offshore Export Cable Corridor i.e. ICES rectangles 42E7 and 41E7 (Figure 14.1), in addition to a 'Local Study Area' and 'Regional Study Area'.

Figure 14.1: Study Area



- 23 The study areas for the assessment of commercial fishing activity are shown in Figure 14.1 which also shows the location of the Development Area and Offshore Export Cable Corridor. ICES rectangles are also shown; these are the smallest spatial unit used for the collation of fisheries statistical information. The Development Area and Offshore Export Cable Corridor falls within ICES rectangles 41E7 and 42E7. The large majority of the Offshore Export Cable Corridor passes through 41E7, with a small proportion of the inshore section falling within rectangle 40E7.
- 24 ICES rectangle 40E7 has two separate areas of sea separated by land, a small section in the Firth of Forth where the Offshore Export Cable Corridor landfall is located and one larger area of sea along the coast of East Lothian and the Borders. Landings in 40E7, between 2011-2016, were predominantly made up of Nephrops and lobster (accounting for 85% of landings by value) and these are targeted most intensively along the North Sea coast (Figures 14A.32 and 14A.33). Hence figures for this rectangle are unlikely to be representative of the level of fishing which occurs around the landfall. For this reason this 40E7 has been included in the Regional Study Area rather than Local Study Area.
- 25 The approach has been to provide a national overview allowing fishing grounds in the Development Area and Offshore Export Cable Corridor to be described within a national context. The Regional Study Area has been defined to ensure sufficient coverage of those grounds surrounding the Development. The Local Study Area is the smallest area comprising

of ICES rectangles 41E7 and 42E7 which encapsulate the Development Area and Offshore Export Cable Corridor.

- 26 Fishing activities specific to the Development Area and Offshore Export Cable Corridor have been further described where possible.

14.6.2 Data Sources

- 27 Due to the requirement to review the most recent, available landings data (MSS and ICES, from 2011-2016) impacts on both the Development Area and the Offshore Export Cable Corridor during construction and operation was collated.

- 28 There is no single data source or recognised model for establishing commercial fisheries baselines. An approach is therefore required that incorporates a number of different data and information sources, each subject to varying sensitivities and limitations.

- 29 *Appendix 14A* describes commercial fishing activities in detail, building upon the data sources and analysis listed. The sensitivities and limitations of these data sources are also described. A summary of the data sources are provided below.

- 30 The principal sources of data and information used for the collation of the commercial fisheries baseline were:

- ICES;
- Marine Management Organisation (MMO);
- MS;
- MSS;
- The Crown Estate (TCE)
- DFOs;
- SFF; and
- Fishermen and their representatives.

- 31 The following datasets were analysed and/or reviewed for inclusion in the baseline:

- Fisheries Statistics (landings values and fishing effort data 2011 to 2016);
 - MMO and MS data;
- UK Satellite Tracking (VMS) Data;
 - MMO VMS data (2011 to 2015);
 - ICES VMS Data (2016 only);
 - MS Data Analysis (2009 to 2013) (Kafas *et al.*, 2013);
 - MS VMS data for scallop fishing intensity (pers. comm.).

- Scotmap;
 - Creel Fishing Effort Study (MSS 2017); and
 - Previous data collected as part of the Inch Cape 2013 ES (*Appendix 14C*).
- 32 All data collated to update the baseline was then validated through consultation with local fishermen, fishermen's organisations and other fisheries representatives. This involved both validation meetings, as well as email and telephone correspondence.
- 33 In order to validate under 15 m data, four consultation events were arranged at the following locations, namely Montrose; Arbroath; Pittenweem; and Port Seton in September 2017 (Table 14.2). A range of stakeholders, fishermen and industry representatives were invited to attend the events (*Appendix 14A, Annex A*) provides the list of organisations invited). In addition, meetings were advertised at local harbours and libraries via posters and an advert was placed in the Kingfisher Bulletin. The meetings served both to inform local fishermen about the Development as well as to allow validation of fishing data.
- 34 Attendees at the meetings were presented with data of fishing distribution for fisheries within the Local Study Area, regarding landings and distribution of fishing. Maps were presented on various fisheries known to occur in the area (namely, scallops, creeling, *Nephrops*, squid, mackerel) from various data sources including the original baseline (fishing distribution maps derived from fishermen's input in 2011), Scotmap, the Creeling Fishing Effort Study and VMS (Kafas *et al.* 2013, and MMO data). Attendees were then invited to comment on the validity of the maps and describe any inaccuracies in spatial patterns. Attendees were also asked to provide information on fisheries that are important in the area. This information was recorded at the meetings through a scribe or through questionnaires. Questionnaires were also made available to consultees unable to attend.
- 35 Validation of fisheries data for the over 15 m fleet was undertaken through a meeting with the SFF and key fishing representatives (invited by the SFF) in Edinburgh in February 2018 as well subsequent email correspondence (Table 14.2).
- 36 In addition to the above data sources, MS also provided a number of references to recent studies that could be used to assist in the gathering of the baseline:
- *Evidence Gathering in Support of Sustainable Scottish Inshore Fisheries* (2014-2015): A European Fisheries Fund funded project led by Seafish and managed by The Marine Alliance for Science and Technology for Scotland (MASTS) aimed to develop new methods for data acquisition and quality assurance within the Scottish fishery sector (particularly for small inshore fishing vessels), addressing knowledge gaps in IFG management plans and providing opportunities for fishermen to become more involved in the catch monitoring process (MASTS, 2018a).
 - *Scottish Inshore Fisheries Integrated Data System Project* (2017-2019): A European Maritime and Fisheries Fund funded project led by The University of St Andrews to support research into the development of an integrated system for the collection, collation, analysis and interrogation of data from the Scottish inshore fishing fleet

(MASTS, 2018b). Aims to develop an On Board Central Data Collation System from the Scottish inshore fisheries fleet.

- 37 These studies are principally aimed at working out ways of improving fishing data collection in the future. As they do not provide information on current levels of fishing they have not been used in this baseline.

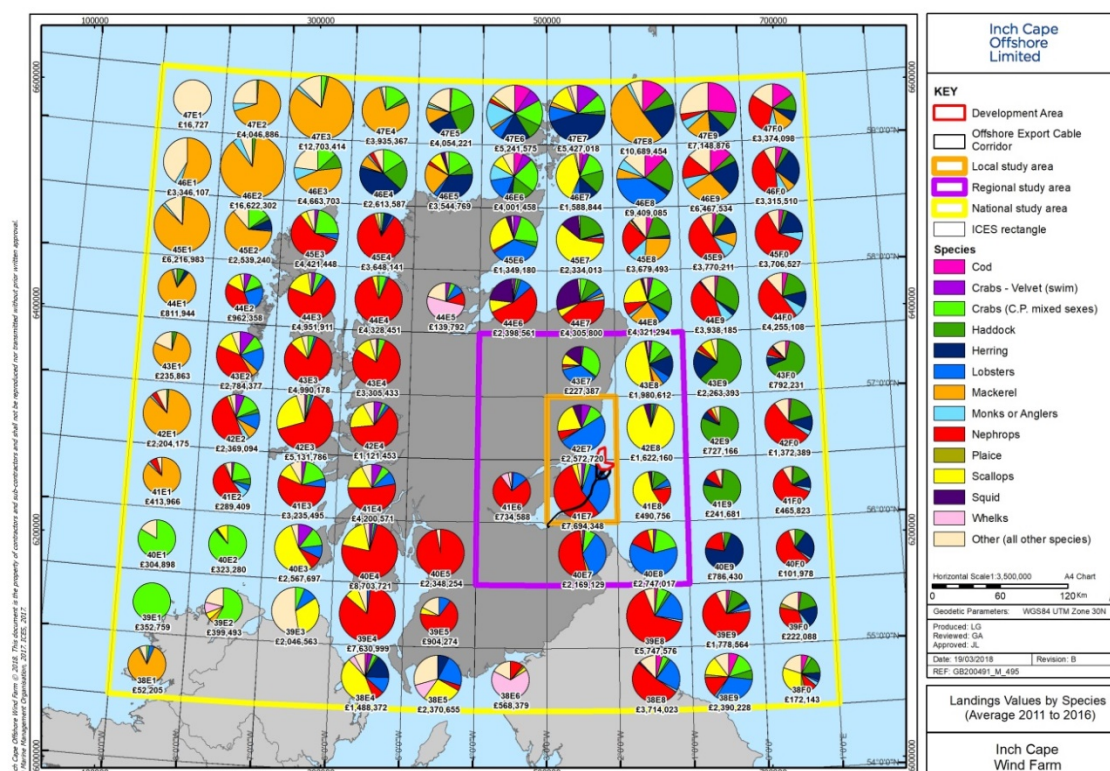
14.6.3 Overview of Commercial Fisheries baseline in the Study Area

- 38 The following information has been summarised from the data gathered for *Appendix 14A Commercial Fisheries Baseline Technical Report* and the data gathered for *Appendix 14C Commercial Fisheries Baseline Development Area* (from Inch Cape 2013 ES) for the scallop fishery.

Overview of landings data

- 39 The Development Area and Offshore Export Cable Corridor are located in ICES rectangles 41E7 and 42E7 and these two rectangles contain valuable Scottish fishing grounds (Figure 14.2). The more southerly rectangle, 41E7, had the sixth highest average landings, by value, in the National Study Area during the period 2011-2016. In comparison, 42E7 had relatively moderate landings, placing 25th nationally, by value. On a regional scale, 41E7 recorded the highest, and 42E7 recorded third highest landings by value.
- 40 Overall landings in 41E7 (£7,694,348) were three times higher than in 42E7 (£2,572,720). This reflects the fact that a greater proportion of 42E7 is made up of land, not sea. There is also a difference in the fisheries targeted within each rectangle, with landings from 41E7 dominated by *Nephrops* and lobster and from 42E7 by lobster and scallops (Figure 14.2).
- 41 Over the 6 year period between 2011 and 2016, the majority of landings in 41E7 were made up of *Nephrops* which accounted for 53% of all landings (by value) which equates to an annual average of £4,093,313. Landings of lobster were the second highest in this rectangle (34% - £2,602,308), with smaller quantities of crabs (edible and velvet crabs 5%), scallops (3%), razor clams (1%) and squid (1%) (Figure 14A.11; *Appendix 14A*). Other notable species captured in this rectangle include mackerel and whelks, although together they account for less than 1.2% of the average annual landings.
- 42 In rectangle 42E7 lobsters made up almost half the landings in the study period (49% which equates to an annual average £1,264,203), followed by scallops (21% - £529,645) and crabs (edible 10% and velvet swimming crabs 6%), squid (6%), *Nephrops* (6%) and mackerel (1%) and other species (Figure 14A.12; *Appendix 14A*).

Figure 14.2: Annual landings values by species (average 2011 to 2016) in National Study Area (MMO)



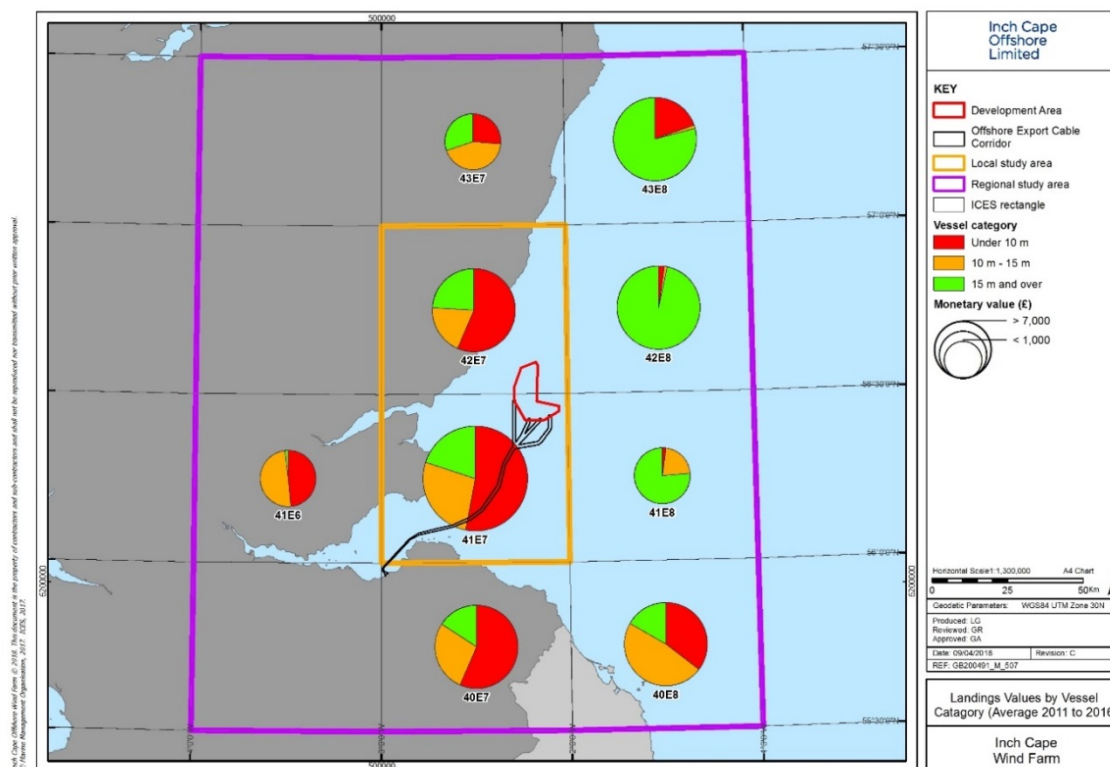
- 43 Within these ICES rectangles fishing methods used to target these species are dredging for scallops, creeling for lobster, edible crabs and velvet crabs, and demersal trawling for *Nephrops* and squid. This is reflected in the landing statistics which show these three fishing methods were responsible for 98.5% fishing activities in the Local Study Area between 2011-2016 (Table 14.7).

Table 14.7: Percentage contribution of fishing methods to local landings (by value; MMO)

Fishing method	% contribution to local landings	Target species include
Pots and traps	46.7	e.g. Lobster, edible crabs, velvet crabs, whelks, <i>Nephrops</i>
Demersal trawls/seine	43.4	e.g. <i>Nephrops</i> , squid, mackerel
Dredge	8.4	e.g. Scallops, razor clams
Gears using hooks	0.8	e.g. Mackerel
Other passive gears	0.7	e.g. Razor clams

- 44 In the Regional Study Area, 57% landings by value was from vessels were over 10 m, while within the Local Study Area just over half the catch landed in 41E7 was caught by vessels of under 10 m in length, in 42E7 this proportion was slightly higher with 60% of landings being caught by vessels of 10 m and under (Figure 14.3). This would indicate that larger vessels native to local ports tend to fish further offshore outside the Local Study Area.
- 45 Although the highest landings tend to occur in the summer months, moderate landings values were recorded year-round in the Local Study Area (In both rectangles 41E7 and 42E7, average landings values were highest in August and lowest in February (Figures 14A.19 and 14A.20).
- 46 During the period 2011-2016, 39.5% of landings from rectangle 41E7 were landed to the port of Pittenweem, representing 95.7% of the port's total income. The second highest percentage of landings from this rectangle (14.7%) was to Dunbar, which represented 81.3% of the port's total income. Landings from 41E7 also accounted for 90% of the total income for the following 6 ports: Crail, St Andrews, Anstruther, St. Monans, North Berwick and Methil and Leven (Table 14A.2; *Appendix 14A*).
- 47 During the period 2011-2016, 36.8% of landings from rectangle 42E7 were landed to the port of Arbroath, representing 65% of the port's total income. The second highest percentage of landings from this rectangle (13.8%) was to Gourdon, which represented 95.6% of the port's total income. Landings from 42E7 also accounted for over 75% of the total income for the following three ports: Stonehaven; Johnshaven; and North Queensferry (Table 14A.3; *Appendix 14A*).

Figure 14.3: Annual landings values by vessel category (Average 2011 to 2016) in Regional Study Area (MMO)



Receptors

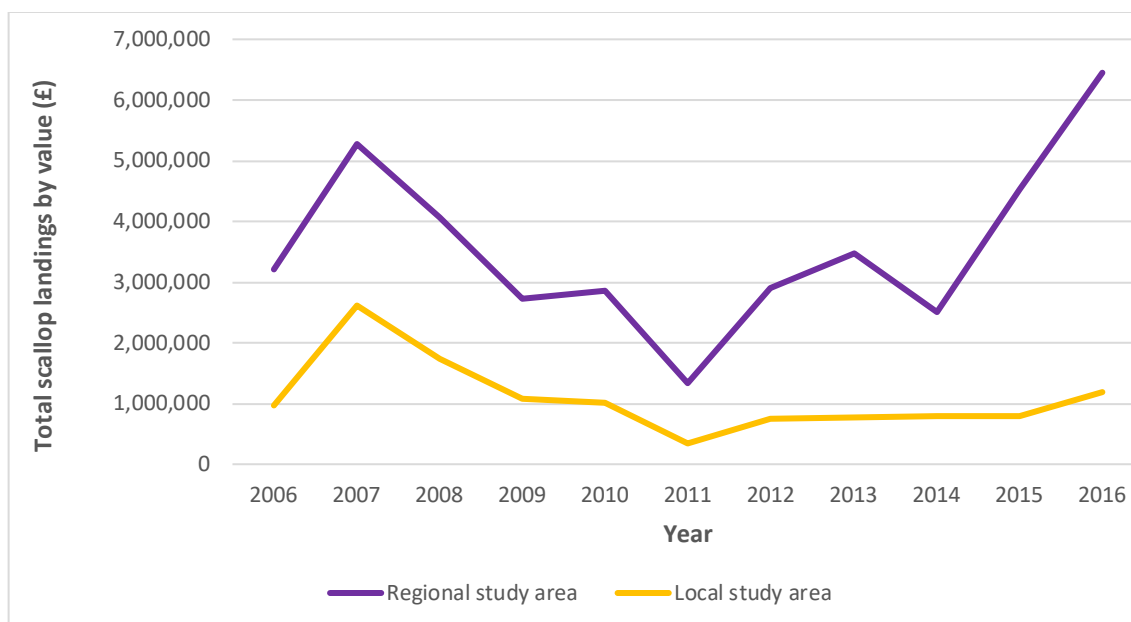
- 48 The overview of fisheries landings data, in conjunction with consultation with statutory and non-statutory consultees, has allowed the identification of fisheries receptors against which detailed impact assessment can be undertaken, these are as follows:
- The creel fishery; and
 - The scallop fishery;
 - The *Nephrops* fishery; and
 - The squid fishery;
- 49 These four receptors were identified in the scoping document and they account for 96% of landings in ICES rectangle 41E7 and 97.8% in 42E7. Other fisheries of potential growing importance were identified through consultation, including both whelk and mackerel, however at present they each only contribute 1% to the total landings in the Regional Study Area, therefore these fisheries were not assessed as specific receptors in this assessment. It is however acknowledged that these fisheries may grow in the future.
- 50 Details on these four fisheries, in terms of their activity and distribution are presented below for both the Development Area and Offshore Export Cable Corridor.

