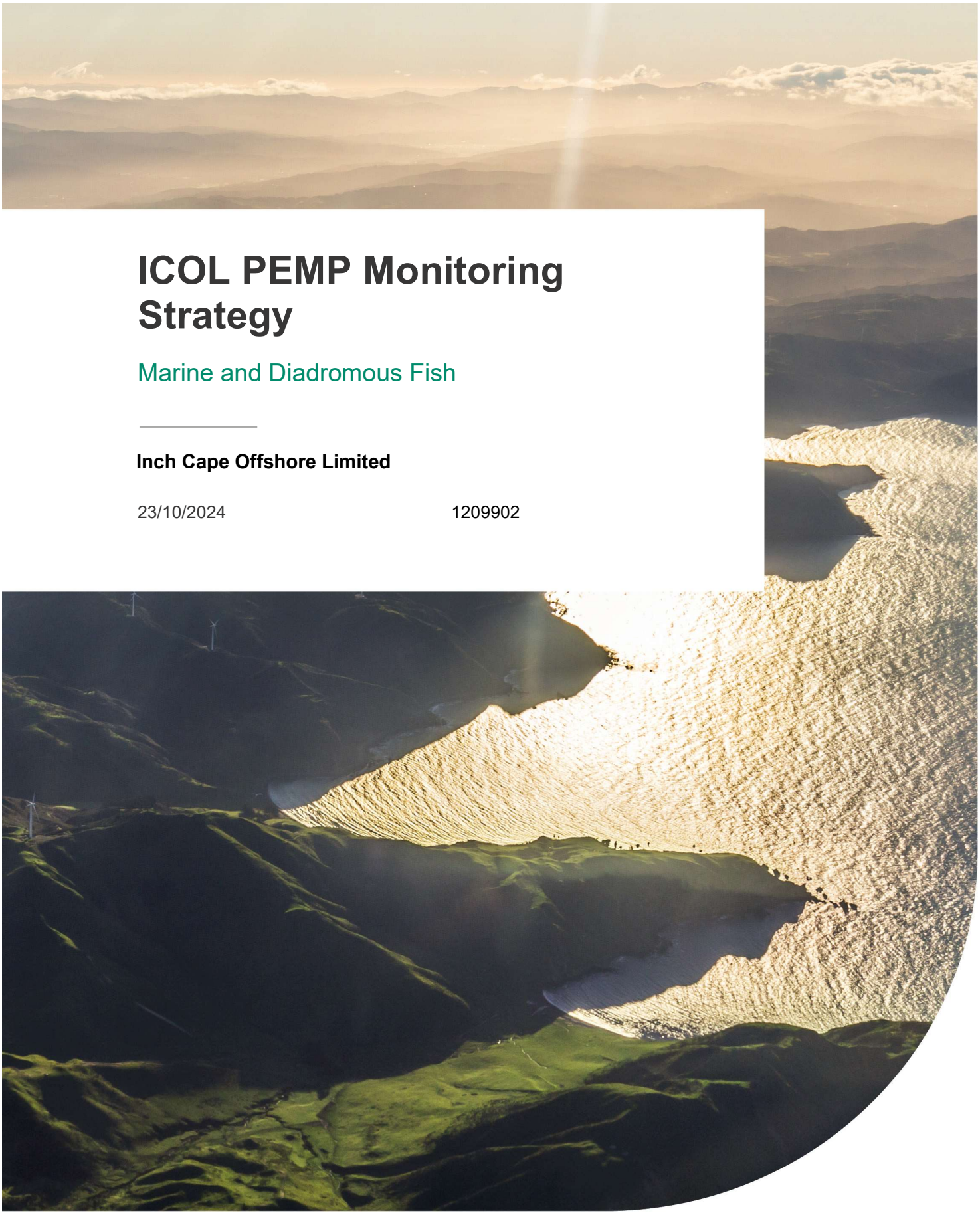

ICOL PEMP Monitoring Strategy

Marine and Diadromous Fish

Inch Cape Offshore Limited

23/10/2024 1209902

OUR VISION

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Document history

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Contents

Glossary

Defined Term	Meaning
Development	The Inch Cape Offshore Wind Farm (the Wind Farm) and Offshore Transmission Infrastructure (OfTI) being developed by ICOL.
Development Area	The area for the Wind Farm, within which all WTGs, IACs, interconnector cables, OSP and the initial part of the Offshore Export Cable and any other associated works must be sited. As stipulated in the Crown Estate agreement for lease.
2013 Environmental Statement (ES)	Refers to the document in which the Environmental Impact Assessment (EIA) was carried for the Inch Cape 2014 Consent.
2018 Environmental Impact Assessment (EIA) Report (EIAR)	Refers to the document produced in 2018 to accompany the application for Consent of the Development (granted in 2019) following a material change in design.
ICES statistical rectangle	ICES statistical rectangles are used for the gridding of marine data to make simplified analysis and visualization
Inch Cape Offshore Transmission Infrastructure (OfTI)	Components of the Development comprising the offshore export cable and OSP which are permitted by the OfTI Marine Licence (MS-00010593).
Inch Cape Offshore Transmission Works (OfTW)	Offshore Transmission Works (i.e., construction methods) associated with Inch Cape Offshore Wind Farm.
Inch Cape Offshore Wind Farm (OWF)/the Wind Farm	A component of the Development, comprising wind turbines and their foundations and substructures, and IACs.
Inch Cape Onshore Transmission Works (OnTW)	Onshore transmission works associated with the Inch Cape Offshore Wind Farm comprising the construction, operation and decommissioning of an onshore substation, electricity cables and associated infrastructure required to export electricity from the Inch Cape Offshore Wind Farm to the National Electricity Transmission System.
Offshore Export Cables	The subsea, buried or protected electricity cables running from the offshore wind farm substation to the landfall and transmitting the electricity generated to the onshore cables for transmission onwards to the onshore substation and the electrical grid connection.
Offshore Export Cable Corridor	The area within which the Offshore Export Cables will be laid from the OSP and up to Mean High Water Springs.
(The) Consents	Collective term used to describe the Section 36 consents and Marine Licences issued to ICOL.