14.6.4 Development Area Baseline

Scallop Fishery

- 51 The scallop fishery targets king scallops using scallop dredges operated from larger (generally over 15 m) vessels from all over the UK as well as some local ports.
- 52 Between 2011-2016, scallops accounted for 17.7% of the average landings of the Regional Study Area. During this time, the majority of these landings came from ICES squares to the north east of the Development Area, particularly rectangles 42E8 and 43E8, which are located further offshore (see Figure 14.1). Rectangle 42E8 alone landed over 39% (£1,418,659) scallops regionally and had the second highest average landings of scallops (by value) in Scotland between 2011-2016. Scallops were also targeted in 41E7 and 42E7 where the Development is located, accounting for 3% of all landings in 41E7 (£240,262) and 21% (£529,645) in 42E7.
- 53 Prior to this, scallop landings were higher in both the regional and Local Study Area (Figure 14.4). Scallop fishing in the Local Study Area underwent rapid expansion during the period 2001-2007 (Figures 18A.19 and 18A.20; *Appendix 14C*), before decreasing until 2011. Since 2011, landings have steadily increased, however remain less than half of their peak levels in 2007 (Figure 18A.20).

Figure 14.4. Total scallop landings values by year (£) in the Local Study Area and Regional Study Area from 2006 to 2016 (MMO)



- 54 The average landing figure for over the past 10 years indicate that scallop fishing has moved further offshore in recent years. This evidence is further substantiated by VMS data, which provides an accurate picture of scallop fishing distribution as the majority of scallop dredgers are of over 15 m. With dredge vessels over 15 m responsible for over 95.7% of landings in the Regional Study Area.

- 55 MS VMS data for the period 2007-2011 (Kafas *et al.*, 2012) shows that the location of the Development Area was subject to some of the highest intensity scallop dredging in the Regional Study Area (Figure 14.5). MS data from 2009-2013 (Kafas *et al.*, 2013) shows that the area intensively dredged for scallops expanded north east (Figure 14.6). More recent VMS data (2011 – 2016) shows the intensity of scallop dredging in the Development Area becoming less, with areas to the north east of the Development Area being more intensively fished during the period 2011-2015 (Figure 14.7). The most recent VMS data available from ICES shows that in 2016 within the Regional Study Area, scallop dredging principally targeted north east of the Development Area (ICES rectangle 42E8; Figure 14.9). It should be noted that the VMS for 2016 from ICES includes vessels of between 12-15m, hence while this increase in intensity may be due to the inclusion of smaller vessels, as most scallop dredgers are over 15m it is more likely that increase in activity is reflective of increased landings in 2016 particularly in 42E8.
- 56 While the landings and VMS data do point to the fact that scallop dredging has moved further offshore in recent years and is now less centred upon the Development Area, it should be noted that fluctuations in scallop dredging activity are subject to annual fluctuations due to the cyclical nature of the fishery, with nomadic vessels targeting different areas in different years. Thus, annual variations in fishing intensity can be somewhat dependant on productivity elsewhere. Hence it is possible that the Development Area may be targeted intensively in future years.

Figure 14.5: Distribution of scallops by intensity (Average 2007-2011) in Regional Study Area (MS; Kafas *et al.*, 2012)

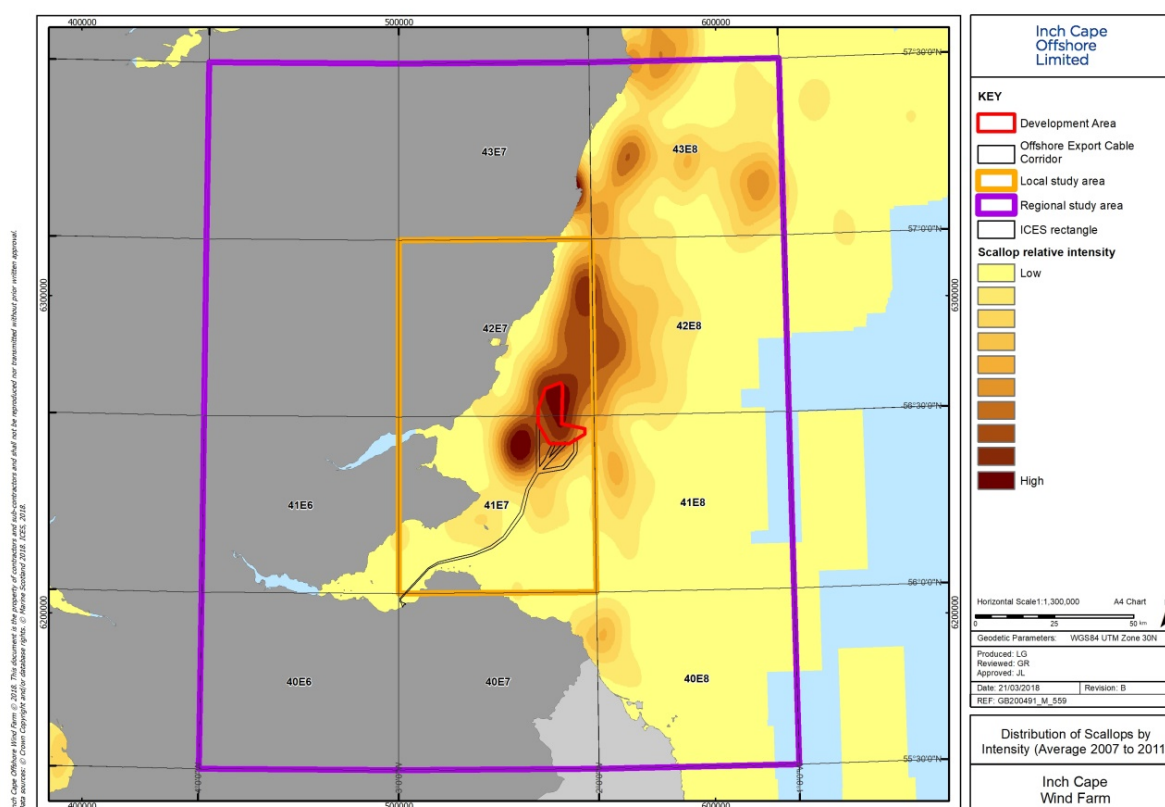


Figure 14.6: Distribution of scallops by intensity (Average 2009-2013) in Regional Study Area (MS; Kafas *et al.*, 2013)

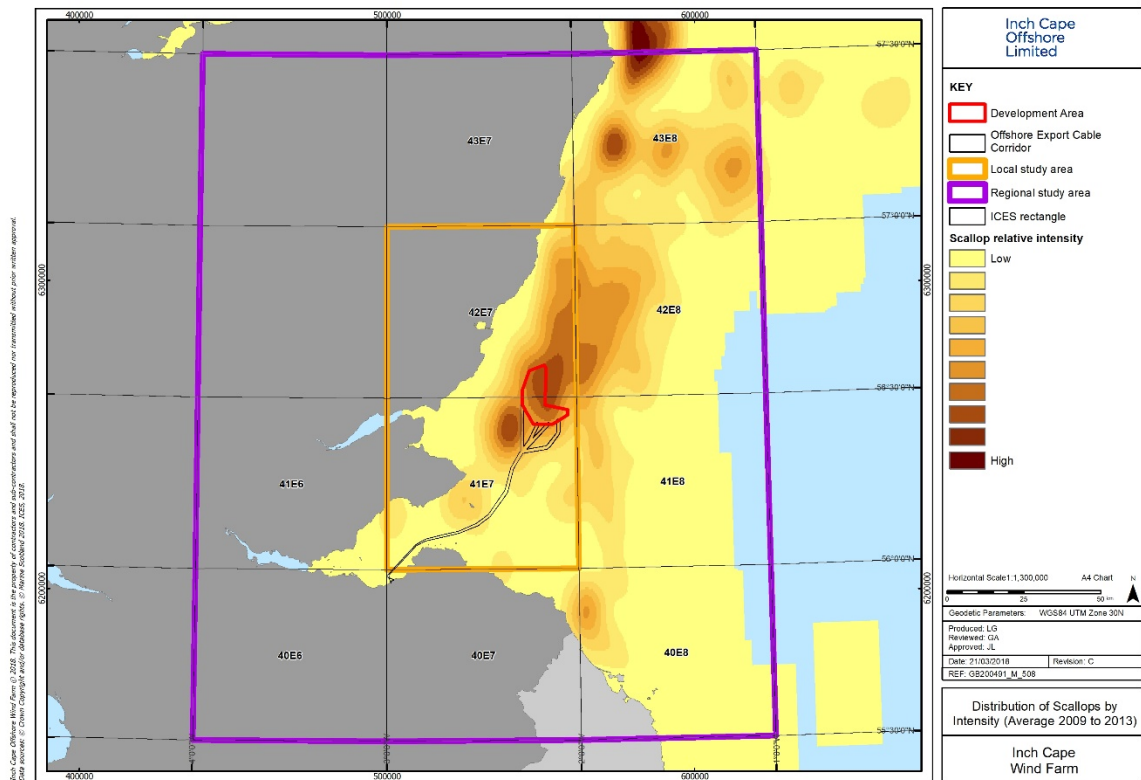


Figure 14.7: VMS density by fishing intensity for dredge (2011-2015) (MMO)

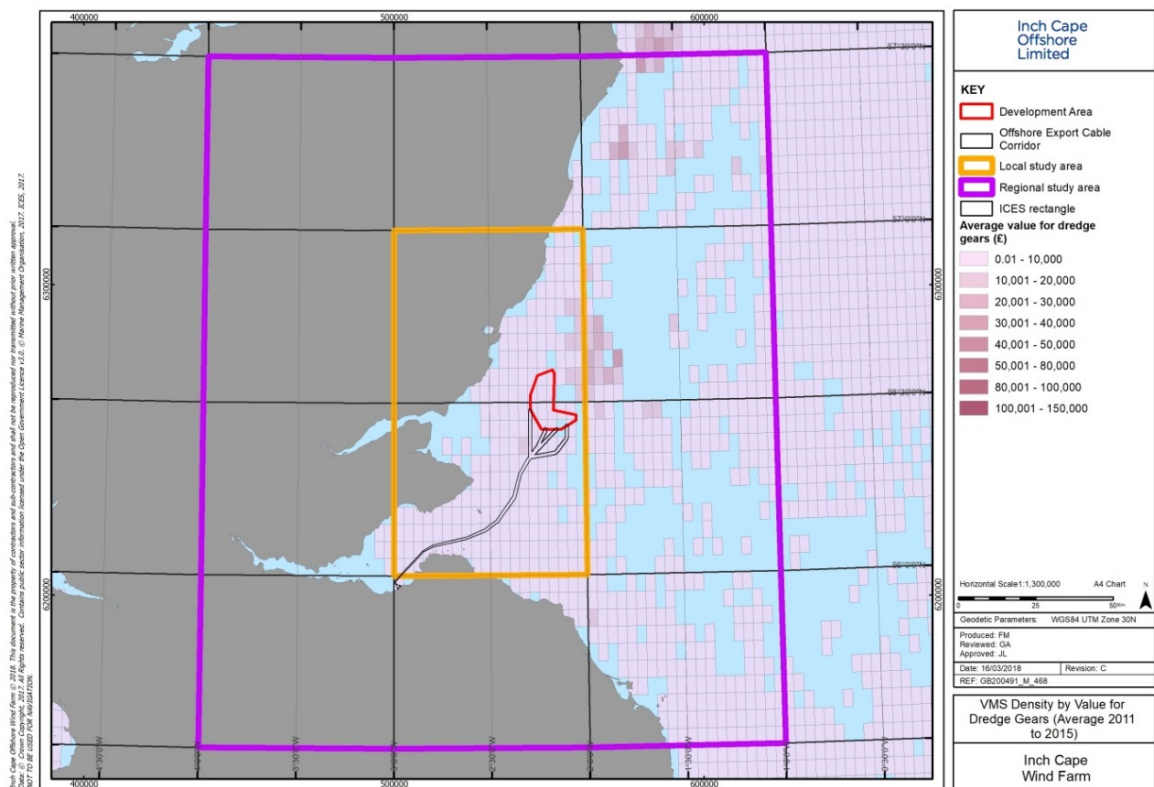
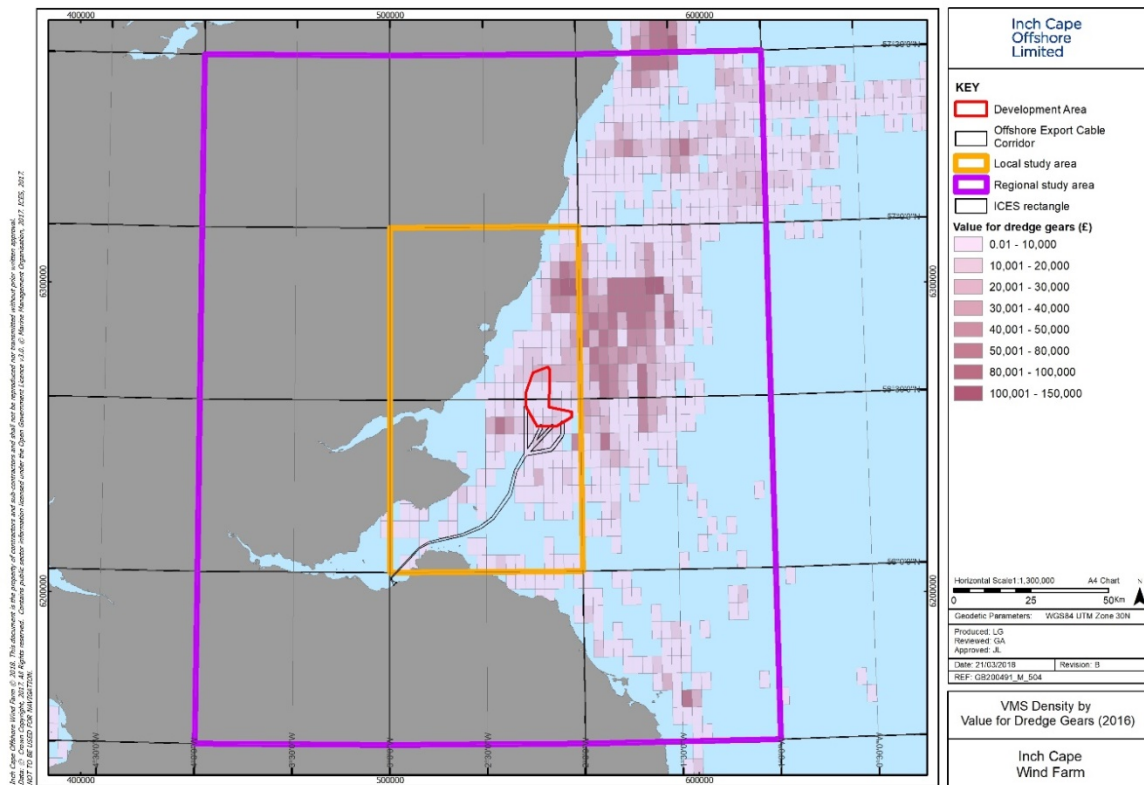
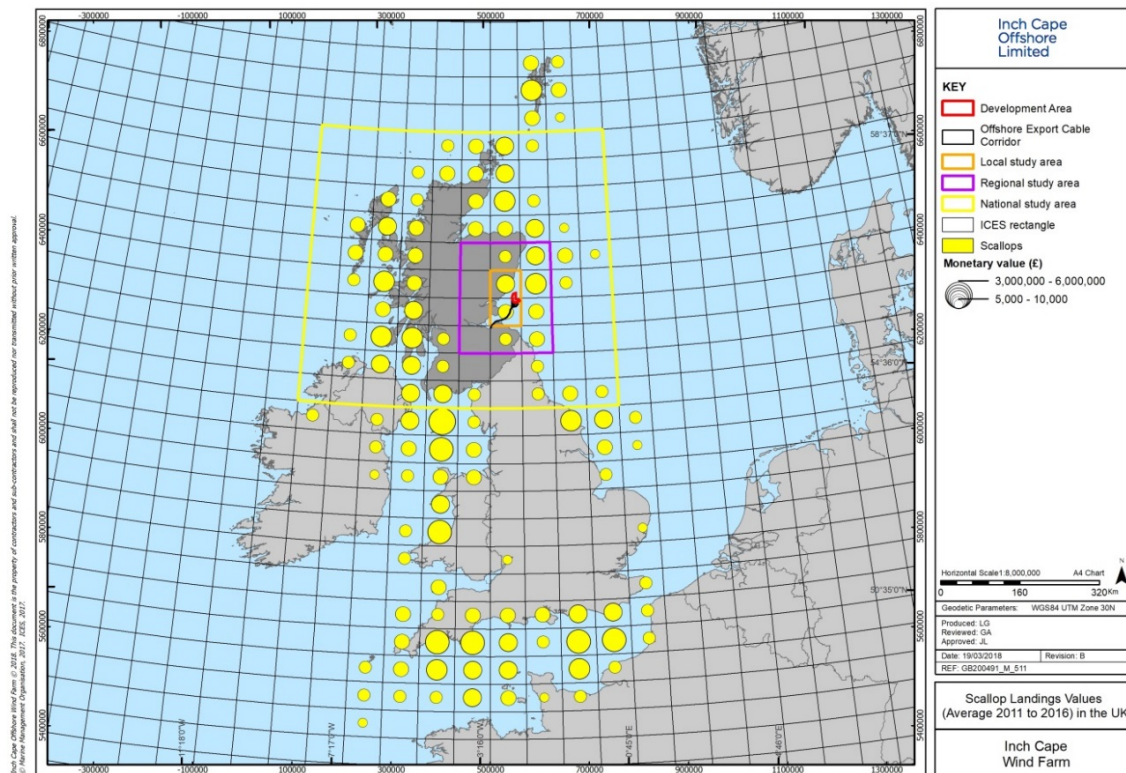


Figure 14.8: VMS density by fishing intensity for dredge (over 12 m vessels) in 2016 (ICES)

- 57 Many UK scallop vessels are nomadic in nature, targeting a range of different grounds before moving on to another area, while stocks recover. Scallop grounds are all around the UK, with major fisheries around the Isle of Man, Irish Sea, English Channel, and the Scottish east and west coasts (Figure 14.9). Between 2007 and 2016 the highest landings of scallops came from Isle of Man, off the Cardiganshire coast and English Channel (Figure 14.9; Figure 18A.7 *Appendix 14C*). Landings were lower in the Regional Study Area, however still of moderate importance on a national scale, reaching similar values to that in the Moray Firth.