Acronyms and Abbreviations

Acronym	Term
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CoP	Construction Programme
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ES	Environmental Statement
EMF	Electromagnetic fields
FMS	Fisheries Management Scotland
FTRAG	Forth and Tay Regional Advisory Group
FWPM	freshwater pearl mussels
ICOL	Inch Cape Offshore Limited
GS	Generating Station
HRA	Habitats Regulations Appraisal
ICES	International Council for the Exploration of the Sea
km	Kilometre
kV	kiloVolts
m	Metre
MD-LOT	Marine Directorate Licensing Operations Team
MD-SEDD	Marine Directorate Science, Evidence, Data and Digital
MMO	Marine Management Organisation
MS-LOT	Marine Scotland Licencing Operations Team (Now MD-LOT)
MSS	Marine Scotland Science (now MD-SEDD)
MW	Megawatt
O&M	Operation and maintenance
OfTI	Offshore Transmission Infrastructure
OfTW	Offshore Transmission Works
OSP	Offshore Substation Platform
PEMP	Project Environmental Monitoring Programme
RAG	Regional Advisory Group
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
ScotMER	Sottish Marine Energy Research
SFF	Scottish Fishermen’s Federation
SNH	Scottish Natural Heritage (now NatureScot)
UK	United Kingdom
WDC	Whale and Dolphin Conservation
WTG	Wind turbine generator

1. Introduction

This document has been prepared by Natural Power Consultants (Natural Power) on behalf of Inch Cape Offshore Limited (ICOL), for submission for approval by Scottish Ministers. It outlines the rationale and specification of the proposed environmental monitoring for the Inch Cape Offshore Wind Farm (the Wind Farm) and Offshore Transmission Infrastructure (OfTI), hereafter referred to as the Development, in relation to marine and diadromous fish (as per Section 36 and Marine Licences conditions).

This document has been produced to communicate and agree with stakeholders the proposed approach to the pre-construction environmental monitoring, and will form part of the Project Environmental Monitoring Programme (PEMP) as required by the Inch Cape Offshore Wind Farm Section 36 Consent conditions 24 and 25, Offshore Energy Generating Station (GS) Marine Licence (MS-00010140) conditions 3.2.2.21 and 3.2.2.22 and Offshore Transmission Infrastructure (OfTI) Marine Licence (MS-00010593) condition 3.2.2.18 and 3.2.2.19. These include conditions relating to the Regional Advisory Group (RAG) who will require to be consulted with for mitigation and monitoring.

Due to the Project Timelines, two separate PEMPs are being developed. The PEMP-OfTI and the PEMP-GS. This document is applicable to both.

1.1. Developing the Natural Fish Strategy

The proposed approach to natural fish monitoring takes into consideration the following:

- The baseline conditions of the Development Area and Offshore Export Cable Corridor (i.e., the results of the Environmental Impact Assessment (EIA) baseline characterisation);
- The predictions of the impact assessment for marine and diadromous fish receptors, and degree of certainty in these predictions, made within the original Environmental Statement (ES) (ICOL, 2013) and revised EIA Report (EIAR) (ICOL, 2018);
- The mitigation and monitoring commitments outlined in the ES (ICOL, 2013) and EIAR (ICOL, 2018);
- The outcomes/recommendations of published reports on monitoring at other offshore wind farm sites in the UK (and overseas) and existing data on the sensitivity and recoverability of receptors as relevant; and
- The outcomes of the independent review of post-consent environmental monitoring data undertaken on behalf of the Marine Management Organisation (MMO) (MMO, 2014a) and the MMO's subsequent recommendations (MMO, 2014b) which state that:
  - Monitoring requirements should be driven largely to "*ensure compliance with measures identified in assessments to mitigate significant impacts, detect any unforeseen impacts and validate predictions made in an EIA or [Habitats Regulations Appraisal] HRA*". For impacts where there is a significant impact, mitigation should be used "*to protect the environment*".
  - Monitoring should be used "*where there is uncertainty in the significance of an impact which could lead to a potentially significant impact on a sensitive receptor*", and that "*surveys should be designed so that data collected can reduce uncertainty in impact significance statements*". It also states that "*monitoring should not be required for impacts where there is already high certainty*".

2. The Development

In 2014, ICOL, the developer, was awarded Section 36 and Marine Licences for the construction and operation of an offshore wind farm and associated transmission works.

In 2018, ICOL submitted a new application with a revised design that would allow the development of a project that could utilise progressions in wind turbine generator (WTG) technology, since the 2014 consent. The revised design was aimed at reducing the environmental impacts and increasing the cost competitiveness of the project, primarily by reducing the overall number of WTGs and increasing the height of the WTGs being installed. Section 36 and Marine Licence Consents for the revised design were granted by Scottish Ministers in 2019.

Offshore construction is currently expected to commence April 2025 and is anticipated to take approximately two and a half years, running to August 2027. Details of the full programme for the construction works are provided in the Construction Programme (CoP) (IC02-INT-EC-OFC-004-INC-PRG-001).

The Inch Cape Offshore Wind Farm will be located approximately 15 to 22 km (eight to 12 nautical miles) off the Angus coastline, to the east of the Firth of Tay. The Development Area is approximately 150 km^2 and will contain 72 (Wind Turbine Generators) WTGs, one Offshore Substation Platform (OSP), 66 kilovolts (kV) inter-array cabling and the initial section of the Export Cables between the Development Area boundary and OSP.

The Offshore Export Cables will be installed within the Offshore Export Cable Corridor (ECC) , and will consist of two 220 kV export cables approximately 85 km long, between the landfall point at Cockenzie in East Lothian and the OSP within the Development Area. The ECC is approximately 1.4 km wide across at the widest point, reducing to approximately 250 m when approaching the landfall.

The location and extent of the Development Area and Offshore Export Cable Corridor is shown in Figure 2.1

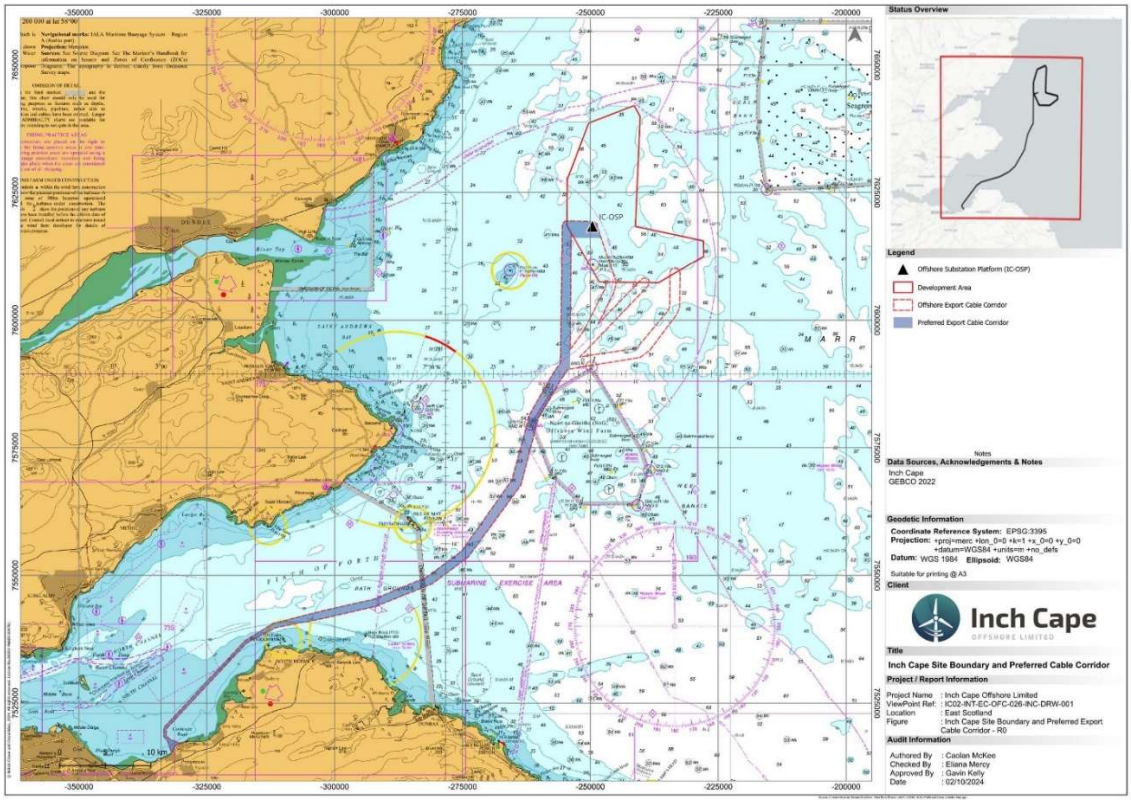

Figure 2.1: Project Location

3. Baseline Summary

The Natural Fish Chapter of both the 2013 and 2018 EIAR (Chapter 13 and Chapter 9, respectively) assessed key fish and shellfish receptors groups, from within the Development Area and Offshore Export Cable Corridor, based on ecological traits and sensitivities. The baseline information for each group (as defined in the 2013 EIA and 2018 EIAR) is summarised below. A summary of the impact assessment conclusions from both the 2013 EIA and 2018 EIAR is provided.

Both the Development Area and Offshore Export Cable Corridor are located within ICES rectangles 41E7 and 42 E7. The areas surrounding these rectangles have been defined as the Local Study Area and the Regional Study Area (Figure 3.1). The Local Study Area encompasses the ICES squares 42E8 and 41E8, along with the salmon fishery districts in closest proximity to the Development; while the Regional Study Area was defined to ensure sufficient coverage of fishing grounds and migration routes covering the Development Area.

Source: 2018 EIAR (ICOL, 2018)