Figure 14.9: Scallop annual landings values (Average 2011 to 2016) in the UK (MMO)

- 58 As a result of the nomadic nature of the scallop fishery, vessels from other regions (Oban; Girvan; Kirkcudbright; Annan; Burntisland; Fleetwood; Brixham) may visit scallop grounds located in the Regional Study Area. It is worth noting that while many vessels targeting scallops in the Regional Study Area are nomadic, some local vessels also are rigged for scallop dredging and some *Nephrops* vessels will occasionally target this fishery.
- 59 Within the Regional Study Area scallop dredging occurs year-round; however, values tend to be highest during April to October (Figures 14A.19 and 14A.20; *Appendix 14A*).
- 60 Scallop vessels generally tow either one or two beams, onto which a number of dredges are attached, depending upon vessel size, engine power and winch capacity. The principal type of dredge used is the English 'Springer' type, whereby the scallops are raked from the seabed by steel teeth that are attached along the leading edge of the dredges and which can penetrate the seabed to a depth of approximately 15 cm.
- 61 New Scallop Conservation Measures, which restrict dredge numbers and tow bar length in Scottish inshore waters, came into force on 1 June 2017 under *The Regulation of Scallop Fishing (Scotland) Order 2017*. Measure one increases King scallop minimum landing size from 100 mm to 105 mm in all areas bar the west coast of mainland Scotland south of 55°N and Shetland (UK Government, 2017). Measure two specifies that vessels fishing within 12 nm of the Scottish coast can deploy tow bars of no more than 7.5 m in length; tow bars should be capable of carrying no more than eight dredges per (vessel) side. Alternatively, should vessels employ a remote electronic monitoring system, they are permitted to use up

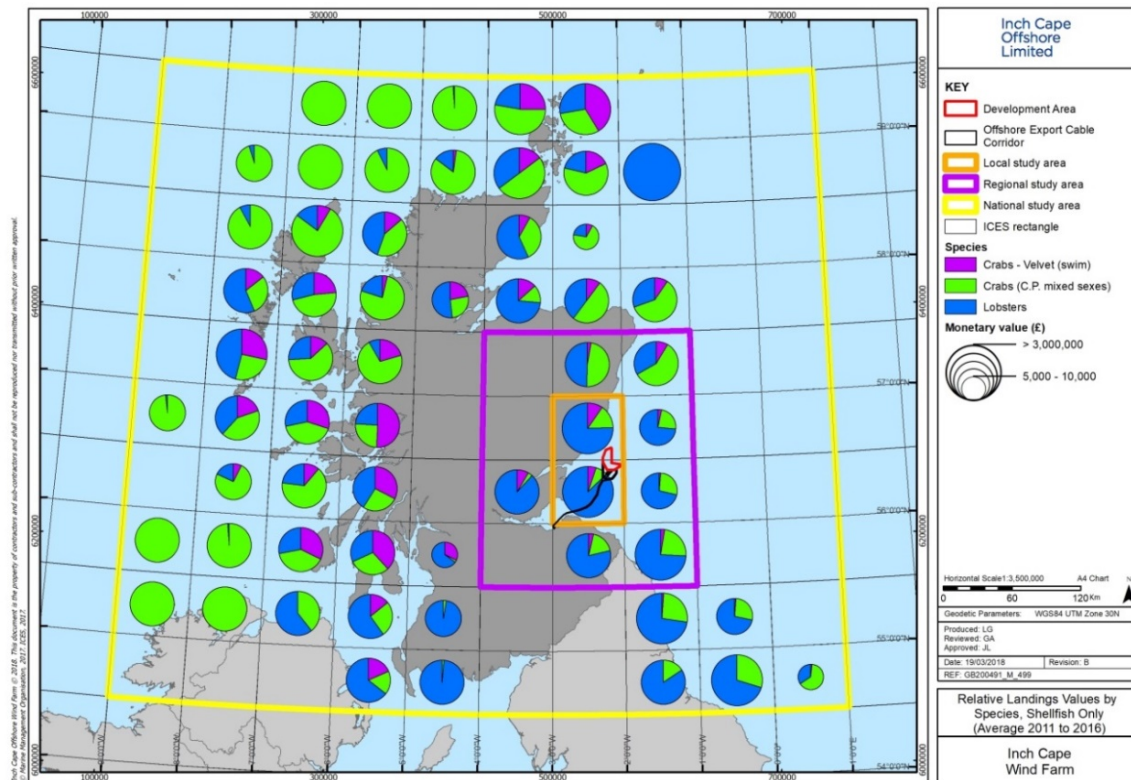
to eight dredges per side when fishing within 0-6 nm of the Scottish coast, and 10 dredges per side in the 6-12 nm area (Scottish Government, 2017). These restrictions will impact the Regional Study Area. Future implications of these regulations to the scallop fishery are unknown, however it is hoped that the alterations will achieve a more sustainable sector.

- 62 Although EU and Scottish legislation specify a minimum landing size for scallops, there are no limits in the form of Total Allowable Catch (TAC) or quotas (Scottish Government, 2017). Regional restrictions or closures may apply elsewhere, although there are none in place in the Regional Study Area at present.

Creel Fishery

- 63 The creel fishery targets crabs and lobster using static gear (baited creels) set from small vessels operating from harbours throughout the Regional Study Area (*Appendix 14A*). Creeling for crabs and lobsters tends to take place on rocky, uneven ground, predominantly by full time fishermen, although some part time fishermen may participate in the fishery in summer months.
- 64 The Local Study Area (in which the Development Area is located) contains a valuable creel fishery, with 41E7 recording the highest and 42E7 the fourth average landings of lobster for the period 2011-2016 in Scotland (Figure 14.10), worth £2,602,308 and £1,264,203 respectively. Lobsters made up almost half the catch in 42E7 (49%) and were the second most important species targeted in rectangle 41E7 contributing 34% to average annual landings over this period. Edible and velvet crabs were also caught in the Local Study Area, however contributed substantially less to total landings than lobster (Figure 14.10).

Figure 14.10: Relative annual landings values by species, shellfish only (Average 2011 to 2016) in the National Study Area (MMO)



- 65 Creeling vessels of under 10 m were responsible for landing the majority of this catch (81% of lobsters; 66.6% and 89.7% of edible and velvet crab landings, respectively). As the creeling fleet is principally made up of vessels of under 15 m, VMS data is not available. However, MS carried out a Creel Fishing Effort Study in 2016 (MS, 2017) which provides information on the distribution of creeling around Scotland. It should be noted that this study did not survey all creeling vessels and so may underestimate creel effort. This updates study information from the Scotmap (MS, 2014), which was collated data on the distribution of fishing by the under 15 m fleet in Scotland for several fisheries between 2007 and 2011.
- 66 The MS Creel Fishing Effort Study revealed intensive creel fishing effort in coastal areas of ICES rectangle 42E7 and 41E7, as well as activity to the east and north of the Development Area (Figure 14.11). While creeling activity is of low intensity within the Development Area itself, areas of particularly intensive creeling activity are located along the coasts of Fife, Arbroath and Johnshaven to Stonehaven. During the consultation events fishermen identified that the maps of fishing activity data from the recent MS Creel Fishing Effort Study provided a reasonable representation of the current distribution of creeling in the Regional Study Area, and was more accurate than the Scotmap (Figure 14.12).

Figure 14.11: Average number of crab/lobster hauls per day per cell (4 km²) (MS, 2017)

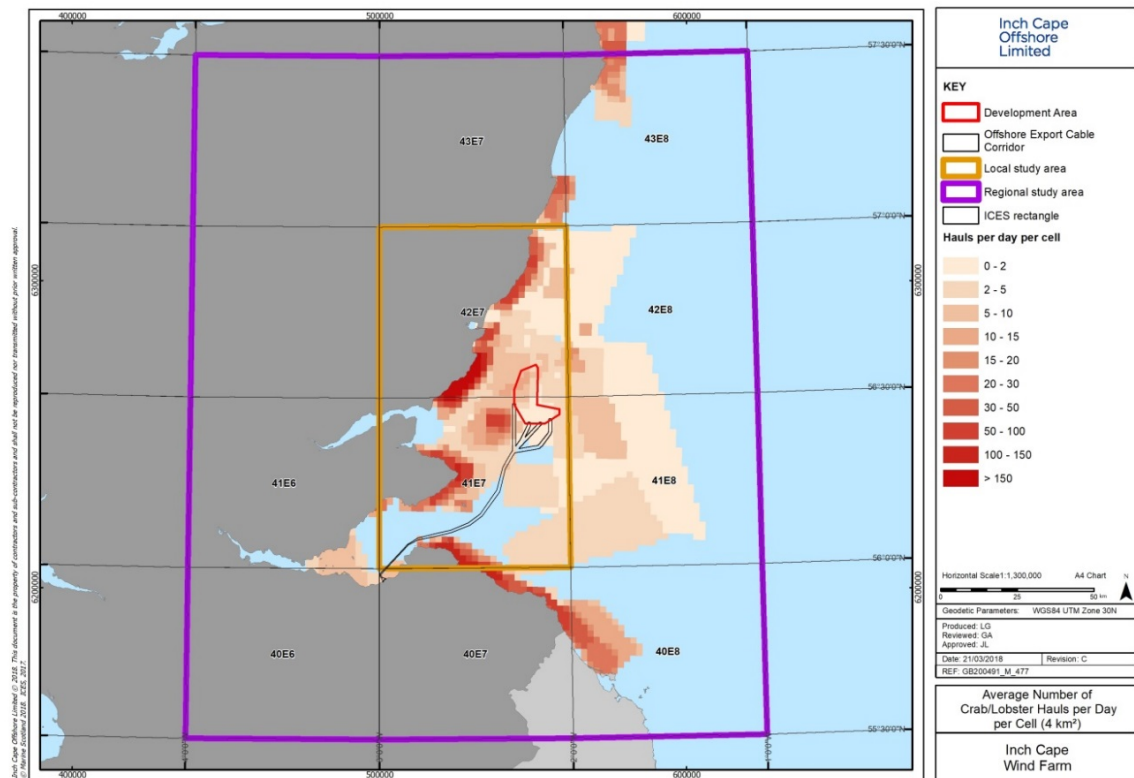
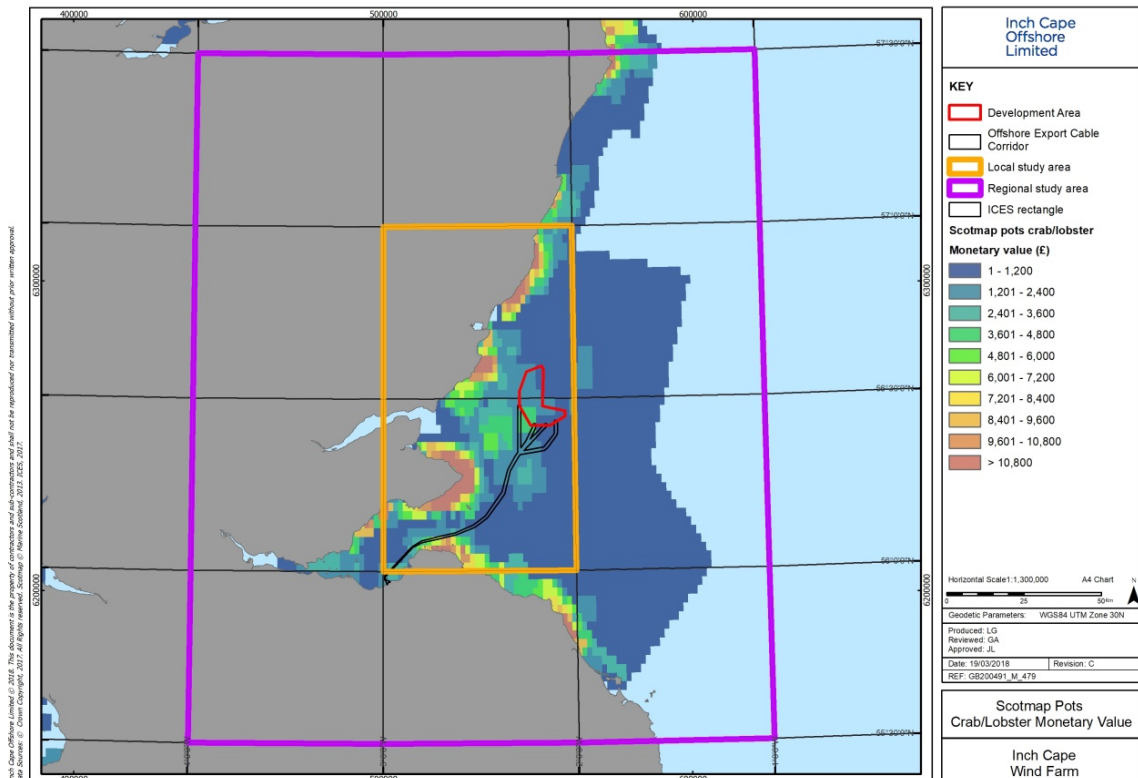


Figure 14.12: Scotmap pots crab/lobster: Monetary value, (MS, 2012)

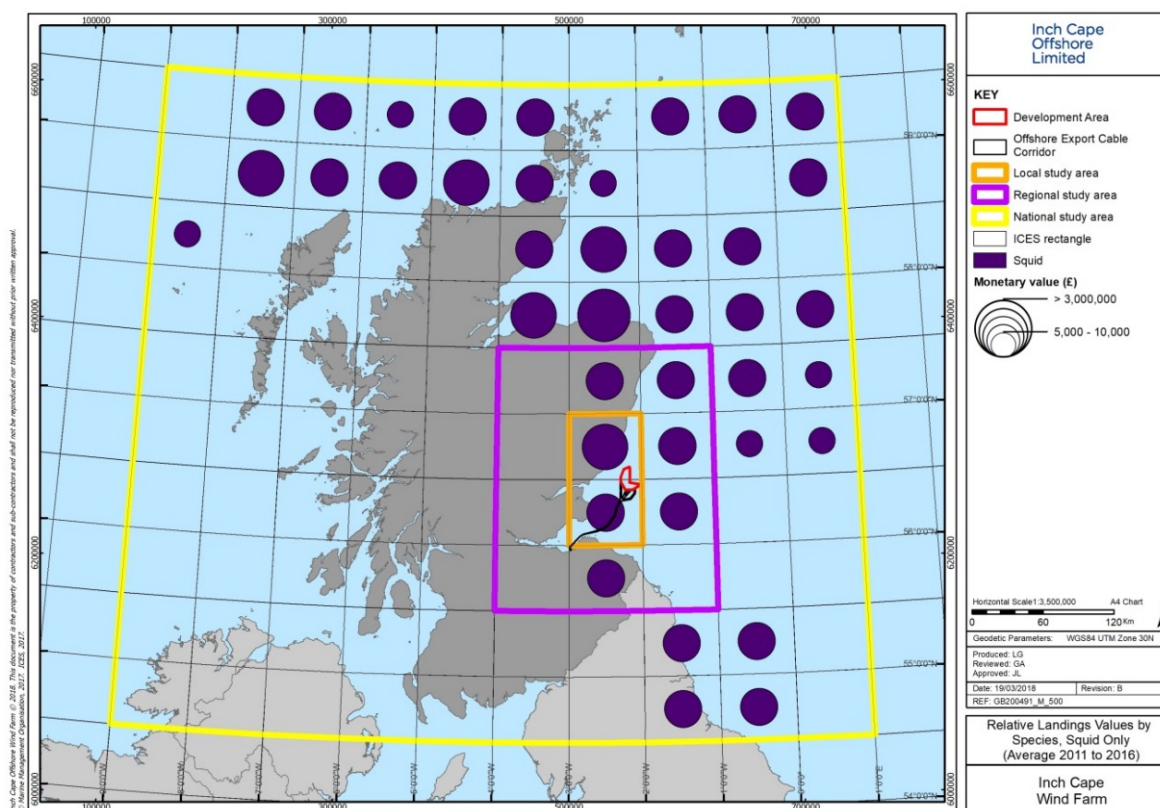


- 67 Fishers commented that the industry is growing; new larger vessels capable of carrying more creels and steaming greater distances are entering the fishery and operating in deeper waters further offshore. This is reflected in the change in fishing patterns between Scotmap and the creeling study, which show more activity further offshore than before, particularly to the north and east of the Development. Fishermen also commented that even the recent creeling study may be an underestimation of effort as new vessels have entered the fishery since this study was undertaken.
- 68 This reported increase is reflected in the landings figures for the two ICES rectangles where the Development is located. In both 41E7 and 42E7, lobster landings have remained stable throughout study period, with slight increases in 42E7 in 2016. Edible crab landings in both rectangles have varied more over the years, however gradually increased to an all-time high in 2016. The razor clam fishery was fairly stable until 2015, when landings fell considerably. As of 2016 the fishery seems to be recovering. Velvet crabs have shown the greatest variation declining in 41E7, but increasing in 42E7.
- 69 Creeling occurs year-round in the Local Study Area, however it is most active during summer (June-September). This is partly due to the movement of the species but also due to weather conditions, which are an important factor in determining levels of activity in the winter months. Lobster landings (by value) peaked in August and September (Figures 14A.19 and 14A.20; *Appendix 14A*), and velvet crab landings peaked in December. Edible crabs showed little seasonal variation.

Squid Fishery

- 70 The squid fishery is targeted by demersal trawlers, predominately *Nephrops* vessels with reconfigured otter trawls modified to capture squid. It is difficult to define what ground squid can be consistently targeted, with fishermen reporting catches over both hard and soft ground.
- 71 Over the period 2011-2016, values of landings for squid were relatively modest with the species accounting for only 2% of regional landings. While 58% of squid landings were from rectangles 41E7 and 42E7, where the Development Area is located, squid only accounted for 1% and 6% respectively. Nationally, highest squid landings values were recorded in the Moray Firth (£1,187,706 and £519,957 in rectangles 44E7 and 44E6, respectively) (Figure 14.13). Although relatively low compared to landings in the Moray Firth, rectangles 41E7 (£159,030) and 42E7 (£71,804) both recorded values in the top ten nationally.

Figure 14.13: Relative annual landings values by species, squid only (Average 2011 to 2016), in the National Study Area (MMO)



- 72 It was widely commented by fisherman that fishing for squid in the local and Regional Study Area is unpredictable between years and landings are dependent upon both stock and effort. *Nephrops* vessels may switch to squid at certain times of year, should squid stocks become high enough. Squid may also be targeted by visiting vessels from the Moray Firth if fishing in their area is poor. This fluctuation in annual catches was confirmed by the landings statistics (Figures 14A.17 and 14A.18; *Appendix 14A*) which showed no obvious trend. In rectangle 41E7, highest landings values were recorded in 2013 (£169,115) and lowest values in 2014 (£3,804). Landings values then increased in 2015 (£83,775) but declined again in 2016 (£6,340). In 42E7, highest landings values were recorded in 2013 (£299,065) and lowest in 2016 (£40,974), with marked fluctuations in between (£69,239 in 2014; £297,812 in 2015). Fishermen reported that 2017 was a good year, although no statistics are yet available.
- 73 The fishery is seasonal; in the Local Study Area, peak season occurs at various times between July-October (Figures 14A.19 and 14A.20; *Appendix 14A*) however this is variable and fishermen reported the squid fishery unpredictable. Stakeholders confirmed that squid catches are highest over the summer months and also September and October, with catches seemingly dependant on water temperature.
- 74 Landings data shows that vessels over 10 m contributed 93.8% to squid landings (by value) in the Regional Study Area between 2011-2016. Fishermen commented that local vessels

which target squid are generally under 15 m in length, hence it is assumed that squid fishing vessels are generally in the 10-15 m size category.