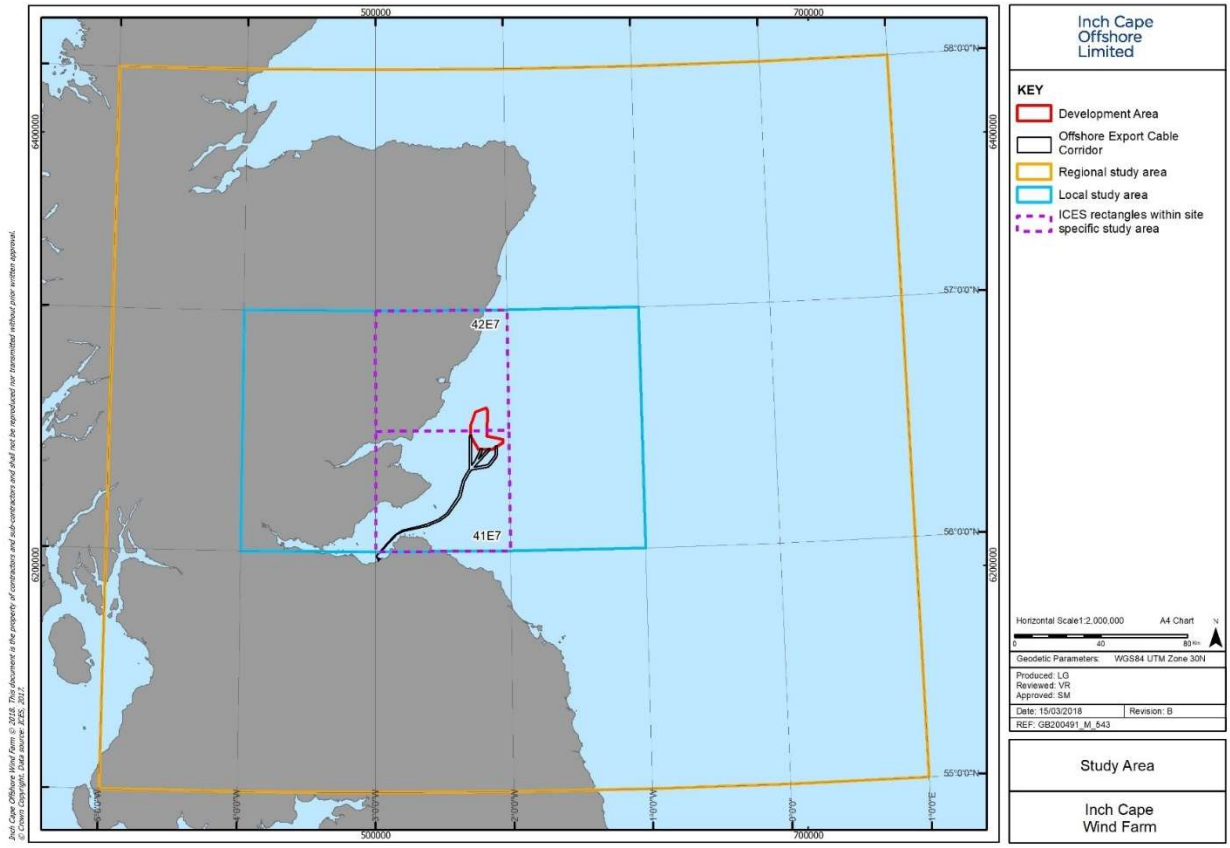

Figure 3.1: The Development Area, Offshore Export Cable Corridor, Local Study Area and Regional Study Area

Mobile fish species

This is the largest group and includes all marine fish which are not included in one of the other receptor groups. This includes whiting (*Merlangius merlangus)*, plaice (*Pleuronectes platessa*), haddock (*Melanogrammus aeglefinus*), mackerel (*Scomber scombrus*), sea trout (*Salmo trutta trutta*), European eel (*Anguilla anguilla*), sparling (*Osmerus eperlanus*), and European squid (*Loligo vulgaris*).

Whiting, plaice, haddock and mackerel are fish of commercial importance in ICES rectangles 41E7 and 42E7 (Figure 3.1) which overlap the Development. Over the period 2007-2011 mackerel were the highest landed species by weight followed by haddock. Plaice and whiting were also landed but weights were low with a high degree of

fluctuation over the 5 years. In addition, whiting, haddock and European squid were also caught in the site-specific surveys carried out in and around the Development Area.

A number of these fish species are known to spawn or have nursery grounds which overlap the Development Area and/or the Offshore Export Cable Corridor. There are spawning grounds for plaice and whiting, and nursery grounds for mackerel, plaice and whiting present (Ellis *et al*., 2012 and Coull *et al*., 1998).

Information on the distribution of European eel within the Development Area is limited, due to gaps in the knowledge of the offshore migratory phase of these species (Malcolm *et al.,* 2010). The uncertainties of distribution and migration routes also applies to sea trout and sparling. The Local Study Area (Figure 3.1) includes a number of river catchments, and whilst the assessments concluded the Development is unlikely to be an area of importance for these species, the presence of European eels, sea trout and sparling in the Development Area could not be ruled out.

Hearing specialists

Fish whose swim bladders are connected to the inner ear, such as the clupeids (herring, sprat and shad) are considered to be hearing specialists, and therefore are particularly susceptible to the noise caused during offshore construction activities. Cod are also regarded as having a moderate sensitivity to noise of a scale similar to herring (these are referred to as Group 3 fish).

Although herring were not recorded in commercial fisheries landing data for ICES rectangles 41E7 and 42E7 (2007-2011) they were recorded as by catch by Marine Scotland Science in 2010. According to landing data between 2012 and 2016 (as distributed by the MMO), herring were landed (from ICES rectangles 41E7 and 42E7) in 2012, 2013, 2015 and 2016, with no commercial landings of herring from these squares reported in 2014. Herring are however landed from across the Local and Regional Study Area in relatively high abundances, with the greatest catches recorded to the north of the Development Area. Herring are substrate spawners with spawning grounds 4.5 km from the Development and nursery grounds which overlap this area (Ellis *et al*., 2012 and Coull *et al*., 1998).

Sprat are recorded in commercial landings data (41E7 and 42E7) although they are not in the top 10 most landed species, and no landings of sprat were recorded within the Regional Study Area between 2012 and 2016. Sprat were however caught in high numbers during site specific surveys in and around the Development Area. Beyond the boundaries of the Development Area and/or the Offshore Export Cable Corridor (within the Local Study Area Figure 3.1) spawning areas for sprat are present (Ellis *et al*., 2012 and Coull *et al*., 1998).

Allis shad (*Alosa alosa)* and twaite shad (*Alosa fallax*) spawn in riverine environments and use the coastal shelf for nursery grounds and migration. Information on the migratory behaviour of these species is limited, with the only known spawning sites found in rivers which flow into the Irish Sea (River Cree for allis shad, and the rivers flowing into the Severn estuary for twaite shad; (Carstairs, 2000). Little is known about their offshore distribution; however they are known to be a pelagic shoaling species. In relation to the Development, the database for the Atlas of Freshwater Fishes (Davies *et al*., 2004) shows two records of the twaite shad in the Tay in 1978 and one record of the allis shad off the coast of St Andrews (date unknown). Unspecified species of shad have occasionally been reported in bycatch data within the ICES rectangle which encompasses the Offshore Export Cable Corridor (41E7), however these totalled just 5.7 kg for the two years they were reported (2009 and 2011). No other landings of shad species have been reported in the ICES rectangles that intersect with the Development between 2012 to 2016.

Cod are landed every year (2007-2016) from both rectangles 41E7 and 42E7 and were caught in reasonably high weights, though landings for the Local Study Area declined historically (2011 to 2016). Cod are a pelagic spawner and are widespread throughout the North Sea. Both spawning and nursery grounds for this species overlap the Development (Ellis *et al*., 2012).

Prey species

Sandeel (*Ammodytes tobianus*) abundance within the Regional Study Area (Figure 3.1) was provided by Marine Scotland Science (MSS) (now MD-SEDD) (pers. com) which collates catch data from their surveys using all

demersal gears (including dredge, grab and trawls) from 1927 to 2010. The highest catches of sandeels have been recorded on specific sand banks to the south east of the Development Area where MSS undertook dredging surveys.

Habitat mapping indicates that large areas of the Development Area have suitable sedimentary conditions for sandeel, but a minority of this is categorised as prime habitat, whereas the Offshore Export Cable Corridor was considered to be almost entirely unsuitable for sandeel (Ellis *et al.,* 2012).

Electro-sensitive elasmobranch species

Three species of elasmobranch have been identified as being present within ICES rectangles 41E7 and 42E7 by both commercial landings and bycatch data; lesser spotted dogfish (*Scyliorhinus canicula*), cuckoo ray (*Raja naevus*) and spurdog (*Squalus acanthias*). Ellis *et al*. (2012) and Coull *et al*. (1998) identified nursery areas for spurdog, tope and common skate that overlap the Development. No data is available on the locations of spawning grounds for these species.

Special Area of Conservation (SAC) qualifying feature species

There are a number of SACs on the East Coast of Scotland which are designated for migratory fish. For example, The River Tay, River Teith and River Tweed are designated for Atlantic salmon (*Salmo salar*), sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*), whereas the Rivers South Esk and Dee are designated for Atlantic salmon. These migratory species all have a marine phase, returning to one or more of these SACs to spawn. It is therefore possible that they will pass through the Development.

Information on the distribution of these species within the Development is limited as a result of knowledge gaps of the offshore migratory phase of these species (Malcolm *et al*., 2010). However, it is considered that river lamprey is not expected to interact with the Development due to their migrations being limited to estuarine habitats. As migration routes of Atlantic salmon and sea lamprey are not fully established, it is precautionary to consider that these species may pass through the Development during migrations.

Spawning and nursery areas for these species is in freshwater riverine environments until they migrate on their seaward migration as smolts (Atlantic salmon) or transformers (sea and river lamprey). During these life stages both smolts and sea lamprey transformers may interact with the Development. Given the estuarine migration of the river lamprey, transformers of this species are unlikely to migrate through the Development.

The Rivers South Esk and Dee are also designated for freshwater pearl mussels (FWPM) (*Margaritifera margaritifera*). Although FWPM are sessile and adults are found in freshwater riverine environment only, they rely on salmonids during their parasitic larval stage. Impacts on salmon migration are directly applicable to FWPM. It is therefore possible FWPM may pass through the Development as parasitic larval, during salmon migrations.

Shellfish

Shellfish are of particular commercial importance within the Development with greater landings (by weight) than fish. Norway Lobster, known as *Nephrops* (*Nephrops norvegicus*) are the highest landed shellfish in the Offshore Export Cable Corridor (ICES rectangle 41E7) with substantially less in the Development Area (rectangle 42E7). The Offshore Export Cable Corridor seabed substrates have higher mud content (which reflects a more suitable habitat for *Nephrops).* Both the Development Area and Offshore Export Cable Corridor are identified as spawning and nursery grounds for this species (Ellis *et al.,* 2012 and Coull *et al.,* 1998).

King scallop (*Pecten maximus*) are of particular commercial importance, however, annual fluctuations in activity due to the cyclical nature of the fishery should be noted. Over 2,000 tonnes of this species were landed from the Development Area (ICES rectangle 42E7) during the period 2007 to 2011. Fewer king scallops were landed in the Offshore Export Cable Corridor (ICES rectangle 41E7) over the same period. In the period of 2011 to 2016, landings within the Development Area were reduced, with the majority of scallop landings in the Forth and Tay region coming from ICES squares to the north east of the Development Area, particularly ICES rectangles 42E8 and 43E8. Although no scallop spawning grounds have been identified within available literature, scallops display low mobility and are known to spawn where they live; therefore, areas where scallops inhabit are also described a spawning grounds.

Edible (brown) crab (*Cancer pagurus*) and lobster (*Homarus gammarus*) populations occur across the Development Area and Offshore Export Cable Corridor, however the habitat present in the Development Area is not considered optimum habitat for mobile crustaceans such as crabs and lobsters. These species are concentrated within the rocky areas inshore and around Bell Rock. No information is provided by CEFAS on the locations where edible crabs and lobsters release their larvae (Ellis *et al*., 2012 and Coull *et al*., 1998). In the North Sea, berried females of both these species migrate offshore to release larvae (Nichols *et al*., 1982; Hayward *et al*., 1996). Hence the Offshore Export Cable Corridor is not predicted to overlap with these areas.

4. Impact Assessment Summary

The conclusions for the Natural Fish assessment in the 2013 ES and 2018 EIAR are provided in full (Appendix A, Tables A.1- A.6).

The majority of the potential impacts were considered to be negligible/minor, minor or minor/moderate and not significant. Barrier effects, disturbance or physical injury associated with construction noise on the behavioural responses of hearing specialists (herring in particular) and SAC qualifying feature species were assessed as moderate and not significant. The significance of the effect for the majority of the potential impacts along the Offshore Export Cable were negligible/minor, minor or minor/moderate and not significant. Behavioural responses to electromagnetic fields (EMF) associated with cabling on SAC qualifying species was considered to be moderate and not significant.