- 75 Data is limited on the distribution of fishing activity for squid. VMS data from Kafas *et al.* (2013) identified low intensity of fishing throughout the Regional Study Area (Figure 14.14), however this is limited to vessels over 15 m and to the period 2009-2013. Scotmap provides information on the distribution of 'not *Nephrops* trawls' for the under 15 m fleet (Figure 14.15). Given the low levels of whitefish catches in the Regional Study Area, this data is likely to reflect patterns of squid fishing, however this also dates from 2007-2011. Both data sources do provide evidence of a widely distributed low intensity fishery across the Regional Study Area, which overlaps with the Development Area. Fishermen confirmed this wide distribution commenting that this was due to the unpredictable nature of the squid fishery, and the fact that squid don't appear to have a preferred area. Despite this, fishermen have identified areas off Stonehaven, East of Bell Rock, east of the Development Area (as well as Pittenweem at the mouth of the Forth, and Port Seton), as areas targeted for squid. This is supported by evidence from both VMS and Scotmap data (Figures 14.13 and 14.14, respectively).

Figure 14.14: Distribution of squid by intensity (Average 2009 to 2013) in the Regional Study Area (MS; Kafas *et al.*, 2013)

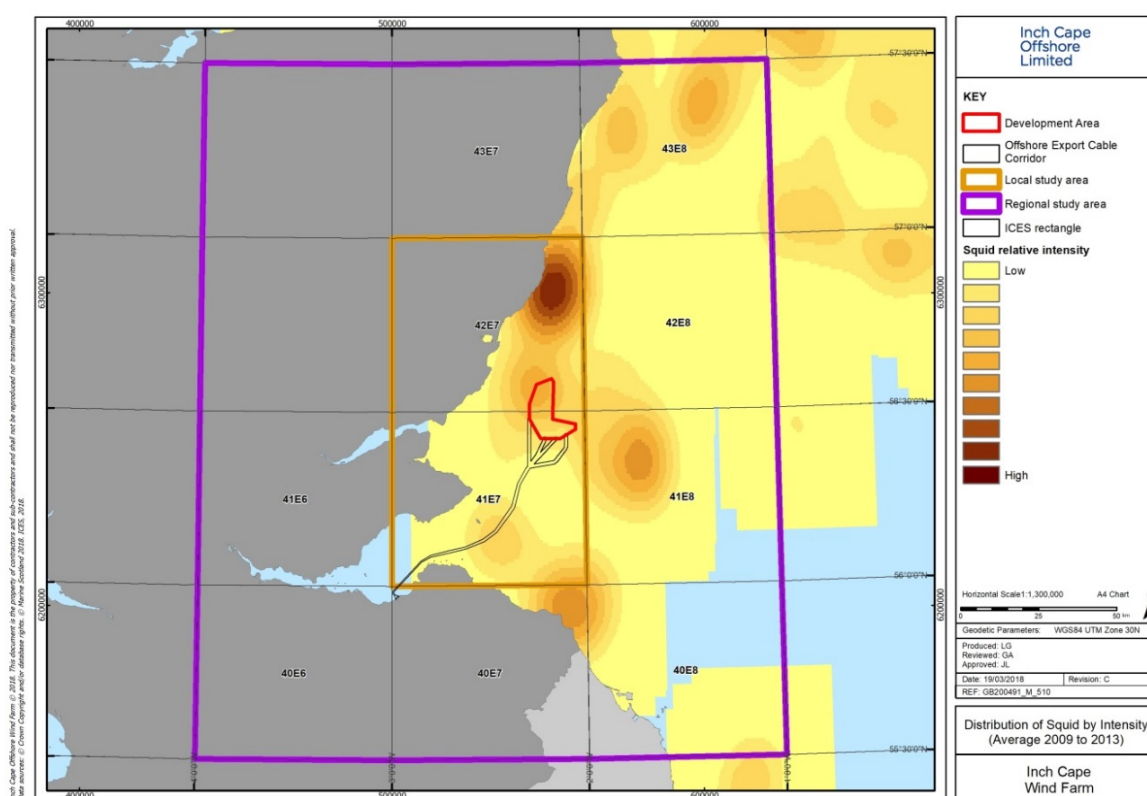
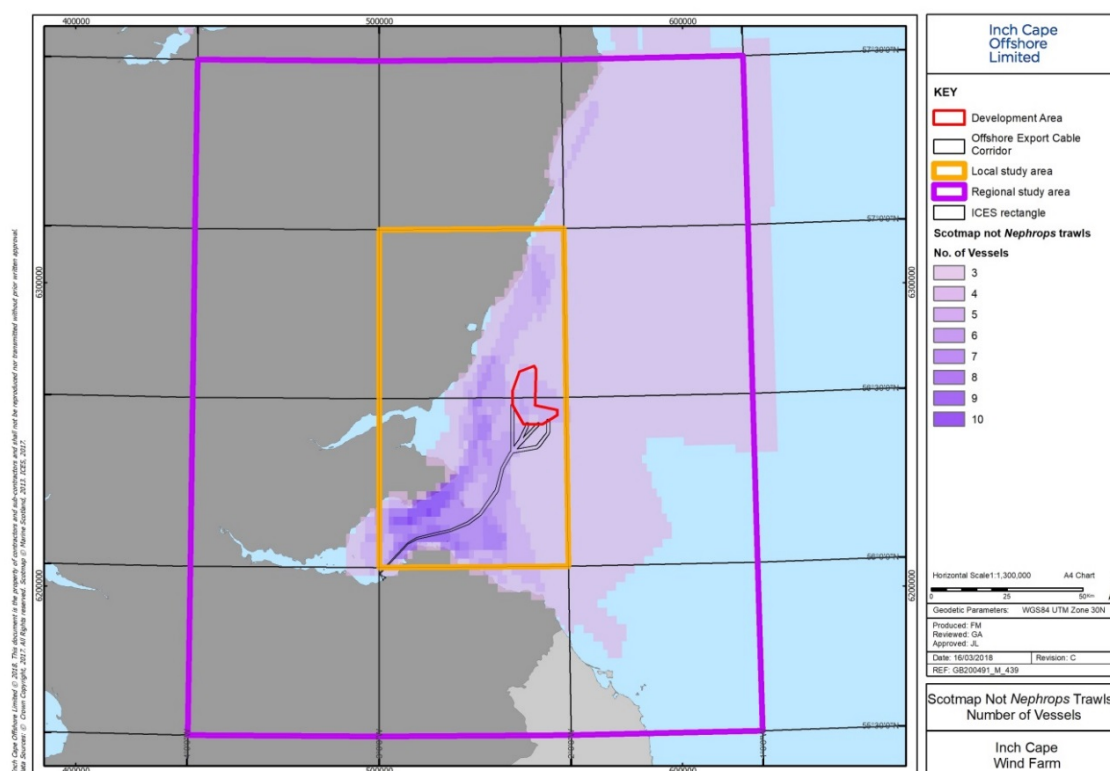


Figure 14.15: Scotmap 'not *Nephrops* trawls': No. of vessels (MS, 2012)

- 76 The squid fishery is both unpredictable in terms of annual landings and patterns of fishing distribution. None the less, it remains an important fishery in this region due the lack of licence restrictions, therefore allowing fishermen to reduce pressure on stocks with catch limits (such as *Nephrops*). Thus, it is likely that the fishery will continue to increase in importance.

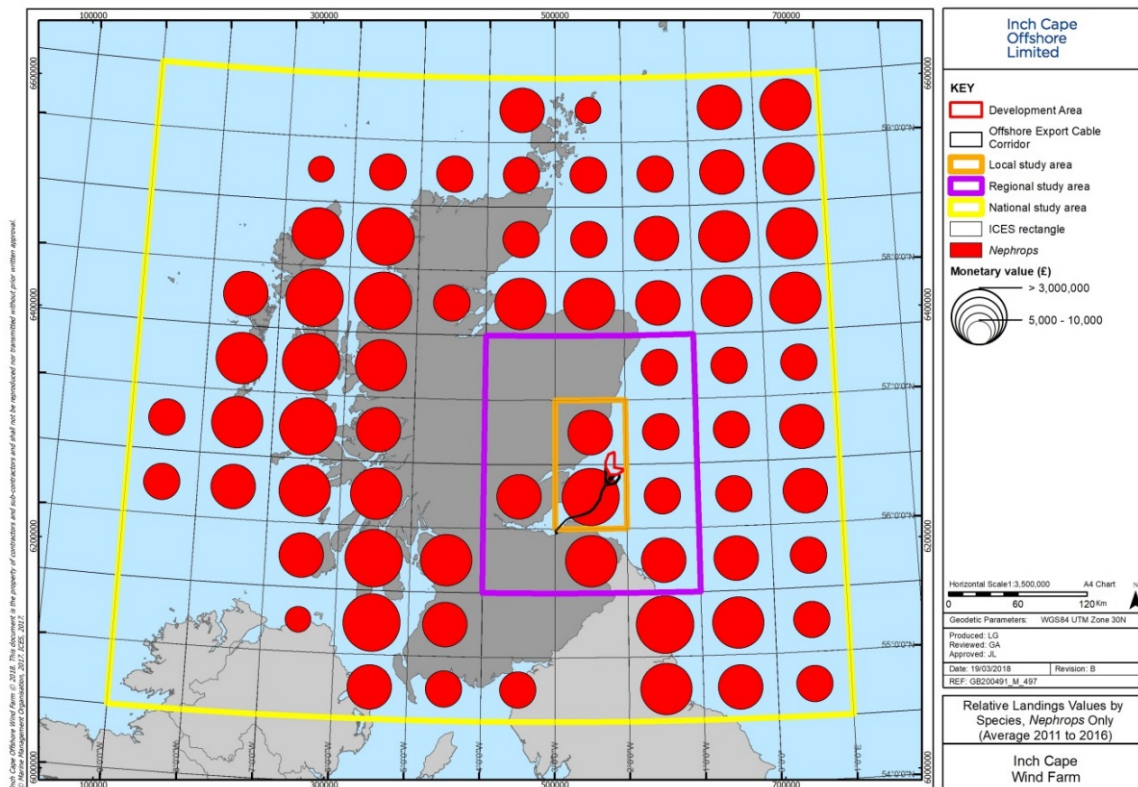
14.6.5 Offshore Export Cable Corridor Baseline

- 77 The Offshore Export Cable Corridor is located in ICES rectangle 41E7, which recorded the highest average landings values in the Regional Study Area, and sixth highest nationally (Figure 14.2).
- 78 The fisheries that occur in the area of the Offshore Export Cable Corridor are primarily demersal otter trawling for *Nephrops* (which accounted for 52% of landings in 41E7 between 2011-2016), creeling (40.3%), and a small proportion of scallop dredging near the Development Area (3.1%) (Figure 14.A11; Appendix 14A).
- 79 As previously noted (Section 14.6.3) 39.5%, 14.7%, 11.1%, 5.8% and 4.9% of landings (2011-2016) from rectangle 41E7 were landed to the ports of Pittenweem, Dunbar, Eyemouth, Arbroath and Port Seton, respectively.
- 80 A summary of the level of fishing activity and its distribution within the Offshore Export Cable Corridor is provided below.

Nephrops Fishery

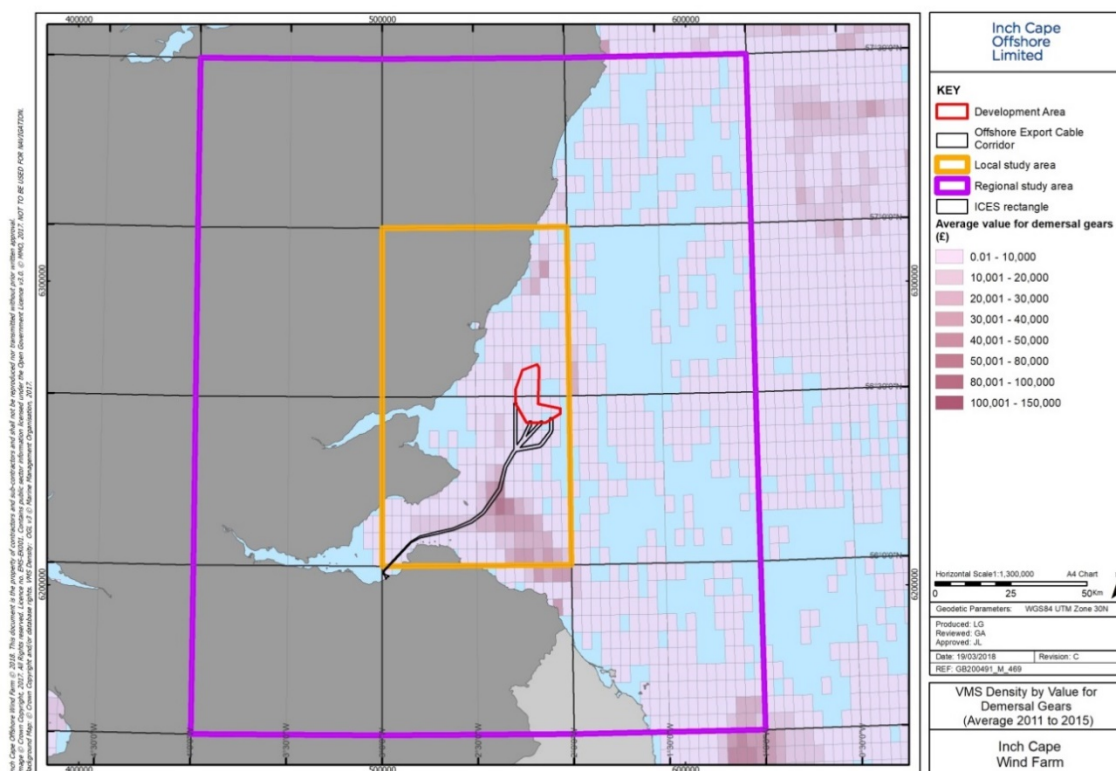
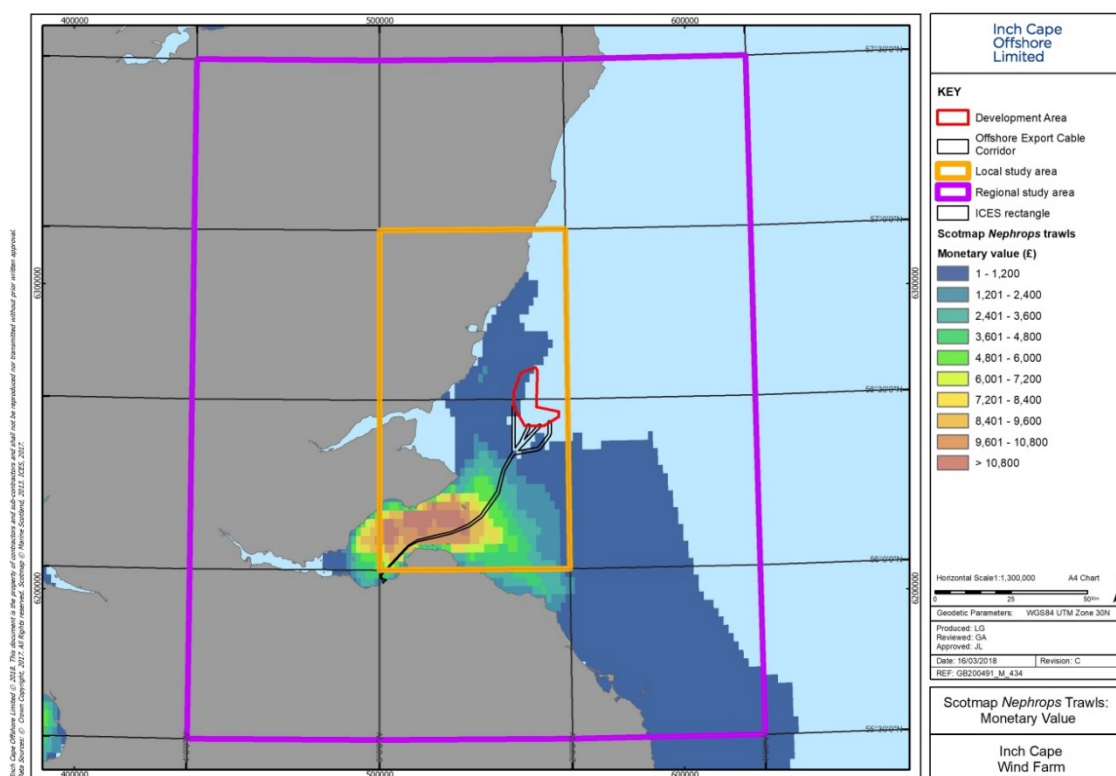
- 81 The *Nephrops* fishery is targeted by demersal trawlers of both under and over 15 m fleets; the under 15 m vessels generally target grounds in proximity to their home ports and the larger over 15 m fleet utilise grounds further offshore (*Appendix 14A*). *Nephrops* favour muddy or soft substrates and inhabit burrows. As this species is dependent on a particular type of habitat, their distribution and therefore the fisheries targeting them is substrate specific. These vessels principally use single or twin rig demersal otter trawls. *Nephrops* gear is configured similarly to standard demersal otter trawling although a smaller mesh is used with a minimum of 70 mm diameter.
- 82 ICES rectangle 41E7, through which the Offshore Export Cable Corridor passes, contains valuable *Nephrops* fishing grounds. *Nephrops* is the most important fishery in 41E7, making up 53%, with average annual landings of £4,093,313 between 2011 and 2016. This represented the third highest landings value in Scotland (Figure 14.16).
- 83 *Nephrops* landings have shown a degree of variation over the data series. The lowest recorded *Nephrops* landings value was in 2013 (£2,648,685) with the highest landings value in the following year (£5,195,466). Despite a decline from 2014 to 2015, landings recovered in 2016 to £4,419,722. Catches are reported throughout the year but peak in the summer months (Figures 14A.19 and 14A.20). Fishermen commented that the *Nephrops* fishery was declining, with some vessels that previously fished *Nephrops* have turned to creeling, however the landing figures do not support this up until 2016.
- 84 Fishing for *Nephrops* in rectangle 41E7 occurs year-round, however it peaks in July (Figure 14A.19).

Figure 14.16: Relative annual landings values by species, *Nephrops* only (Average 2011 to 2016), in the National Study area (MMO)



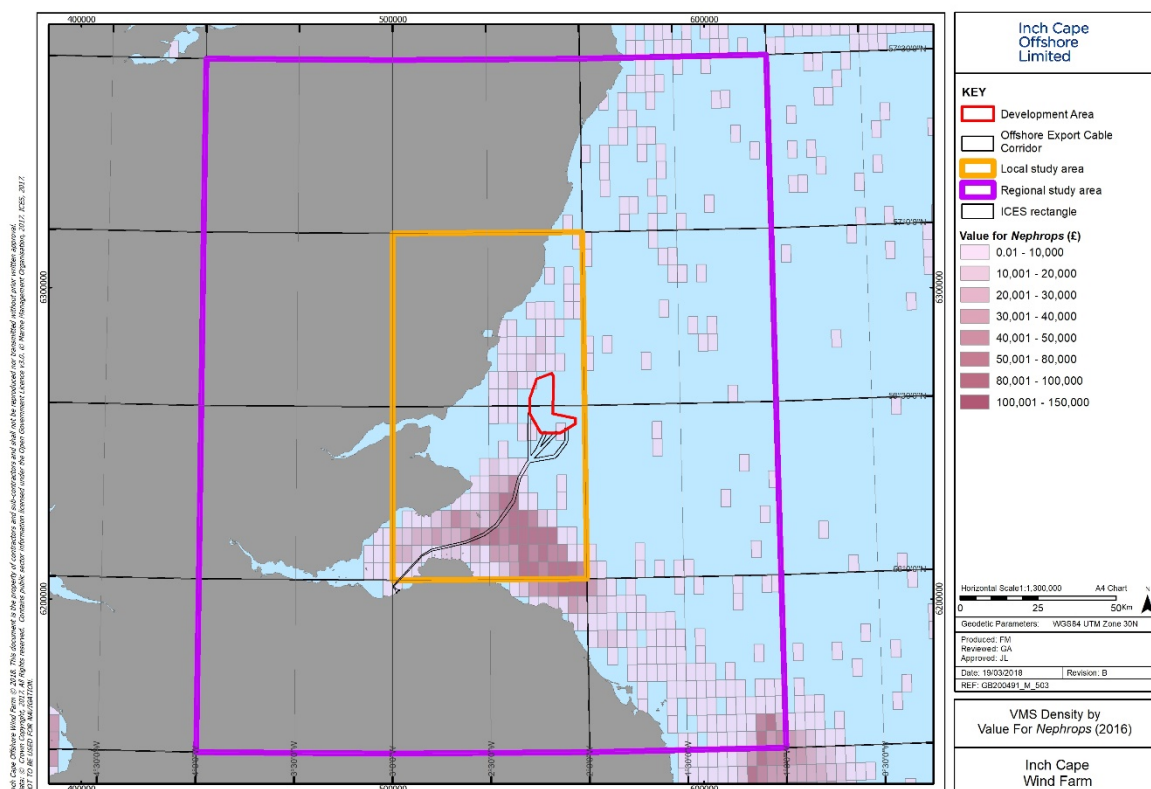
- 85 The *Nephrops* fleet is targeted by both the over and under 15 m fleet, with over 30% *Nephrops* landings (by value) in 41E7 (in the Regional Study Area) captured by vessels over 10 m (30%). The under 15 m fleet is generally comprised of the local fleet and concentrates on grounds closer to their home port, particularly in the Firth of Forth (and along the Montrose-Stonehaven coast near to the Development Area). The over 15 m fleet predominantly fish grounds further offshore in the North Sea. The vessel restriction in the Firth of Forth restricts demersal trawlers of over 16.77 m from inshore of the line drawn between Fife Ness Lighthouse and North Ness on the Isle of May, along the coast of the Isle of May to South Ness and on to the mainland at Tantallon Castle. Larger vessels from outside the Regional Study Area occasionally visit the *Nephrops* grounds within the Regional Study Area, but only when fishing in their own region is poor.
- 86 Due to the diverse nature of the fleet, VMS data and data sources which provide information on the under 15 m fleet were examined. VMS data from the MMO is not broken down by species, however given that most of the demersal trawling in this region is for *Nephrops*, this provides a good indication of fishing patterns within the area. VMS data shows both a similar pattern of fishing, with effort concentrated offshore of the Firth of Forth, extending down the east coast of as far as Eyemouth (Figure 14.17).

Figure 14.17: VMS density by value for demersal gears (Average 2011 – 2015) (MMO)

Figure 14.18: Scotmap *Nephrops* trawls: Monetary value (MS, 2012)

- 87 Fishermen at the consultation events agreed that the MMO VMS data for 2011-2015 was the most accurate representation of fishing patterns for *Nephrops* for the over 15 m fleet and was more representative than the MS VMS data for 2009-2013 (Kafas *et al.*, 2013). They also commented that Scotmap data was an accurate representation of fishing patterns for the under 15 m vessels (Figure 14.17), although some fishermen commented that since the Scotmap exercise, the under 15 m fleet has started to move offshore within the Firth of Forth, while larger vessels have started fishing further north, primarily due to restrictions over gears and horsepower. Fishermen recommended that using both VMS and Scotmap data combined would give the most accurate representation of *Nephrops* fishing.
- 88 Although not validated with local fishermen as the data was not available at the time, ICES data for *Nephrops* trawling for vessels of 12 m and over (Figure 14.19) also provides data on the distribution of *Nephrops* trawling. This data is similar to the combined pattern of MMO VMS and Scotmap data, however with less fishing in the Firth of Forth as this is mainly targeted by vessels not fitted with VMS.

Figure 14.19: VMS density by fishing intensity for *Nephrops* for vessels of over 12 m (2016) (ICES)



Scallop Fishery

- 89 VMS data shows that fishing predominately occurs on the northern most part of the Offshore Export Cable Corridor, near to where it meets the Development Area; elsewhere along the Offshore Export Cable Corridor, scallop fishing intensity is relatively low (Figures 14.6-14.8). This is substantiated by the landings data for rectangle 41E7. During the period

2011-2016, scallop landings averaged only £240,262 per year compared to £1,418,659 in 42E8. As with the Development site, the value of the scallop fishery in the region of the Offshore Export Cable Corridor (41E7) has declined in recent years, reducing from £564,905 in 2007-2011.

- 90 All other details in terms of the makeup of the fleet, fishing methodologies and seasonality is the same as per the Development Area

Creel Fishery

- 91 Creeling is an important fishery in 41E7, with crabs and lobsters being targeted predominantly by vessels under 10 m operated from local ports. Vessels of less than 10m accounted for 80.2% of all lobsters and crabs landings, with the remaining from other vessels of between 10 and 15m in length. Lobsters were the second most important species targeted in rectangle 41E7 contributing 34% (£2,602,308) to average annual landings, with less quantities of edible crabs and velvet lobsters, accounting for 3% (£219,839) and 2% (£152,751) respectively.
- 92 During the consultation events fishermen identified that the maps of fishing activity data from the recent MS Creel Fishing Effort Study provided a reasonable representation of the current distribution of creeling in the Regional Study Area (Figure 14.11), and believed was more accurate than the Scotmap (Figure 14.12). This study revealed intensive creel fishing effort in coastal 41E7.
- 93 Creeling activity is of relatively low intensity along the Offshore Export Cable Corridor itself. This is because the Offshore Export Cable Corridor has been routed to areas of sediment wherever possible in order to allow burial of the cable, and creelers predominantly target harder rocky ground, as this is where lobsters and crabs are more common. There are however areas of particularly intensive creeling activity located along the coastlines adjacent to the Offshore Export Cable Corridor, particularly along the coasts of Fife, and on the south side of the Firth between Port Seton and Dunbar, and Kirkcaldy on the north side of the Firth of Forth.
- 94 All other details in terms of the makeup of the fleet, fishing methodologies and seasonality are the same as per the Development Area.

Squid Fishery

- 95 The Offshore Export Cable Corridor passes through squid fishing grounds of low intensity, with slightly higher intensity within the Firth of Forth (Figures 14.13 and 14.4). Average annual squid landings in 41E7 were only £71,804; which did not rank in the national top ten, and was third highest regionally (Figure 14.12).
- 96 Fishers consulted considered the squid fishery to be particularly inconsistent and unpredictable, which is backed up by landing figures. In this area, as in the rest of the Regional Study Area, landings for squid fluctuate substantially year-on-year.

- 97 All other details in terms of the makeup of the fleet, fishing methodologies and seasonality is the same as per the Development Area

14.6.6 Baseline without Development

- 98 In the event of the Development not being developed, and no other developments occurring in the North Sea (including ICOL's consented Development) the fisheries within the Regional and Local Study Area are unlikely to remain constant, as fisheries change from year to year. Future trends in commercial fisheries activity are difficult to predict. Numerous factors can influence the spatial extent, movement and profitability of fisheries. These factors may include alterations in species distribution, market forces, productivity of fisheries in other areas, fuel costs, introduction of marine conservation areas and changes in legislation and policy. This uncertainty may cause fisheries in the future to change from that outlined in the baseline provided.

14.7 Assessment Methodology

- 99 The Scoping Report and Scoping Opinion identified a range of impacts with potential to effect commercial fisheries near to the Development. These potential impacts (Table 14.2) have been assessed separately for the Development Area and Offshore Export Cable Corridor, using significance criteria provided in Tables 14.8, 14.9 and 14.10. As a standardised methodology for assessing the impacts of offshore wind farm developments on commercial fishing activities is unavailable at present, expert judgement and best practice guidance (*Section 14.4*) have also been used.

14.7.1 Sensitivity of Receptor

- 100 Sensitivity can vary between fishery receptors for any given impact. For each fishery, information is provided about its sensitivity to each impact at each stage of the development. The criteria used in this assessment to define the sensitivity of the fishery receptor are provided below (Table 14.8).
- 101 There are four characteristics (adaptability, tolerance, recoverability and value) from which overall sensitivity is derived.

Table 14.8: Criteria to define the sensitivity of the receptor

Characteristic	Sensitivity	Definition
Adaptability	Low	Fishing vessels are required to amend fishing practices slightly, but no significant change
	Moderate	Fishing vessels are limited in their ability to adapt
	High	Fishing vessels cannot adapt
Tolerance	Low	Outwith of peak fishing period or low change in fishing practices

Characteristic	Sensitivity	Definition
	Moderate	During peak fishing periods and discernible change in fishing practices
	High	Fishing activities cannot be undertaken
Recoverability	Low	Fishing activities can resume with little effect
	Moderate	Fishing activities resume but with a discernible effect
	High	Fishing activities cannot be resumed
Value	Low	Low loss of economic value of fishery affected
	Moderate	Moderate loss of economic value of fishery affected
	High	High loss of economic value of fishery affected

14.7.2 Magnitude of Impact

- 102 There are four characteristics (spatial extent, duration, frequency and severity) (Table 14.9) for which magnitude is measured, from these an overall magnitude for a given impact is defined.

Table 14.9: Criteria to define the magnitude of an Impact

Characteristic	Category	Definition
Spatial Extent	Negligible	Not in the proximity of fishing grounds, or very low intensity fishing grounds
	Low	In the proximity of low intensity fishing grounds
	Moderate	In the proximity of frequently targeted fishing grounds which comprise a proportion of receptor fishing grounds
	High	In the proximity of high intensity fishing grounds which comprise the majority of fishing grounds for the receptor
Duration	Negligible	Very short term, or in periods of very low intensity fishing activities
	Low	Short term, or outwith of principal fishing periods
	Moderate	Temporary (i.e. during construction period, or peak fishing period)
	High	Permanent (i.e. during operation phase)

Characteristic	Category	Definition
Frequency		Does not apply to commercial fishing because it is assumed that works will be consistent throughout the construction/decommissioning periods. In the case of operation, the assessment considers the Wind Farm and OfTW.
Severity	Negligible	No discernible, or very low change to fishing practices
	Low	Some amendment to fishing practices but no significant change
	Moderate	Fishing activities have limited opportunity to adapt and there is a discernible reduction in the Development Area and Offshore Export Cable Corridor
	High	Fishing activities cannot be undertaken in the Development Area and Offshore Export Cable Corridor

14.7.3 Method for Assigning Significance of Effect

103 The magnitude of any impact will be used to determine whether the predicted effect has the potential to be significant. A matrix which combines the magnitude of impact with receptor sensitivity (Table 14.10), was used as a guide to evaluate the significance of effect, however the final assignment of significance was based on expert opinion. Those effects assessed as being of Moderate/Major or Major significance are considered significant for the purposes of this assessment. Embedded migration measures were taken into account during the impact assessment and where any significant effects reached, additional mitigation measures may be proposed to reduce the residual effects.

Table 14.10: Significance of effects

Magnitude of Impact	Sensitivity of resource/receptor		
	Low	Moderate	High
Negligible	Negligible/Minor	Minor	Minor/Moderate
Low	Minor	Minor/Moderate	Moderate
Moderate	Minor/Moderate	Moderate	Moderate/Major
High	Moderate	Moderate/Major	Major

14.8 Impact Assessment- Development Area

14.8.1 Effects on Construction

Temporary Loss or Restricted Access to Fishing Grounds

- 104 The principal reasons construction of the Development Area could result in the temporary loss or restricted access to fishing grounds arise as a result of:
- Safety zones around construction vessels (500 m); and
 - Infrastructure that has been installed in addition to that within construction safety zones (500 m), including WTGs, OSPs and sub-sea cables.
- 105 500 m safety zones will be applied for around major construction works or vessels within the Development Area. These zones will prohibit all vessels (with the exception of construction vessels). The potential for increasing number of safety zones as the construction period progresses will have the effect of limiting normal fishing practices. These will occur for the duration of the construction phase (24 months within a three year period) at locations throughout the Development Area. The sensitivity of individual fisheries to the safety zones will be affected by the times of year that they are in place. For the purposes of this assessment, the most sensitive period for each fishery has been considered.
- 106 Approximately 190 km of inter-array cabling will be installed within the Development Area during the construction period. The inter-array cable will be buried to approximately one metre. Where burial is unachievable, the cable will be protected by other means, such as rock placement. It is considered that fishing vessels will not be able to safely operate in the vicinity of these cables until their safe burial or protection has been confirmed. Corrective measures may be required to ensure that the seabed is at an acceptable status for fishing activities to be safely resumed. Inter-array cables could potentially be installed throughout the Development Area and at any stage throughout the construction period, it is therefore considered that access to fishing grounds within the Development Area will be increasingly restricted as the construction schedule advances.
- 107 Fishing stakeholders have also identified the potential for construction vessels outside the Development Area causing issues for fishermen that could result in temporary loss or restricted access to fishing grounds. This issue has been reported on other Scottish wind farms where construction vessels (eg tugs towing transport barges) were sailing holding patterns while awaiting the opportunity to access the site, thereby restricting access to fishing grounds. Interference with fishing vessels arising from navigational conflict was scoped out of the commercial fisheries assessment. It is considered this impact will be mitigated through the implementation of the licence conditions to produce NSPs which include Vessel monitoring systems, as well as through the CFMS. The concerns of the fishermen will be taken into account through consultation in the development of these, and other plans (such as CMPs), and routes agreed and communicated widely with fishermen to minimise disruption to fishing outside the Development Area. ICOL will commit to investigating suitable mitigation such as setting up of 'no go zones' in areas of importance to

local fishing, whereby construction vessels over a certain size will not be allowed to enter (apart from for safety reasons). Consultation over the suitable mitigation will be undertaken as part of the NSP and CMP process.

- 108 The Development Area is located in an area targeted by scallop dredgers. As fishing intensity for scallops is known to fluctuate over time, due to the nomadic nature of much of the fleet, landings and fishing patterns were examined over a 10 year period. Total landings by value for 41E7 and 42E7 (Local Study Area), peaked in 2007 at £2,614,386 then declined to their lowest values of £342,378 in 2011. Landings from these rectangles increased slightly in 2013, and remained stable through to 2015 (Figure 14.4), 2016 saw an increase in landings from this area, however these amount to only half the value of 2007. This pattern is reflected in the landings within the Regional Study Area, however since 2011, landings in this wider area have increased at far greater rate than those in 42E7 and 41E7 and in 2016 landings in the Regional Study Area exceeded landings in 2007 by over £1,000,000. Hence the proportion of scallops from 42E7 and 41E7 has declined from 39.8% 2001-2010, to 21.5% 2011-2016. This is principally due to a rise in landings to the north east of the Development Area in 42E8 and 43E8. VMS data also confirms that the majority of landings in the Regional Study Area are from further north east corresponding to 42E8 and 43E8.
- 109 One possible reason for the decline at the Development Area, and one cited by some fishermen during the validation meetings, could be the introduction of scallop dredging restrictions, which came into force on 1 June 2017 under the Regulation of Scallop Fishing (Scotland) Order 2017. This order places restriction on scallop dredging whereby the total length of any tow bar deployed cannot exceed 7.5 m, no more than two tow bars can be deployed at any time by a vessel, and no more than eight scallop dredges per side can be towed (i.e. no more than 16 in total) within territorial waters (0-12 nm from the coast) unless they are fitted with remote electronic monitoring (REM) equipment. These restrictions apply to vessels that wish to fish both inside and outside 12 nm during the same trip. Fishing with 10 dredges per side in the six to 12 nm zone is still permitted only if a vessel has REM equipment fitted (at their own expenses), however this is needed to have been fitted (and verified by MS) prior to 1 June 2017. These restrictions effectively mean that larger vessels which predominantly work outside the territorial waters, and carry more than 16 dredges to maximise catches, which have not had REM equipment fitted, cannot work within the 12nm limit. While it is accepted that more vessels may decide to fit REM equipment, at present this Fishing Order would appear to be reducing scallop fishing activity in territorial waters where the Development Area is located.
- 110 While it is accepted that the value of the scallop fishery within the Development Area may increase in the future, the sensitivity of the fishery takes into account the current value of fishing intensity within the Development Area as well as the wider availability of scallop grounds and the nomadic nature of a large proportion of the fleet. The sensitivity of the scallop fishery is therefore Moderate.
- 111 The creel fishery within the Development Area is limited with low numbers of crab / lobster hauls identified in the Creel Fishing Effort Study and Scotmap with the creel fishery (crab and lobster) value ranging from low to low / medium value. The majority of creel fishing takes

place in coastal areas, although there is a gradual increase in creeling vessels' working further offshore, north east of the Development Area. While construction work in the Development Area is unlikely to result in much disruption to creel fishing as a result of the low level of creeling activity on the site, it is accepted that there is the potential for impacts on creel fisheries from construction vessels outside the Development Area, however embedded mitigation such as the NSP and CFMS will minimise this. The sensitivity of the creel fishery is therefore Low.

- 112 The sensitivity of squid fishery takes into account the low value recorded within the Development Area as identified through landing figures, MS VMS and Scotmap data but recognises the year on year variations in landings values from ICES rectangles within the Local Study Area (*Appendix 14A*). The sensitivity of the squid fishery is therefore Low.
- 113 The magnitude of impact takes into account the temporary duration of total construction activities (24 months within a three year period) and the special extent of the safety zones. The magnitude of impact is therefore Low for creeling and squid fishing as the safety zones are located in low intensity fishing grounds, and Moderate for scallop fishing.
- 114 The significance of the effect of temporary loss or restricted access to fishing grounds during the construction and decommissioning phase is Moderate for the scallop fishery and Minor for the creel and squid fishery.

Increased Steaming Time to Fishing Grounds

- 115 The implementation of safety zones around major construction works during the construction phase could result in some short term increases in steaming distances and times, and therefore higher operational costs for fishing vessels.
- 116 The sensitivity of the scallop fishery in the Development Area is considered in the context of both the nomadic nature, operational range of scallop vessels and value of the scallop fishery in Development Area and the Regional Study Area. Vessels wishing to access the scallop grounds within the Development Area will be subject to increased steaming around safety zones. There may be some increase in steaming times for vessels wishing to access grounds in 42E8 and 43E8, from ports south of the Development Area, however it is expected that most of these vessels would use ports further north to avoid any increase in steaming times. The sensitivity is therefore considered to be Low.
- 117 The sensitivity of the creel fishery takes into account the higher intensity of fishing in the coastal areas inshore of the Development Area which will be unaffected. The number of larger vessels utilising fishing grounds offshore to the east of the Development Area may encounter safety zones as they steam to offshore fishing grounds. The low value of the offshore fishery is considered. The sensitivity of the creel fishery is Low.
- 118 The sensitivity of the squid fishery takes into account the low value recorded within the Development Area but recognises the significant year on year variations in landings values from ICES rectangles within the Local Study Area. The sensitivity of the squid fishery is therefore Low.