The 2018 EIAR only assessed effects (barrier effects, disturbance, or physical injury associated with construction noise) on hearing specialist fish (herring, sprat, cod and shad) due to the increase in hammer energy proposed. The 2018 EIAR concluded that the effect was not significant. Impacts on SAC qualifying feature species (Atlantic salmon) were scoped out of the 2018 EIAR on the basis that they would not likely result in significant effects.

5. Monitoring Commitments and Relevant Conditions

5.1. Monitoring Commitments in ES

The 2013 assessment for Natural Fish (ICOL, 2013), which included embedded mitigation, concluded that impacts to this receptor group were not significant therefore no additional mitigation or monitoring was required. The Natural Fish assessment for the 2018 application (ICOL, 2018) only assessed impacts to hearing specialist fish species (herring, sprat, cod and shad) as the assessment in the 2013 ES was still relevant for all other species. The assessment, which included embedded mitigation, also concluded that impacts to this receptor group were not significant therefore no additional mitigation or monitoring was required.

Therefore, no additional natural fish monitoring was proposed for the Development at this time.

5.2. Section 36 Consent and Marine Licence conditions

The Section 36 Consent, Generating Station (GS) Marine Licence, and OfTI Marine Licence for the revised design were granted by Scottish Ministers on 17th June 2019. The Section 36 Consent was subsequently varied on 16th July 2020, 22nd July 2021, and 14th June 2023, the GS Marine Licence was varied on 14th June 2023 (Licence No. MS-00010140); and the OfTI Marine Licence varied on 23rd August and amended on 9th November 2023 (Licence No. MS-00010593).

The S36 Condition 24, GS Marine Licence condition 3.2.2.21, and OfTI Marine Licence Condition 3.2.2.18 provide the requirement for the PEMP, as described below:

- The Company/ Licensee must, no later than six months prior to the Commencement of the Development/ Works, submit a Project Environmental Monitoring Programme ("PEMP"), in writing, to the Scottish Ministers/ *Licensing Authority* for their written approval. Such approval may only be granted following consultation by the Scottish Ministers/ *Licensing Authority* with SNH, RSPB Scotland, WDC, SFF, FMS and any other environmental advisors or organisations as required at the discretion of the Scottish Ministers/ *Licensing Authority*. The PEMP must be in accordance with the Application as it relates to environmental monitoring.
- The PEMP must set out measures by which the Company must monitor the environmental impacts of the Development. Monitoring is required throughout the lifespan of the Development where this is deemed necessary by the Scottish Ministers/ *Licensing Authority*. Lifespan in this context includes pre-construction, construction, operational and decommissioning phases.
- The Scottish Ministers/ *Licensing Authority* must approve all initial methodologies for the above monitoring, in writing and, where appropriate, in consultation with the FTRAG.
- Monitoring must be done in such a way so as to ensure that the data which is collected allows useful and valid comparisons between different phases of the Development. Monitoring may also serve the purpose of verifying key predictions in the Application. In the event that further potential adverse environmental effects are identified, for which no predictions were made in the Application, the Scottish Ministers/ *Licensing Authority* may require the Company to undertake additional monitoring.
- The PEMP must cover, but not be limited to, the following matters:
    a. Pre-construction, construction (if considered appropriate by the Scottish Ministers/ *Licensing Authority*) and post-construction monitoring or data collection as relevant in terms of the Application, and any subsequent monitoring or data collection for:

    1. Birds; [Generating Station only]
    2. Marine Mammals;
    3. Commercial Fisheries;

4. Marine fish;
5. Diadromous fish;
6. Benthic communities; and
7. Seabed scour and local sediment deposition.

b. The participation by the Company to contribute to data collection or monitoring of wider strategic relevance, identified and agreed by the Scottish Ministers/ *Licensing Authority*.

- Due consideration must be given to the Scottish Marine Energy Research ("ScotMER") programme, or any successor programme formed to facilitate these research interests.
- Any pre-consent monitoring or data collection carried out by the Company to address any of the above issues may be used in part to discharge this condition subject to the written approval of the Scottish Ministers/ Licensing Authority.
- The PEMP is a live document which will be regularly reviewed by the Scottish Ministers/ Licensing Authority, at timescales to be determined by them to identify the appropriateness of on-going monitoring. Following such reviews, the Scottish Ministers/ Licensing Authority may, in consultation with the FTRAG require the Company to amend the PEMP and submit such an amended PEMP, in writing, to the Scottish Ministers/ *Licensing Authority*, for their written approval. Such approval may only be granted following consultation with the FTRAG and any other environmental, or such other advisors as may be required at the discretion of the Scottish Ministers/ *Licensing Authority*.
- The Company must submit written reports and associated raw and processed data of such monitoring or data collection to the Scottish Ministers/ *Licensing Authority* at timescales to be determined by them. Consideration should be given to data storage, analysis and reporting and be to Marine Environmental Data and Information Network standards.
- Subject to any legal restrictions regarding the treatment of the information, the results are to be made publicly available by the Scottish Ministers/ Licensing Authority, or by such other party appointed at their discretion.
- The Scottish Ministers/ *Licensing Authority* may agree, in writing, that monitoring may be reduced or ceased before the end of the lifespan of the Development.

The S36 Condition 25, GS Marine Licence condition 3.2.2.22, and OfTI Marine Licence Condition 3.2.2.19, also set up the requirements for ICOL participation at the Forth and Tay Regional Advisory Group, the FTRAG, as described below:

- The Company must participate in the Forth and Tay Regional Advisory Group ("FTRAG") or any successor group, established by the Scottish Ministers/ *Licensing Authority* for the purpose of advising the Scottish Ministers/ *Licensing Authority* on research, monitoring and mitigation programmes for, but not limited to, ornithology, marine mammals, diadromous and commercial fish. The extent and nature of the Company's participation in the Regional Advisory Group is to be agreed by the Scottish Ministers/ *Licensing Authority*.