- 119 The magnitude of impact has taken into account the temporary duration of construction, the limited special extent of the safety zones across the Development Area in comparison with the fishing grounds for scallop, squid and creels. The magnitude of impact is therefore Low.
- 120 The significance of the effect of increased steaming times to fishing grounds during the construction and decommissioning phase is Minor for the scallop fishery, squid and creel fishery.

Displacement of Fishing Vessels into other Areas

- 121 Displacement of fishing vessels into other areas as a result of the Development Area can potentially result in either conflict between vessels competing for the same resource, or between different fishing methods (i.e. static and towed gear vessels).
- 122 The extent of displacement will be a direct function of the temporary loss or restricted access to fishing grounds during the construction period, for which the sensitivity for scallops, squid and creel fisheries is Low and the magnitude for all three is Moderate.
- 123 The significance of the effect displacement of fishing vessels into other areas during the construction and decommissioning phase is Minor/Moderate for the scallop, fishery creel and squid fishery.

14.8.2 Effects of Operation and Maintenance

Complete Loss or Restricted Access to Fishing Grounds

- 124 Fishing will not be excluded from the Development Area, however, it is possible that operational safety zones (50 m) will apply around structures, from which fishing vessels will be prohibited. This safety zone is likely to apply to installed and part installed infrastructure such as WTGs (maximum of 72) and OSPs (maximum of two OSPs). This equates to a total of 0.88 km² for WTGs and 0.05 km² for the OSPs. Given that the total area of the Development Area is 150 km², this accounts for a relatively small proportion of the total area available.
- 125 The Design Envelope has identified the nominal minimum separation distance between WTGs as 1278 m. According to fishermen the scallop gear used in the Regional Study Area has a maximum gear width of 60 m, while squid trawls have gear 92 m between trawl doors. It is considered that this spacing will allow fishing practices to continue to some extent during the operational phase.
- 126 Inter-array cables will be buried to a target burial depth of approximately one metre or will be protected by other means (i.e. rock placement) when burial is not practicable. The penetration depth of otter trawl boards into muddy sediment are reported to be up to 30 cm (Szostek *et al.*, 2017) whereas the teeth on a scallop dredge will penetrate as deep as the teeth are long (e.g. 15 cm penetration for 15 cm teeth) into the sediment. It is therefore, considered that were feasible fishing activities will be able to resume in these areas once the cables are operational subject to post installation surveys.

- 127 Ultimately the decision to fish within an operational wind farm is down to the individual vessels. VMS data from the Eastern Irish Sea collated as part of a Crown Estate study provides evidence of reduced fishing activity within constructed offshore wind farms, only with 18% of those vessels interviewed returning post construction (Gray *et al.*, 2016). Reasons provided by fishermen interviewed for this study for not wishing to fish within the wind farms were; fear of gear snagging caused by debris, the possibility of collision with turbines and the implications of this on their vessel insurance. For vessels not wanting to fish within the operational wind farm this would result in the complete loss of the Development Area for these vessels.
- 128 The sensitivity of the scallop fishery takes into account the current value of fishing within the Development Area as well as the wider availability of scallop grounds and the nomadic nature of a large proportion of the fleet. It also takes into account the spacing of the turbines and the fact that fishing could continue once the Development Area infrastructure is in place, however the reluctance of some vessels to fish within an operational wind farm is also taken into account. These fishermen may not fish within the Development Area for the duration of operation. For these vessels the sensitivity is high, but when considered in conjunction with the reduced value, nomadic nature, availability of alternative scallop grounds, distance between turbines and movement of the scallop fishery a Moderate sensitivity has been assigned.
- 129 The creel fishery within the Development Area is of low intensity and value. Creeling grounds are located in coastal areas inshore of the Development Area, as well as areas targeted further offshore to the north and east of the Development Area. It was observed in the eastern Irish Sea that static gear was used within operational wind farms (Gray *et al.*, 2016). Given the low value of creel fishing within the Development Area and the fact that creel fishing can continue within the Development Area the sensitivity of the creel fishery is therefore Low.
- 130 The sensitivity of the squid fishery takes into account the low value recorded within the Development Area but recognises the significant year on year variations in landings values from ICES rectangles within the Local Study Area. The sensitivity of the squid fishery is therefore Low.
- 131 The magnitude of impact takes into account the operational life of the Wind Farm (up to 50 years) and OSPs, but also considers the low spatial extent of the impact due to the relatively small area of fishing grounds permanently lost as a result of infrastructure. The associated safety zones are also considered but it is likely that a degree of access will be regained to fishing grounds within the Development Area. The magnitude of impact is Moderate.
- 132 The significance of the effect of complete loss or restricted access to fishing grounds during the operation and maintenance phase is Moderate for the scallop fishery and Minor/Moderate for both the creel and squid fishery.

Increased Steaming Times to Fishing Grounds

- 133 It is possible that 50 m safety zones will be used around installed infrastructure and that all vessels except O&M vessels will be prohibited from these zones. It is however considered that due to the distance between turbines (1,278 m) fishing vessels will be able to navigate through the Development Area when operational. It is expected that the discrete nature of the safety zones will require minimal deviation from steaming routes. Due to the low spatial extent of the safety zones and ability to navigate through the wind farm the sensitivity for all fisheries is considered to be low, the magnitude of impact is considered to be Low.
- 134 The significance of the effect of increased steaming times to fishing grounds during the operation and maintenance phase is Minor for all fisheries.

Displacement of Fishing Activity into other Areas

- 135 The extent of displacement will be a direct function of the complete loss or restricted access to fishing grounds during operation, as assessed previously. The sensitivity of the scallop fishery is Moderate, the squid fishery is Low and the creel fishery is also Low. The magnitude of impact for all fisheries assessed is Moderate.
- 136 The significance of the effect of displacement of fishing vessels into other areas during the operation and maintenance phase is Moderate for the scallop fishery, and Minor/Moderate for both the creel and squid fishery.

14.8.3 Effects of Decommissioning

- 137 The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.

14.9 Impact Assessment- Offshore Export Cable Corridor**14.9.1 Effects on Construction****Temporary Loss or Restricted Access to Fishing Grounds**

- 138 The implementation of safety zones of 500 m from which all vessels will be prohibited is the principle effect for temporary loss or restricted access to fishing grounds in the Offshore Export Cable Corridor during construction. The safety zones will be in place until the area is confirmed safe for vessels to return.
- 139 The safety zones will prevent vessels from actively fishing or steaming within their boundaries. Due to the seasonal nature of fisheries in the vicinity of the Offshore Export Cable Corridor the sensitivity of the safety zones will depend on the time of year. To ensure that the most sensitive time of year is assessed it is proposed that the safety zones will be active during peak periods of fishing activity.
- 140 The Offshore Export Cable Corridor is approximately 83.3 km in length and 1.4 km at its widest point. A maximum of two cables will be laid in two trenches within the Offshore

Export Cable Corridor with the area of the seabed that may experience some level of compaction or disturbance due to the footprint of the cable laying equipment being 12-15 m in width per cable (where trench depth is much deeper e.g. three metres, the affected width may be up to 40 m per cable). The cables will be buried to a target cable burial depth of approximately one to three metres, where this depth cannot be attained suitable cable protection will be used (i.e. rock placement or other suitable means, such as concrete mattresses). Due to the potential safety risks associated with fishing in the vicinity of installed Offshore Export Cables (e.g. snagging) it is considered that a temporary loss of access to fishing grounds will occur. Fishing vessels will be subject to exclusion from specific areas until post-installation surveys are undertaken.

- 141 ICES rectangle 41E7, through which the Offshore Export Cable Corridor passes, currently contains valuable *Nephrops* fishing grounds. *Nephrops* is the most important fishery in 41E7, making up 53%, with average annual landings of £4,093,313 between 2011 and 2016, which represented the third highest landings value in Scotland. The *Nephrops* fishery is targeted by demersal trawlers of both under and over 15 m fleets. The under 15 m fleet is generally comprised of the local fleet and concentrates on grounds closer to their home port, particularly in the Firth of Forth. The vessel restriction in the Firth of Forth restricts demersal trawlers of over 16.77 m, hence the over 15 m fleet predominantly fish grounds further offshore.
- 142 *Nephrops* trawling in this region tends to be undertaken from east to west, therefore fishermen have raised concerns that trawl lines may be interrupted and gear hauled prematurely due to the presence of safety zones. Fishermen interviewed for a study in the eastern Irish Sea identified that excessive restrictions on fishing during cable installation was one of the main hindrances (Gray *et al.*, 2016). Due to the location of the Offshore Export Cable Corridor in proximity to the fishery a number of vessels may experience temporary loss or restricted access to fishing grounds as a result. The sensitivity for the *Nephrops* fishery is Moderate.
- 143 It is also noted that scallop fishing along the Offshore Export Cable Corridor is of a low value, and only occurs in the north of 41E7, where the Offshore Export Cable Corridor meets the Development Area. These vessels have a wide range and therefore the ability to utilise the fishing resource outside of the Local Study Area. The sensitivity of the scallop fishery is therefore Low.
- 144 Creeling is an important fishery in 41E7, with crabs and lobsters being targeted predominantly by vessels under 10 m operated from local ports. Creeling activity is of relatively low intensity along the Offshore Export Cable Corridor itself, as it has been routed through areas of sediment wherever possible in order to allow burial of the cable. As creelers predominantly target harder rocky ground the Offshore Export Cable Corridor has generally not been targeted. As a result of the location of the Offshore Export Cable Corridor and the static nature of creeling gear, this fishery has a Low sensitivity.
- 145 The sensitivity of the squid fishery takes into account the low value of landings recorded within the Offshore Export Cable Corridor and lack of consistently targeted grounds but

recognises the significant year on year variations in landings values from ICES rectangles within the Local Study Area. The sensitivity of the squid fishery is therefore Low.

- 146 The magnitude of impact considers the temporary nature of the impact (i.e. limited to the installation phase) and the spatial extent (Offshore Export Cable Corridor of 83 km in length and with an affected footprint width of 40 m per cable (80 m in total). It has also been assumed that the installation period and associated temporary loss of fishing grounds throughout the Offshore Export Cable Corridor will encompass the peak seasonal periods for all of the affected fisheries. The magnitude is therefore Moderate.
- 147 The significance of the effect of temporary loss or restricted access to fishing grounds during the Offshore Export Cable Corridor construction phase is Moderate for the *Nephrops* fishery and Minor/Moderate for the scallop fishery, squid fishery and creel fishery.

Increased Steaming Times to Fishing Grounds

- 148 The implementation of 500 m safety zones during the installation phase of the Offshore Export Cable, from which all vessels will be prohibited, could result in increased steaming distances / times and as such increased operational costs for vessels wishing to transit the area. It is expected, however that the discrete and transitory nature of the safety zones will require minimal deviation from steaming routes. As a result the safety zones will result in minimal spatial extent and duration of effect so the magnitude is Low.
- 149 The sensitivity of all fisheries is expected to be Low due to discrete and short term nature of the safety zones.
- 150 The significance of the effect of increased steaming times to fishing grounds during the construction phase of the Offshore Export Cable is Minor for all fisheries

Displacement of Fishing Vessels into Other Areas

- 151 The extent of displacement will be a direct function of the complete loss or restricted access to fishing grounds during operation, as assessed previously. The sensitivity of the *Nephrops* fishery is Moderate and the scallop, squid and creel fishery are Low. The magnitude of this impact is Moderate.
- 152 The significance of the effect of displacement of fishing vessels into other areas during the Offshore Export Cable construction phase is Moderate for the *Nephrops* fishery and Minor / Moderate for the scallop, squid and creel fishery.

14.9.2 Effects of Operation and Maintenance

Complete Loss or Restricted Access to Fishing Grounds

- 153 It is expected that the Offshore Export Cables will be buried to a cable target burial depth of approximately one to three metres where feasible. Where burial is unachievable cable protection will be used where practicable (i.e. rock placement or other suitable means). Areas of cable protection will be subject to an over-trawl-ability assessment which will

ensure the risk of snagging is reduced. It is expected that fishing vessels will be able to resume fishing activity within the Offshore Export Cable Corridor subject to post installation survey.

- 154 While it is generally accepted that trawling can resume once the cable is installed, concern was raised by fishermen about the impact of clay from beneath the seabed being brought to the surface creating clay berms by the action of ploughing the cable in producing clay berms along the length of the cable. These clay berms can create a snagging hazard, particularly for *Nephrops* trawlers, as well as cause damage to the net and catch. *Nephrops* trawling in this region tends to be undertaken from east to west, hence concerns have been raised about clay berms along the cable route which will either create a snagging hazard, or that fishermen will have to interrupt their tows and haul gear prematurely to avoid them, hence constituting a loss of fishing area.
- 155 The presence of clay berms or any other hazardous material brought to the surface during cable installation will be detected by post backfill surveys following each stage of cable installation. As this would constitute a seabed obstacle to demersal fishing, the appropriate liaison would be undertaken, and notices circulated, to make fishermen aware of the locations and the risks associated with such obstacles. Remedial work would be undertaken as soon as practically possible to level berms and remove such material. The commitment to an over-trawl-ability assessment would further mitigate this impact. As fishing practices will be able to resume within the Offshore Export Cable Corridor during the operational phase with a low loss of economic value the sensitivity for the *Nephrops* fishery is Low.
- 156 As a result of the embedded mitigation combined with the lower intensity of other fisheries along the Offshore Export Cable Corridor the sensitivity of all other fisheries (scallops, squid and creeling) is Low.
- 157 The magnitude is Low for *Nephrops* and Negligible for all other fisheries as a result of their spatial distribution.
- 158 The significance of the effect of complete loss or restricted access to fishing grounds during the Offshore Export Cable operation and maintenance phase will be Minor for the *Nephrops* fishery, Negligible / Minor for scallop, squid and creel fisheries.

Increased Steaming Times to Fishing Grounds

- 159 The Offshore Export Cables are not considered to have an effect on the increased steaming times to fishing grounds as they will be buried in the sea bed or placed on the sea bed and protected. It is considered that the sensitivity to this effect is Low for all fisheries.
- 160 During the operation and maintenance phase of the Offshore Export Cable it is expected that fisheries will not be effected due to the limited temporal and spatial nature of any potential maintenance work. It is therefore considered that the magnitude is Negligible.
- 161 The significance of the effect of increased steaming times to fishing grounds during the Offshore Export Cable operation and maintenance phase is Negligible/Minor for all fisheries.

Displacement of Fishing Activities into other Areas

- 162 The potential displacement of fishing vessels is a function of the complete loss or restricted access to fishing grounds incurred during the operational phase of the Offshore Export Cables. This might result in either conflict between vessels competing for the same resource, or between different fishing methods (i.e. static and towed gear vessels).
- 163 The sensitivity is considered to be Low for the *Nephrops*, scallop, creel and squid fisheries for this impact, with a Negligible magnitude.
- 164 The significance of the effect of displacement of fishing activities into other areas during the Offshore Export Cable Corridor operation and maintenance phase is Negligible / Minor for *Nephrops*, scallop, creel and squid fisheries.

14.9.3 Effects of Decommissioning

- 165 The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.

14.10 Impact Assessment- Development (Wind Farm and OfTW)

- 166 The cumulative impact of both the Development Area and Offshore Export Cable Corridor combined during construction/decommissioning and operation is considered below. A fishery is considered to have the potential to sustain a cumulative impact only if it is affected by the Development components (Table 14.1).
- 167 The principle fishery operating within the Offshore Export Cable Corridor is for *Nephrops* with negligible fishing activity recorded for them within the Development Area. Therefore the Development assessment (Wind Farm and OfTW) will be no worse than that assessed individually.
- 168 Scallop fishing along the Offshore Export Cable Corridor only occurs in the north of 41E7, where the Offshore Export Cable Corridor meets the Development Area. As a result of the relatively low value of the scallop fishery on the Offshore Export Cable Corridor, there is only a small increase in effect relating to temporary / restricted access to fishing grounds during construction, complete loss or restricted access to fishing grounds during operation and any subsequent displacement of fishing into other areas loss of fishing, which does not increase the significance of the effect assessed for the wind farm alone.
- 169 Due to the coastal nature of the creel fishery with limited fishing grounds within both the Development Area and to a lesser degree along the Offshore Export Cable Corridor the effect of the Development is only likely to occur where both elements of the Development meet. Given the limited range of the majority of creeling vessels, relatively low value of the fishery in the area where the Development Area meets the Offshore Export Cable Corridor the effect of the Development will not increase the significance of those effects assessed.

- 170 Due to the year on year fluctuations in squid landings, transient nature of the fishery and the low landings values within both the Development Area and Offshore Export Cable Corridor it is considered that the cumulative effect of both elements combined will not increase the significance of those effects assessed.
- 171 For increased steaming time to fishing grounds the discrete nature of the safety zones during construction and operation will not have a discernible increase in effect of the Development.

Table 14.11: Effects of the development during construction (and decommissioning) and operation (and maintenance)

Impact	Receptor	Development Area	Offshore Export Cable Corridor	The Development
Construction (and decommissioning)				
Temporary loss or restricted access to fishing grounds	Scallop fishery	Moderate	Minor/Moderate	Moderate
	Creel fishery	Minor	Minor/Moderate	Minor/Moderate
	Squid fishery	Minor	Minor/Moderate	Minor/Moderate
	Nephrops fishery	n/a	Moderate	Moderate
Increased steaming times to fishing grounds	Scallop fishery	Minor	Minor	Minor
	Creel fishery	Minor	Minor	Minor
	Squid fishery	Minor	Minor	Minor
	Nephrops fishery	n/a	Minor	Minor
Displacement of fishing vessels into other areas	Scallop fishery	Minor/Moderate	Minor/Moderate	Minor/Moderate
	Creel fishery	Minor/Moderate	Minor/Moderate	Minor/Moderate
	Squid fishery	Minor/Moderate	Minor/Moderate	Minor/Moderate
	Nephrops fishery	n/a	Moderate	Moderate
Operation (and maintenance)				
Complete Loss or Restricted access to fishing	Scallop fishery	Moderate	Negligible/Minor	Moderate
	Creel fishery	Minor /Moderate	Negligible/Minor	Minor/Moderate

Impact	Receptor	Development Area	Offshore Export Cable Corridor	The Development
grounds	Squid fishery	Minor/ Moderate	Negligible/Minor	Minor/Moderate
	Nephrops fishery	n/a	Minor	Minor
Increased Steaming Times to Fishing Grounds	Scallop fishery	Minor	Negligible/Minor	Minor
	Creel Fishery	Minor	Negligible/Minor	Minor
	Squid Fishery	Minor	Negligible/Minor	Minor
	Nephrops fishery	n/a	Negligible/Minor	Negligible/Minor
Displacement of Fishing Activity into other Areas	Scallop fishery	Moderate	Negligible/Minor	Moderate
	Creel fishery	Minor/Moderate	Negligible/Minor	Minor/Moderate
	Squid fishery	Minor/Moderate	Negligible/Minor	Minor/Moderate
	Nephrops fishery	n/a	Negligible/Minor	Negligible/Minor
Decommissioning				
The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.				

14.11 Cumulative Impact Assessment (CIA)

172 The following section describes the cumulative impacts arising from the Development and Onshore Transmission Works (OnTW). It should be noted that for Commercial Fisheries there are no likely interactions between the OnTW and the Development, therefore the conclusions of the Development assessment alone remain valid for this CIA.

173 The CIA therefore assesses other relevant marine developments which have the potential to interact with the Development and fisheries in the area.

174 The following projects were identified by Scottish Ministers in the Scoping Opinion to be included in the CIA for all fisheries:

- Neart Na-Gaoithe Offshore Wind Farm (2017 Scoping Report);
- Seagreen Alpha and Bravo Offshore Wind Farms (2017 Scoping report);
- Kincardine Offshore Wind Farm;
- Forthwind Offshore Wind Demonstration Project; and

- Offshore Renewable Energy Catapult Levenmouth.
- 175 As the baseline and status for cumulative projects are ever evolving a cut-off date of November 2017 was used to allow the EIA and CIA to progress. ICOL appreciates and acknowledges that the status of some of these projects may have changed since this date and note however that the individual status of projects has not been updated in the EIA Report due to the time restrictions associated with the assessment.
- 176 The two fully commissioned turbines of the Forthwind Offshore Wind Demonstrator Project are located 1.5 km from the shore at Buckhaven on the south coast of Fife. As this site is fully commissioned only impacts from the operation of this site have the potential to interact with the Development. The fisheries in this site are confined to creeling, with some *Nephrops* and squid trawling further offshore. The ES for this site concluded that as the value of the commercial fishing in the area is low (amounting to only £3,738.67 per year) and the spatial extent is small (0.293 km²) the significance of operation is minor. Therefore this project will not be considered in this CIA.
- 177 The Offshore Renewable Energy Catapult Levenmouth is a single fully constructed turbine in close proximity to the shore. Due to its location commercial fisheries were not assessed in the EIA as no commercial fisheries occur on this site. This project will not be considered further in this assessment.
- 178 Details are presented for the three offshore windfarms that will be considered in the CIA below (Table 14.12). The Neart Na-Gaoithe and Seagreen Alpha and Bravo are consented, however both sites are in the process of submitting new assessment for revised developments of fewer turbines. For this cumulative assessment the worst-case scenario of either revised or original development has been assessed, as there is potential for either the original consents or any revised consents to be implemented. The worse-case scenario for both both Neart Na-Gaoithe and Seagreen Alpha and Bravo, for fishing, is the original developments as this involves more WTGs, inter-array cabling, and longer construction periods, therefore the original developments for these sites used in this assessment.

Table 14.12: Worst case design parameters of developments

Worst case Design Parameters	Neart Na-Gaoithe*	Seagreen Alpha and Bravo*	Kincardine Offshore Wind Farm
Location	Forth and Tay Region	Forth and Tay Region	Aberdeen coast
Maximum number of WTGs	Up to 125 (56)	150 (70 – 120)	eight (floating)
Minimum spacing between turbines	450 m (800m)	610 m (1,000 m)	500 m
Maximum number of OSPs	Two (two)	Up to five (five) – OfTW consented in 2014	0
Maximum number of	n/a	Up to six (three)	0

met masts			
Installation status of inter-array cables	Buried where feasible, protected elsewhere.	Buried where feasible, protected elsewhere.	Surface laid
Wind farm construction period	Two years (eight months)	Up to 36 months	Short in duration due to low construction requirements on site
Location of export cable	South of site in Thorntonloch	West of Project Alpha to Camoustie	South of Nigg Bay
Maximum number of export cables	Two (Two)	Up to six - OfTW consented in 2014	Two
Installation status of export cables	Buried where feasible, protected elsewhere.	Buried where feasible, protected elsewhere.	Buried where feasible, protected elsewhere.
Export cable installation period	Several months (Five months)	Nine months within a two year period	n/a

*For Firth and Tay developments = original development information provided, revised development shown in brackets

- 179 Information on fishing activity at the Neart Na-Gaoithe and Seagreen Alpha and Bravo Developments has been taken from data collected from this assessment (on the Regional Study Area) as well as information presented in their respective Scoping Reports for their revised developments (both submitted in 2017) as these contain more up to date information on where fishing is located.
- 180 According to the 2017 Scoping Report for the Seagreen development scallop fishing is the predominant fishery at the Alpha and Bravo sites (more details provided below), with little *Nephrops*, squid or creeling activity (Seagreen, 2017). Scallops accounted to 86% of landings from ICES rectangle 42E8 (where the development is located), between 2011-2016. In contrast *Nephrops* only contributed 8% to the total value, while squid contributed 4.7% to total landings (by value) during this time. Creel fishing is limited on the development site itself and grounds are predominantly located inshore along the coasts adjacent to the landfall. The original development ES for this project concluded the potential impact of the development on the *Nephrops*, squid and creel fishery to be not significant, although significant impacts were predicted for creeling on the cable route, and cumulative affect with other projects were possible (Seagreen, 2012).
- 181 At the Neart na Gaoithe site, *Nephrops* fishing predominantly takes place along the cable corridor. Squid was targeted to a lesser degree however fishermen identified grounds within the development site, with more along the export cable corridor. Creel fishing is limited in the development area itself, generally occurring inshore along the north and south coasts of the Firth of Forth. The ES for this site (Mainstream, 2013) predicted that loss or restricted access to fishing grounds during construction, and displacement of fishing grounds would be of moderate significance to the *Nephrops*, squid and creel fisheries for the project and cumulatively, but all other impacts would be negligible.

- 182 During the assessment for the Kincardine project it was found that some squid fishing occurs but there is no *Nephrops* fishing at this site. Both the development area and cable corridor is targeted by creel fishing which accounted for £2,731,377 (average 2009-2013) in ICES rectangle 43E7 (inshore of the development area). Squid are also targeted with landings values of £72,267 for 42E8 and £28,620 for 43E7. The ES for this project predicted either no impact or a minor significance when considered cumulatively with other projects (Atkins, 2016).
- 183 It is recognised that the operational range of the nomadic scallop fleet means it will interact with projects outside of the Forth and Tay region. Scottish Ministers identified the following projects that should be included in the CIA, in addition to those identified for all fisheries, for the scallop fishery and possibly squid fishery:
- European Offshore Wind Deployment Centre;
 - Hywind Scotland Pilot Park;
 - Blyth Offshore Wind Farm (2 turbines)
 - Blyth Offshore Demonstrator Project;
 - Beatrice Offshore Wind Farm;
 - Moray East Offshore Wind Farm;
 - Moray East Offshore Wind Farm – Alternative Design;
 - Moray West Offshore Wind Farm; and
 - Rampion Offshore Wind Farm.
- 184 The squid fishery is not considered to be nomadic, with vessels within the Regional Study Area generally under 15 m, operating in areas close to their home port. It is therefore considered there will be no cumulative impact on the squid fishery from these projects. Consideration has however been given to these projects and their potential cumulative impact on the nomadic scallop fleet.
- 185 Details on these offshore wind farm developments, and the importance of the scallop fisheries within them was collated in order to inform this CIA.
- Scallop dredging is recorded in the Seagreen development area and along a proportion of its export cable route. During the period 2001-2010, dredging for king scallops was the principal fishing activity recorded in ICES rectangle 42E8 in which the development is located, accounting for 78.6% landings. When this development was considered alongside other offshore wind farms, significant cumulative effects on the scallop fishery during construction and operation were predicted (Seagreen, 2012). Since 2010 scallop fishing has increased in 42E8 considerably, and this ICES square now accounts for the highest proportion of scallop landings in the Regional Study Area. According to recent VMS data much of this activity overlaps the Seagreen development area.

- There is a low level of scallop activity recorded within the north of the Neart na Gaoithe offshore site and along the export cable route, with principal grounds being located outside of the development area. The ES (Mainstream, 2013) considered effects of loss of traditional fishing grounds and displacement of fishing vessels during offshore site construction and export cable installation to the scallop fishery to be of moderate significance for the project and cumulatively when considered alongside other wind farms. Despite this, it was noted that the site will have a limited contribution to such impacts due to its relatively low level and small proportion of scallop activity. All other impacts during construction, operation and decommissioning phases were considered minor to negligible.
- The Kincardine development is located in ICES rectangles 42E8 and 43E8 where the majority of landings (87.5% and 48.5%, respectively) were scallops during 2011-2016. The Kincardine development is small in area, and the scallop fishing grounds with the highest intensity are to the north and south of this site. Due to the wider availability of grounds, and the small scale of the project, effects to the scallop fishery were considered of negligible to minor significance in the ES for both the development and in combination with other relevant projects were concluded to be of minor significance (Atkins, 2016).
- The European Offshore Wind Deployment Centre, off the coast of Aberdeen, is an 11-turbine site covering an area of 19 km, which is currently under construction. It is situated within ICES rectangles 43E7 and 43E8 which had average annual (2011-2016) scallop landings of between £20,087 and £960,589, which accounted for 8.8% and 48.5% of all landings. Despite the high value of the scallop fishery in rectangle 43E8, it was recognised in the ES for this project that the nearest scallop grounds lie in deeper waters in 43E8 beyond Aberdeen Bay. All impacts to commercial fishery receptors, including scallops, were thus identified as negligible to minor in the ES for this project and cumulatively with other projects.
- The Blyth Offshore Wind Farm consists of two turbines covering an area of <1 km². The decommissioned site is situated one mile from the shore of Blyth; there is no scallop fishing in this area due to the substrate on which the foundations are sited.
- The Blyth Offshore Demonstrator Project is a five-turbine site, which has recently become operational. There is consent for ten additional turbines, however there are no current plans to install these. The development is sited in ICES rectangle 39E8; the total average (2011-2016) landings value for scallops was £35,769 (0.6%) in this rectangle. In the ES for this project, scallops were not regarded as a species of commercial importance in the vicinity to the site.
- Hywind Scotland Pilot Park, a fully commissioned 5 turbine floating wind farm covering an area of 15 km², is situated in ICES rectangle 43E8, with a portion of the 27.5 km export cable and landfall falling in rectangle 44E8. The average (2011-2016) scallop landings (by value) in rectangle 43E8 was £960,589 and £902,753 in 44E8, accounting for 48.5% and 20.9% of the total landings. Despite the high value of the scallop fishery in this area, due to the small size of the Hywind Project (15km² = 0.49% of an ICES

rectangle) the ES for this project concluded there would be a minor impact on the scallop fishery both for the project and cumulatively with other projects (Statoil, 2015).

- Beatrice Offshore Wind Farm is an 84-turbine site (under construction) covering an area of 131 km². It is located in ICES rectangle 44E6, where average annual scallop landings between 2011 and 2016 were £529,645, accounting for 20.6% for total landings. Although scallops are the principal species targeted in this ICES rectangle, the ES for this project concluded that any impacts to the scallop fishery would be of negligible or minor significance. This was attributed to the limited level of scallop dredging activity recorded within the wind farm relative to available grounds in the Moray Firth.
- The Moray Firth Offshore Wind Zone comprises two planned development areas: the Eastern Development Area (Moray East) of 295 km² and the Western Development Area (Moray West) of 226 km². Planning consent for up to 186 turbines has been granted for the Eastern site, however Contract for Difference (CfD) has been issued for an alternative design which takes advantage of new turbine technology available since its initial consent. This means less turbines (137) with a greater power generation capacity and greater turbine spacing. Construction is expected to begin in 2020-2021. The Western site has received a Scoping opinion, and ICOL understand that MORL are working towards an EIA submission in early 2018. There is also potential for construction schedules to overlap with those associated with the OfTW.
- Moray East sits in rectangles 45E7 and 44E7. Between 2011-2016 average scallop landings were £1,337,148 from 45E7 (57.3% of total landings) while in rectangle 44E7 only 5% (£219,000) of landings were scallops. The ES for this project concluded that effects to scallop fisheries during construction, operation and decommissioning of the wind farm would be of minor significance, however, this increased to moderate when including offshore transmission infrastructure in conjunction with other projects.
- The Moray West Offshore Wind Farm is located in three ICES rectangles; 45E7, 44E7 and 45E6. Rectangles 45E7 and 44E7 have been described above, and in 45E6 scallop landings accounted for 27% (£364,720). Fishing grounds surrounding The Moray Firth Offshore Wind Zone thus contain important scallop fisheries.
- Rampion Offshore Wind Farm is a 116 turbine site located on the south coast of England. The 226 km² development is in the final stages of construction. The development is located in ICES rectangle 30E9, where annual average scallop landings were £596,114 (accounting for 9.8% of all landings) for the period 2011-2016. While the project overlaps with scallop grounds, it occupies a relatively small area (e.g. the site accounts for only 7.2% of an ICES rectangle). The Rampion ES (E.ON, 2012) points out that due to restrictions placed on the number of dredges which can be operated within 12 nm under the Scallop Order 2012, the majority of the nomadic scallop dredge vessels cannot target grounds in the vicinity of the Rampion site or cable route, therefore the loss of fishing within the site will have a negligible effect on the nomadic scallop fleet.

186 It is not considered that the Blyth Demonstrator Project, Blyth offshore wind farm and Aberdeen Offshore Wind Farm contribute cumulatively to the impact of the scallop fishery

due to the low level of scallop fishing value of the scallop fisheries within their boundaries (pre-construction) and these have therefore been ruled out of the assessment.

- 187 All other projects mentioned above will be considered within the cumulative assessment for scallop fishing.

14.11.1 Effects on Construction

- 188 The magnitude of all construction impacts are dependent on the construction schedules for each project. Current estimates, based on the assumption that the Development will be consented and obtain a CfD, are that construction will commence between around 2021 and will take approximately 24 months within a three year period. There is potential for the construction schedule for the Forth and Tay wind farms to overlap and therefore affect the *Nephrops*, scallop, squid and creel fisheries. The construction schedule for Kincardine, is also unknown at present, however it is less likely to have a cumulative impact due to the short duration of the construction period for the eight floating turbines (much of the construction work can take place onshore).
- 189 Of the additional developments identified in the Scoping Opinion for consideration for the scallop fishery, the only one with the potential for overlapping construction schedules is Moray East Offshore Farm, and potentially Moray West Offshore Wind Farm (although not yet consented) as it is scheduled to be constructed between 2020-2021. All other projects are either already constructed, or will be constructed before the Development, or construction will not have begun.

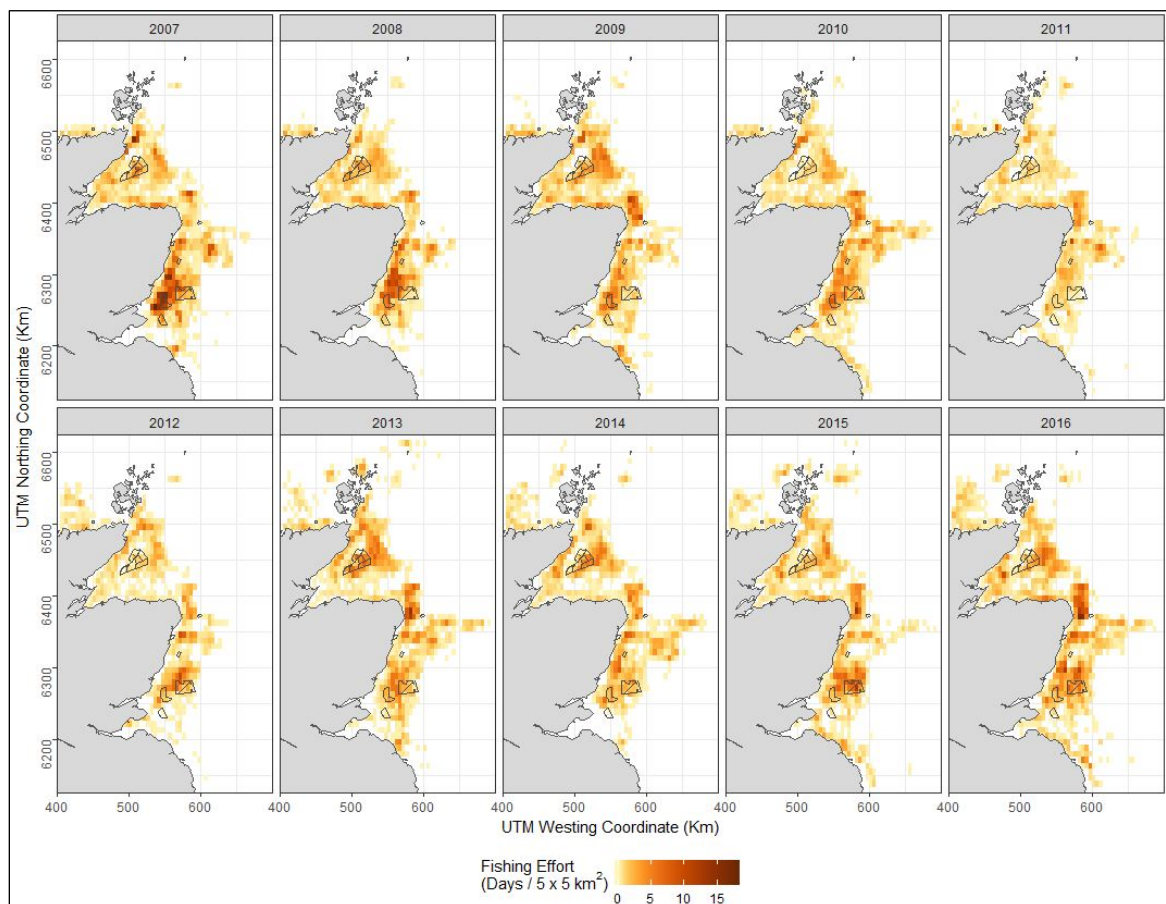
Temporary loss or restricted access to fishing grounds

- 190 For the individual assessments the implementation of safety zones around construction vessels and installed and part installed infrastructure is the principle element which could contribute to this effect. The safety zones, however will be discrete in nature relative to the area of the site and available fishing area, however, during the construction phase, the safety risks associated with the installation of array and export cables would result in the progressive loss of access to fishing grounds in these areas as the construction schedule advances. Access to these areas will not resume until the appropriate post-construction surveys confirm that fishing activities can safely resume.
- 191 While trawling for *Nephrops* is confined to the Offshore Export Cable Corridor, it also occurs in the Seagreen and Neart na Gaoithe sites and along their respective export cable routes. There is no *Nephrops* fishing at the Kincardine site. Given the range of the *Nephrops* vessels within the Regional Study Area and their preference for working areas relatively close to their home ports, the greatest potential for a cumulative impact during construction is during the installation of the offshore export cables for both the Inch Cape Development and Neart na Gaoithe. Both cable corridors are relatively close to each other and pass through the heavily trawled area for *Nephrops* in 41E7. The sensitivity of this fishery is Moderate.
- 192 Squid trawling is recorded in the Seagreen, Neart na Gaoithe, and Kincardine site and along their respective export cable routes. The transient nature of the squid fishery, and the low

comparable landings values within the Regional Study Area have been considered and the sensitivity of this fishery is Low.