6. Proposed Approach to Monitoring

Based on the available evidence, and the current understanding within the offshore wind industry of barrier effects, disturbance, or physical injury associated with construction noise, project specific monitoring prior, during or after construction for marine and diadromous fish species is not proposed for the Development.

- This strategy is consistent with the findings and commitments outlined in both the relevant application documentation and the relevant Section 36 consent and Marine Licence conditions (see Section 5). The following has been considered to support this approach: A full review of both EIARs (ICOL, 2013; ICOL, 2018) as relevant to natural fish has been undertaken, confirming no significant effects from either the construction,

operation and maintenance or decommissioning of the Development are predicted on natural fish receptors. This is on the basis that the magnitude of all impacts is predicted to be moderate or less, and the significance of all associated effects is moderate or less. This includes the implementation of the embedded mitigation measures proposed in both EIARs (ICOL, 2013; ICOL,2018);

- In addition to the 2013 and 2018 EIAR's, a Salmon Migration Behaviour report was also produced (Alcock, 2017). This report highlighted the most up to date understanding of salmon migration routes and the effects of EMF and underwater noise on salmonids. Based on this report, Scottish Ministers confirmed that effects of underwater noise and EMF could be scoped out of the assessment as no potential for significant effects existed, and therefore further assessment of the effects on salmon migration behaviour was not required;
- No monitoring commitments were proposed within the EIA or EIAR (ICOL, 2013; ICOL, 2018);
- The Development Area and Offshore Export Cable Corridor do not overlap any designated sites with fish interest features; and
- It is acknowledged that WTGs are known to alter the foraging patterns of seals however there is no evidence to support any claim that this behaviour is detrimental to salmon stocks, or that salmon aggregate around offshore structures and are therefore at risk of additional predation.

While no project specific survey is proposed, ICOL will continue to work with Marine Directorate and FTRAG to identify suitable opportunities to support national or regional initiatives. In line with Section 36 Condition 24, GS Marine Licence Condition 3.2.2.21 and OfTI ML Condition 3.2.2.18, ICOL will explore opportunities for contributing with the ScotMER programme (Scottish Government, 2024), or any successor programme formed to facilitate research on natural fish and diadromous fish.

7. Conclusions

A requirement for a marine and diadromous fish monitoring plan forms part of the conditions attached to the section 36 consent and the Marine Licences for the Development. A review has been undertaken of the requirement for marine and diadromous fish monitoring based on consideration of the predictions made within the 2013 EIAR (ICOL, 2013), the level of certainty in these assessments, and the most recently available data including the 2018 EIAR (ICOL, 2018). These findings have been considered in the context of existing data on the sensitivity and recoverability of fish receptors, to determine if areas of uncertainty exist, against which potential monitoring could be targeted.

This review has found that the effects of potential impacts resulting from the Development were not deemed to be significant, and that there is a high level of certainty in the impact assessments presented within both the 2013 and 2018 EIAR. In addition, the Salmon Migration Report (Alcock, 2017) reinforced the conclusion to scope out impacts to salmon from the Development. This is due to the well understood nature of many of the impacts, the unlikelihood of any unforeseen impacts, and the certainty of the predicted extents of the impacts. The evidence therefore suggests that there is no requirement marine and diadromous fish monitoring.

On this basis, ICOL is not proposing a programme of monitoring for marine and diadromous fish species, as such. This proposal is in line with the independent review of post-consent environmental monitoring data undertaken on behalf of the Marine Management Organisation (MMO) (MMO 2014a) and the MMO's subsequent recommendations (MMO 2014b) that monitoring requirements should be driven to ensure compliance with measures identified in assessments to mitigate significant impacts, detect any unforeseen impacts, and validate predictions made in an EIA or HRA where uncertainty exists.

It is noted that this document will be updated with any outputs coming from the FTRAG, and due consideration will be given to future contribution to the ScotMER programme (or any other successor programme formed to facilitate research on natural fish).

ICOL considers that this strategy is consistent with the requirements of the Section 36 consent and the Marine Licence conditions and is also consistent with the commitments for monitoring/mitigation outlined in both the ES and the EIARs (ICOL, 2013; ICOL, 2018).

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A. Summary Tables

A.1. Conclusions from 2013 ES

Table 8.1: Summary of Effects – Development Area

Impact	Receptor	Residual Significance
Construction (and Decommissioning)		
Direct temporary habitat disturbance	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Indirect disturbance as a result of sediment deposition and temporary increases in SSC	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Barrier effects disturbance or physical injury associated with construction noise	Mobile fish species (hearing generalists)	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Minor
	Hearing specialists	(Mortality and injury) = Minor (Behavioural responses) herring = Moderate Cod & sprat = Minor/Moderate
	Prey species	(Mortality and injury) = Minor (Behavioural responses) = Minor/Moderate
	Electro-sensitive elasmobranchs	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Minor
	SAC qualifying feature species	(Mortality and injury) = Minor/Moderate (Behavioural responses) = Moderate
	Shellfish	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Negligible/Minor
Operation and Maintenance		
Long term loss of original habitat	Mobile fish species	Negligible/Minor

Impact	Receptor	Residual Significance
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Minor
Behavioural responses to Electro Magnetic Field (EMF) associated with cabling	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Disturbance or physical injury associated with operational noise	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Reduced fishing activity within the Development Area	All receptor groups	Negligible/Minor (positive)
Creation of new habitat due to presence of infrastructure	Mobile fish species	Negligible/Minor (Positive)
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor (positive)
	SAC qualifying feature species	No Impact
	Shellfish	Minor/Moderate
Temporary habitat disturbance via O&M activities	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor

Source: 2013 ES, Chapter 13 – Natural Fish and Shellfish

Table A.2: Summary of Effects – Offshore Export Cable Corridor

Impact	Receptor	Residual Significance
Construction (and Decommissioning)		
Direct temporary habitat disturbance via Export Cable installation	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor

Impact	Receptor	Residual Significance
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Indirect disturbance as a result of sediment deposition and temporary increases in SSC via Export Cable installation	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Disturbance or physical injury associated with construction noise (Export Cable installation)	Mobile fish species (hearing generalists)	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Operation and Maintenance		
Long term loss of original habitat (Export Cable)	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Minor
Behavioural responses to EMF associated with cabling (Export Cable)	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Minor
	SAC qualifying feature species	Moderate
	Shellfish	Negligible/Minor
Creation of new habitat due to presence of Cable Protection	Mobile fish species	Negligible/Minor (positive)
	Hearing specialists	No Impact
	Prey species	No Impact
	Electro-sensitive elasmobranchs	Negligible/Minor (positive)
	SAC qualifying feature species	No Impact
	Shellfish	Negligible/Minor (positive)
Direct temporary habitat disturbance from O & M activities	Impacts on all receptors considered to be less than that of “Direct temporary habitat disturbance via Export Cable installation” during the construction phase (as outlined above).	

Source: 2013 ES, Chapter 13 – Natural Fish and Shellfish

Table 8.3: Summary of Effects – The Development

Impact	Receptor	Residual Significance
Construction (and Decommissioning)		
Direct temporary habitat disturbance	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Indirect disturbance as a result of sediment deposition and temporary increases in SSC	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Barrier effects disturbance or physical injury associated with construction noise	Mobile fish species (hearing generalists)	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Minor
	Hearing specialists	(Mortality and injury) = Minor (Behavioural responses) herring = Moderate Cod & sprat = Minor/Moderate
	Prey species	(Mortality and injury) = Minor (Behavioural responses) = Minor/Moderate
	Electro-sensitive elasmobranchs	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Minor
	SAC qualifying feature species	(Mortality and injury) = Minor/Moderate (Behavioural responses) = Moderate
	Shellfish	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Negligible/Minor
Operation and Maintenance		
Long term loss of original habitat	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate

Impact	Receptor	Residual Significance
	Shellfish	Minor
Behavioural responses to EMF associated with cabling	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Minor
	SAC qualifying feature species	Moderate
	Shellfish	Negligible/Minor
Disturbance or physical injury associated with operational noise	No cumulative impact	
Reduced fishing activity within the Development	No cumulative impact	
Creation of new habitat due to presence of infrastructure	Mobile fish species	Negligible/Minor (positive)
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor (positive)
	SAC qualifying feature species	No Impact
	Shellfish	Minor/Moderate (positive)
Temporary habitat disturbance via O&M activities	Impacts on all receptors considered to be less than that of "Direct temporary habitat disturbance" during the construction phase (as outlined above)	

Source: 2013 ES, Chapter 13 – Natural Fish and Shellfish

Table 8.4: Summary of Effects – The Development with other projects

Impact	Receptor	Residual Significance
Construction (and Operation)		
Direct temporary habitat disturbance	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Indirect disturbance as a result of sediment deposition and temporary increases in suspended sediment concentrations (SSC)	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Barrier effects disturbance or physical injury associated with construction noise	Mobile fish species (hearing generalists)	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Minor
	Hearing specialists	(Mortality and injury) = Minor

Impact	Receptor	Residual Significance
		(Behavioural responses) herring = Moderate Cod & sprat= Minor/Moderate
	Prey species	(Mortality and injury) = Minor (Behavioural responses) = Minor/Moderate
	Electro-sensitive elasmobranchs	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Minor
	SAC qualifying feature species	(Mortality and injury) = Minor/Moderate (Behavioural responses) = Moderate
	Shellfish	(Mortality and injury) = Negligible/Minor (Behavioural responses) = Negligible/Minor
Operation and Maintenance		
Long term loss of original habitat	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor/Moderate
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Minor
Behavioural responses to EMF associated with cabling	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Minor
	SAC qualifying feature species	Moderate
	Shellfish	Negligible/Minor
Disturbance or physical injury associated with operational noise	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor
	SAC qualifying feature species	Minor/Moderate
	Shellfish	Negligible/Minor
Reduced fishing activity	All receptor groups	Negligible/Minor (positive)
Creation of new habitat due to presence of infrastructure	Mobile fish species	Negligible/Minor
	Hearing specialists	Minor
	Prey species	Minor
	Electro-sensitive elasmobranchs	Negligible/Minor

Impact	Receptor	Residual Significance
	SAC qualifying feature species	No Impact
	Shellfish	Minor/Moderate
Temporary habitat disturbance via O&M activities	Impacts on all receptors considered to be less than that of “Direct temporary habitat disturbance” during the construction phase (as outlined above)	

Source: 2013 ES, Chapter 13 – Natural Fish and Shellfish

A.2. Summary Tables 2018 EIAR

Table 8.5: Summary of Effects – The Development

Impact	Receptor	Residual Significance
Barrier effects, disturbance, or physical injury associated with construction noise	Herring	Not significant
	Sprat	Not significant
	Cod	Not significant
	Shad	Not significant

Source: 2018 EIAR, Chapter 9 – Natural Fish and Shellfish

Table 8.6: Summary of Effects – The Development with other projects

Impact	Receptor	Residual Significance
Barrier effects, disturbance, or physical injury associated with construction noise	Herring	Not significant
	Sprat	Not significant
	Cod	Not significant
	Shad	Not significant

Source: 2018 EIAR, Chapter 9 – Natural Fish and Shellfish

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