- 193 In the case of the creel fishing for crabs and lobster, this occurs in coastal areas throughout the Forth and Tay region, as well as the Aberdeenshire. Creel fishing is limited in the Development Area and also other sites in the Forth and Tay, however the offshore export cable corridors for these sites overlap to some extent with creel fisheries. Both the Kincardine site and cable corridor are targeted by creel fishing. While areas overlap, creeling activity tends to be of relatively low intensity along the offshore export cable corridors themselves, as they traverse through areas of sediment, and creelers predominantly target harder rocky ground. As a result of this and the static nature of creeling gear, this fishery is of Low sensitivity.
- 194 The magnitude of impact takes into account the increased spatial extent of the developments relative to the available fishing grounds and the increase in construction vessel activity when considered together. The magnitude is therefore Moderate for *Nephrops*, creeling and squid fisheries.
- 195 The significance of the cumulative impact from the construction of the Development with other projects is considered to be Moderate for *Nephrops* and Minor/Moderate for squid and creeling fisheries.
- 196 As identified by the scoping response the wide operational range of the nomadic scallop fleet may result in this portion of the fleet being affected by marine developments both within and outside the Forth and Tay and also Kincardine. Fishing intensity data for scallop dredging was provided by MS for the period 2007 – 2016 in relation to the Forth and Tay development (Figure 14.20) as well as for the UK (14A.43), which is useful to understand the cumulative impact to the scallop fishery.

Figure 14.20: Scallop dredging VMS intensity (2007-2016) in relation to the Forth and Tay Projects (MS pers. com)



- 197 For construction impacts this is limited to Moray East Offshore Farm as it is scheduled to be constructed between 2020-2021 and potentially Moray West Offshore Wind Farm (although this is not yet consented). All other projects are either already constructed, or will be constructed before Inch Cape, or construction will not have begun. The sensitivity of the scallop fisheries is therefore Moderate.
- 198 Recent VMS data shows scallop fishing is less intensive in the Inch Cape Development Area, however it may be more intensive in the Seagreen development area, this is reflected in the landing figures for 42E7 and 42E8 where Seagreen is located, which show a large shift in peak landing figures from 42E7 and 42E8 over the last 10 years. The nomadic nature of the scallop fleet and the importance of fishing within the Moray Firth, as well as the availability of other scallop grounds is also recognised. The magnitude of this impact is Moderate. The significance of the cumulative effect of these projects on the nomadic scallop feet is therefore Moderate.

Increased Steaming Times to Fishing grounds

- 199 As previously described the implementation of safety zones applied during the construction phases of the proposed developments may result in increased steaming times for fishing vessels, particularly in the likely event that construction schedules overlap. Additional safety zones may be applied to partially installed or completed infrastructure within the sites.

- 200 The sensitivity of commercial fisheries recognises that there are limited fishing grounds in areas offshore of the sites, although transit in a north to south direction is recognised. In addition the discrete nature of safety zones relative to available fishing grounds is recognised. The sensitivity of all fisheries is therefore Low.
- 201 The magnitude of impact takes into account the temporary nature of the safety zones but recognises the likely overlap in construction schedules. The limited spatial extent of the safety zones is however recognised, although these will be proportionally increased. The magnitude of effect is therefore Moderate for all fisheries including scallops, as increased steaming times in the Moray Firth will not impact on fishing within the Forth and Tay region.
- 202 The effect of the Development in conjunction with other projects for all fisheries on increased steaming times to fishing grounds during construction is considered to be Minor/Moderate.

Displacement of Fishing Activity

- 203 As described in the individual assessments the extent of displacement will be a direct function of the temporary loss or restricted access to fishing grounds during the construction period. The cumulative impact, therefore from the construction of the Development in combination with the Neart Na-Gaoithe, Seagreen Alpha and Bravo and Kincardine projects is considered to be Moderate for scallop and *Nephrops* fisheries and minor moderate for creel and squid fishing.

14.11.2 Effects of Operation and Maintenance

Complete loss or restricted access to fishing grounds

- 204 It is considered that fishing vessels will regain some degree of access to fishing grounds within the operational wind farm sites and that subject to post installation surveys normal fishing activities will be able to recommence in the vicinity of export cables. As a result, it is considered that those fisheries identified in the vicinity of export cable routes will not be affected during their operation.

Creel and Nephrops

- 205 For creel and *Nephrops* fisheries there is considered to be little cumulative impact from other projects during operation, therefore the level of significance is not increased beyond that of the Development. As *Nephrops* fishing occurs predominantly along the cable routes of Inch Cape and Neart na Gaoithe and fishing can resume once the cables are installed the cumulative impact of the Development with other projects remains as minor. While creel fishing does occur within wind farm sites and on the offshore export cable, the majority of creel vessels are small and do not target different sites, therefore the cumulative impact remains the same as for the Development as Minor/Moderate.

Squid

- 206 Squid fishing is widely distributed and of low intensity across the developments within the regional study area. Its sensitivity is therefore low. The magnitude, however, is considered to be Moderate due to the operational life of the wind farm developments (up to 50 years), the significance of effect for squid is therefore Minor/Moderate.

Scallops

- 207 The fisheries most likely to be affected by the operation of the wind farms cumulatively will be the scallop fisheries.
- 208 For the scallop fishery, as stated previously, while fishing may resume within the Development Area of Inch Cape, it is recognised that a number of skippers of scallop dredge vessels may be reluctant to fish within operational wind farm sites. It therefore follows that these vessels will be unlikely to fish within the development areas in the Forth and Tay and Moray Firth region (Rampion is not included as this site tends not be targeted by the nomadic fleet as a result of gear restrictions).
- 209 The greatest impact on scallop fishing principally relates to the recent increase in scallop fishing in ICES 42E8, which accounts for the highest proportion of scallop landings in the Regional Study Area applied in this assessment. As this scallop fishing activity overlaps the Seagreen development area, the potential displacement to scallop fishing from this project alone is likely to have a significant effect. As noted in *section 14.6.5* above, scallop fishing in Inch Cape's Development Area has reduced in recent years, and the impact from the Development alone is not significant. ICOL recognises that there are however fluctuations in scallop dredging activity due to the cyclical nature of the fishery and thus it is possible that the Development Area may be targeted intensively in future years.
- 210 The cumulative assessment carried out is based on the worse case for the other Forth and Tay Developments, hence for Seagreen's Alpha and Bravo, where the original development design envelope specifies turbine spacing of only 610 m, it is assumed that a proportion of fishermen will be unlikely to fish within the site between WTGs.
- 211 For loss of scallop fishing areas, when considered in combination with other projects, the result of the moderate sensitivity and high magnitude assigned to the potential impact the resulting effect is of **Moderate/Major significance**, and thus significant for the purpose of this assessment.
- 212 As noted this significant impact is considered the worse-case assuming the original Seagreen's Alpha and Bravo developments are built out and assuming scallop fishermen do not fish in the site, however if the revised developments with fewer, wider spaced turbines are built it is likely over time that fishermen will try / become acclimatised to fishing within wind farms and the impact will lessen.

Mitigation measures

213 *Section 14.5.2* identifies ICOL's commitment to mitigation measures to minimise impacts to the fishing industry, both as a project alone and collectively with both Seagreen and NNG (through the CFWG). Commitments identified here, which will specifically help minimise the impacts on scallop fishing, e.g. those that will allow scallop fishing to return to the Development Area, are:

- Participation in the CFWG to provide a forum for collaborative discussion and action in relation to the cumulative interactions with the Forth and Tay developments and commercial fishing activities;
- ICOL's commitment to the cables being suitably buried, or protected by other means, when burial is not practicable to reduce the risk to scallop fishing vessels from snagging;
- The wind farm WTG and OSPs will be designed in a grid or offset grid layout, to minimise risk of collision. The layout of the wind farm will also be provided to the fishing industry, so it can be used in their navigation aids;
- A cable burial plan will be produced which will include monitoring and reporting of any exposures. The plan will be made available to the fishing industry to allow the location of the cables to be used in their navigation aids. Monitoring of the cables will be carried out regularly and this information, including the risk of any exposed cables, prior to remedial work, will also be disseminated to the fishing industry; and
- Commitment to an over-trawl-ability assessment to provide reassurance to the scallop fleet that fishing could continue over cables.

214 ICOL suggests that should the scallop fishing fleet return to fish for scallops within the wind farm areas of Seagreen or Inch Cape, the impacts on loss or restriction to fishing grounds will be reduced. However, as this assessment has been carried out on a worst case scenario, and on the consented Seagreen design, the assessment suggests that this may be unlikely. Therefore, regardless of the mitigation measures put in place, the residual cumulative impacts on scallop fishing could result in a significant effect.

Increased Steaming Times to Fishing Grounds

215 It is considered that fishing vessels will be able to navigate through the operational wind farms. The export cables for all projects will be buried in or protected on the sea bed and are not expected to have any effect of steaming times. The sensitivity for all fisheries is expected to be low and magnitude Low.

216 The cumulative impact from the operation of the Development in combination with the Neart Na-Gaoithe, Seagreen Alpha and Bravo and Kincardine projects is Minor for all fisheries.

Displacement of Fishing Activity

217 As described in the individual assessments the extent of displacement will be a direct function of the complete loss or restricted access to fishing grounds during the operation

period. The cumulative impact from the construction of the Development in combination with the Neart Na-Gaoithe, Seagreen Alpha and Bravo and Kincardine projects is considered to be Moderate for the scallop fishery, Minor/Moderate for creel and squid fisheries and minor for the *Nephrops* fishery.

218 This also applies to the nomadic scallop fleet with the cumulative impact being Moderate.

14.11.3 Effects of Decommissioning

219 The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.

14.12 Impact Interactions

220 There is potential for the individual impacts identified in the impact assessment to interact with each other and create new or more significant impacts on commercial fisheries or other receptors. Particularly when construction phase impacts and operational phase impacts combine to produce an impact which has a longer timescale.

221 The cumulative assessment on scallop fishery during the operation and maintenance phase of the Development has been considered significant. As the construction of Inch Cape alone does not assess a significant effect on scallop fishery, which is due to the level of scallop fishing in the Development footprint, the combination of both construction and operational effects would therefore be considered no greater than that assessed for the cumulative assessment. For all other fisheries no significant interaction through the accumulation of construction and operational impacts is considered.

222 The potential impact interactions with other receptors have also been considered, of which the two likely interactions would be on shipping and navigation and on potential impacts on natural fish.

223 For shipping and navigation, the embedded mitigation noted both in this chapter and in the *Chapter 15*, would mitigate against any impact interaction, such as conflict with other sea users (including commercial fisheries) and therefore not considered to lead to a significant interaction.

224 For potential interactions with natural fish, the only likely interaction would be in relation to the lack of fishing as a result of temporary or permanent safety zones (around construction infrastructure or WGT), will result in effectively no take zones where fishing cannot take place. This may have a small positive impact on benthic / fisheries ecology which then may increase the productivity of the fishery.

225 No other impact interactions have been noted.

14.12.1 Development Alone

226 The impacts on commercial fisheries associated with the construction and operation phases of the Development are:

- Temporary loss or restricted access to fishing grounds;
- Complete loss or restricted access to fishing grounds;
- Increased steaming times to fishing grounds; and
- Displacement of fishing activity into other areas.

227 As these impacts are a consequence of each other i.e. the temporary loss or restricted access to fishing grounds is linked to increased steaming times to fishing grounds and also displacement of fishing activity into other areas, they have already been considered within the impact assessment and the significance would not increase.

228 No potential for impact interactions would result from the construction and operational phases of the Development.

14.12.2 Cumulative with Other Projects

229 As discussed for the Development the potential impacts assessed for commercial fisheries are already connected. The potential for impact interactions to increase the significance or contribute to a greater long term effect has already been assessed. No additional impact interactions have been identified.

14.13 Additional Mitigation

230 A range of embedded mitigation measures have been proposed in and ICOL have committed to the purpose of the conditions set out for the Inch Cape 2014 Consent which are relevant to commercial fisheries *Section 14.5.2*.

231 Through pre-submission consultation with SFF one additional mitigation has been identified to minimise the potential impacts on the fishing industry during the construction phase (see *Section 14.8.1*). ICOL have recognised that there is the potential for construction vessels outside the Development Area to cause issues for fishermen and inadequate communication between ICOL (including contractors) and the fishing industry. There appropriate mitigation will be included as part of the CFMS and through the appointment of a suitable FLO.

14.14 Conclusion and Residual Effects

232 The following tables summarise the residual effects considered for the Development Area and the Offshore Export Cable Corridor.

Table 14.13: Summary of residual effects, which takes into account embedded mitigation– Development Area

Impact	Receptor	Residual Effect
Construction		
Temporary loss or restricted access to fishing grounds	Scallop fishery	Moderate
	Creel fishery	Minor
	Squid fishery	Minor
	<i>Nephrops</i> fishery	n/a
Increased steaming times to fishing grounds	Scallop fishery	Minor
	Creel fishery	Minor
	Squid fishery	Minor
	<i>Nephrops</i> fishery	n/a
Displacement of fishing activity into other areas	Scallop fishery	Minor/Moderate
	Creel fishery	Minor/Moderate
	Squid fishery	Minor/Moderate
	<i>Nephrops</i> fishery	n/a
Operation and Maintenance		
Complete loss or restricted access to fishing grounds	Scallop fishery	Moderate
	Creel fishing	Minor/Moderate
	Squid fishery	Minor/Moderate
	<i>Nephrops</i> fishery	n/a
Increased steaming times to fishing grounds	Scallop fishery	Minor
	Creel fishing	Minor
	Squid fishery	Minor
	<i>Nephrops</i> fishery	n/a

Impact	Receptor	Residual Effect
Displacement of fishing activity into other areas	Scallop fishery	Moderate
	Creel fishing	Minor/Moderate
	Squid fishery	Minor/Moderate
	<i>Nephrops</i> fishery	n/a
Decommissioning		
The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.		

Table 14.14: Summary of residual effects, which takes into account embedded mitigation – Offshore Export Cable Corridor

Impacts	Receptor	Residual Effect
Construction		
Temporary loss or restricted access to fishing grounds	<i>Nephrops</i> fishery	Moderate
	Scallop fishery	Minor/Moderate
	Creel fishing	Minor/Moderate
	Squid fishery	Minor/Moderate
Increased steaming times to fishing grounds	<i>Nephrops</i> fishery	Minor
	Scallop fishery	Minor
	Creel fishing	Minor
	Squid fishery	Minor
Displacement of fishing activity into other areas	<i>Nephrops</i> fishery	Moderate
	Scallop fishery	Minor/Moderate
	Creel fishing	Minor/Moderate
	Squid fishery	Minor/Moderate
Operation and Maintenance		
Complete loss or restricted	<i>Nephrops</i> fishery	Minor
	Scallop fishery	Negligible/Minor

Impacts	Receptor	Residual Effect
access to fishing grounds	Creel fishing	Negligible/Minor
	Squid fishery	Negligible/Minor
Increased steaming times to fishing grounds	<i>Nephrops</i> fishery	Negligible/Minor
	Scallop fishery	Negligible/Minor
	Creel fishing	Negligible/Minor
	Squid fishery	Negligible/Minor
Displacement of fishing activity into other areas	<i>Nephrops</i> fishery	Negligible/Minor
	Scallop fishery	Negligible/Minor
	Creel fishing	Negligible/Minor
	Squid fishery	Negligible/Minor
Decommissioning		
The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.		

14.14.1 Cumulative Impacts

233 The following tables summarise the residual effects considered for the Development and the Development with other projects.

Table 14.15: Summary of residual cumulative effects, which takes into account embedded mitigation – The Development (Development Area and the OfTW)

Impact	Receptor	Residual Effect
Construction		
Temporary loss or restricted access to fishing grounds	Scallop fishery	Moderate
	Squid fishery	Minor/Moderate
	Creel fishery	Minor/Moderate
	<i>Nephrops</i> fishery	Moderate
Increased steaming times to fishing grounds	Scallop fishery	Minor
	Squid fishery	Minor
	Creel fishery	Minor

Impact	Receptor	Residual Effect
	<i>Nephrops</i> fishery	Minor
Displacement of fishing activity into other areas	Scallop fishery	Minor/Moderate
	Squid fishery	Minor/Moderate
	Creel fishery	Minor/Moderate
	<i>Nephrops</i> fishery	Moderate
Operation and Maintenance		
Complete loss or restricted access to fishing grounds	Scallop fishery	Moderate
	Squid fishery	Minor/Moderate
	Creel fishing	Minor/Moderate
	<i>Nephrops</i> fishery	Minor
Increased steaming times to fishing grounds	Scallop fishery	Minor
	Squid fishery	Minor
	Creel fishing	Minor
	<i>Nephrops</i> fishery	Negligible/Minor
Displacement of fishing activity into other areas	Scallop fishery	Moderate
	Squid fishery	Minor/Moderate
	Creel fishing	Minor/Moderate
	<i>Nephrops</i> fishery	Negligible/Minor
Decommissioning		
The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.		

Table 14.16: Summary of residual cumulative effects, which takes into account embedded mitigation – The Development with other projects

Impact	Receptor	Residual Effect
Temporary loss or restricted access to fishing grounds	Scallop fishery	Moderate
	Squid fishery	Minor/Moderate
	Creel fishery	Minor/Moderate
	<i>Nephrops</i> fishery	Moderate
Increased steaming times to fishing grounds	Scallop fishery	Minor/Moderate
	Squid fishery	Minor/Moderate
	Creel fishery	Minor/Moderate
	<i>Nephrops</i> fishery	Minor/Moderate
Displacement of fishing activity into other areas	Scallop fishery	Moderate
	Squid fishery	Minor/Moderate
	Creel fishery	Minor/Moderate
	<i>Nephrops</i> fishery	Moderate
Operation and Maintenance		
Complete loss or restricted access to fishing grounds	Scallop fishery	Moderate/Major*
	Squid fishery	Minor/Moderate
	Creel fishing	Minor/Moderate
	<i>Nephrops</i> fishery	Minor
Increased steaming times to fishing grounds	Scallop fishery	Minor
	Squid fishery	Minor
	Creel fishing	Minor
	<i>Nephrops</i> fishery	Minor
Displacement of fishing activity into other areas	Scallop fishery	Moderate
	Squid fishery	Minor/Moderate

Impact	Receptor	Residual Effect
	Creel fishing	Minor/Moderate
	<i>Nephrops</i> fishery	Minor
Decommissioning		
The potential effects of decommissioning are considered to be equivalent to, or potentially lower than the worst case effects assessed for the construction phase.		

*this is based on a worst-case scenario assessment, and regardless of mitigation measures being adopted, scallop fishing does not return to the wind farm development areas of in the Forth and Tay and Moray Firth region. Should fishing activity return the residual effects will be reduced to a non-significant effect.

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