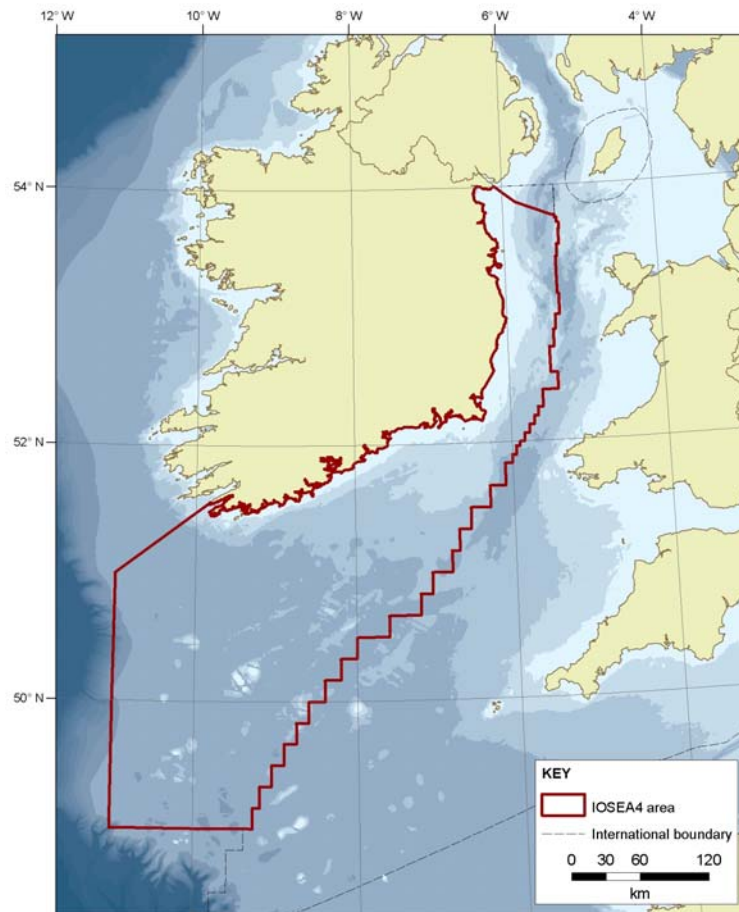




Department of Communications, Energy and Natural Resources
Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha
www.pad.ie

Fourth Strategic Environmental Assessment for Oil and Gas Activity in Ireland's Offshore Waters: IOSEA4 Irish and Celtic Seas

Early Consultation Report



This report was commissioned by:



Department of Communications, Energy and Natural Resources
Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádurtha
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and prepared by:

Xodus Group



and

Aqua-Fact International Services Ltd



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Section 1

Introduction and background

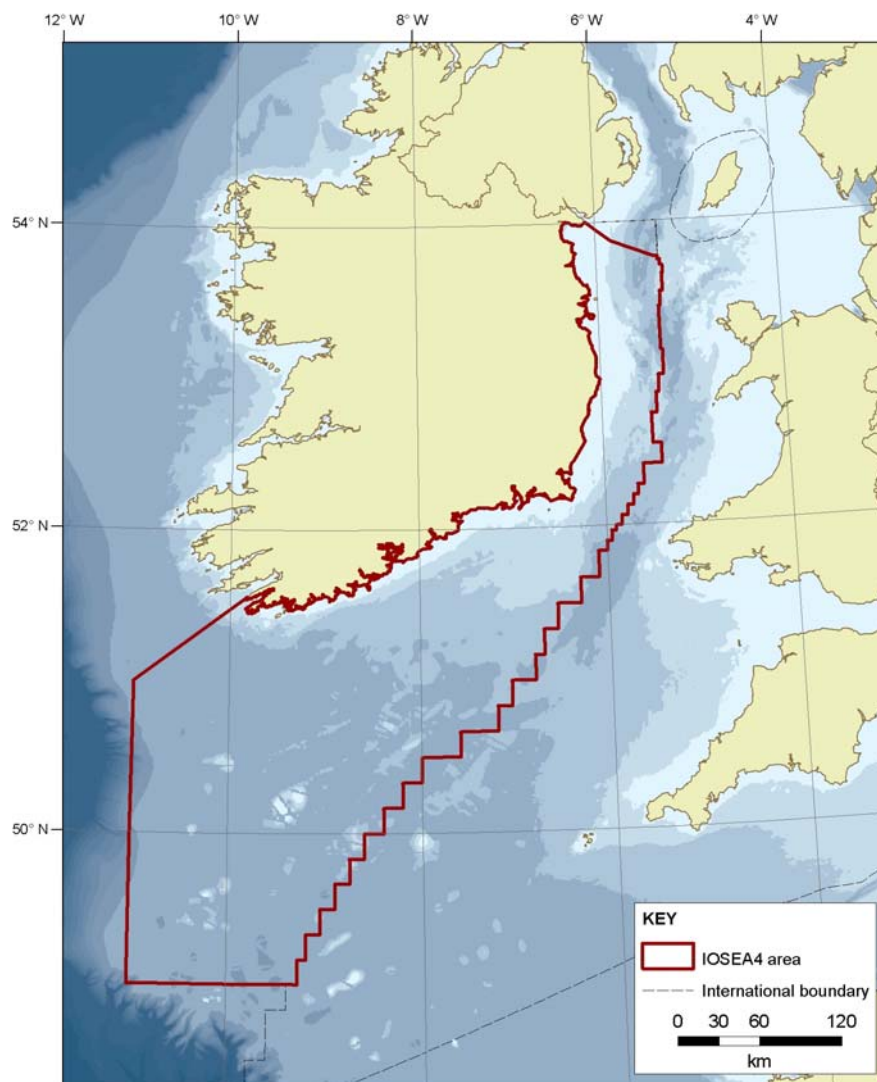
1 Introduction and background

1.1 Introduction

The Department of Communications, Energy & Natural Resources (DCENR) plans to continue licensing blocks in the Irish and Celtic Seas within Irish waters to offshore oil and gas exploration under its 'Open Door' policy (Figure 1.1). DCENR is currently undertaking a strategic environmental assessment (SEA) in order to identify and assess any potential environmental constraints within the proposed licence area. The SEA for the Irish and Celtic Sea acreage will be the fourth Irish Offshore Strategic Environmental Assessment (IOSEA4) undertaken by DCENR, with previous ones undertaken for the Slyne, Erris and Donegal Basins to the west and northwest of Ireland in 2006 (IOSEA1), the Porcupine Basin to the west and southwest of Ireland in 2007 (IOSEA2), and the Rockall Basin in 2008 (IOSEA3).

The purpose of the IOSEA4 is to assess the significance of all potential impacts arising from the Draft Plan (essentially a forecast of the expected survey and exploration drilling activity levels by DCENR), and to present the outcome of this assessment in an Environmental Report. The Draft Plan and the Environmental Report will be made available to the environmental authorities designated by the Irish government and to the general public for their comment. The environmental authorities, together with other expert bodies and the general public, shall be given early and effective opportunity to express their opinion regarding any possible environmental impacts on the acreage available within the IOSEA4 area.

Figure 1.1 The IOSEA4 area within the Irish and Celtic Seas





1.2 Legislative background and requirements

The SEA Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment came into force in 2001. The SEA directive has been implemented into Irish law by the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [Statutory Instrument (SI) 435 of 2004], and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 [SI 436 of 2004]. SI 436 covers SEA for land use planning and development purposes, whilst SI 435 covers SEA for other specified plans and programmes.

As such, Article 9.1a of SI 435 states that an environmental assessment shall be carried out for all plans and programmes which set the framework for future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive¹. Annex II of the EIA Directive includes the extraction of petroleum and natural gas, surface industrial installations for the extraction of petroleum and natural gas, as well as oil and gas pipeline installations.

SI 435 also states that a plan or programme referred to in sub-article 9.1, which determines the use of a small area at local level, only requires an environmental assessment where the competent authority determines that it is likely to have significant effects on the environment. As the competent authority, DCENR has recognised that the proposed Draft Plan for the Irish and Celtic Seas may potentially have significant effects on the environment, and therefore has embarked on an SEA process to inform the Irish government, oil companies and the general public of specific environmental considerations in its licensing process.

1.3 Scope and purpose of this Early Consultation Document

This document is the first step in initiating the IOSEA4 process, and has been prepared to facilitate a programme of informal consultation so that any potential concerns of stakeholders are identified at an early stage and can be addressed appropriately in the Environmental Report. In order to do so, this Early Consultation Document includes a brief overview of the SEA process, followed by an outline of the proposed work programme or Draft Plan, and schedule. It also lists the likely key environmental issues requiring particular attention in assessing the impacts of the proposed operations on the receiving environment.

DCENR is committed to undertaking the IOSEA4 in an open and transparent manner, with due regard for the environment and any local interests. Consequently, DCENR welcomes comments on any aspect of the proposed work programme, also known as the 'Draft Plan', and is keen to learn of any concerns held by stakeholders that may need to be addressed in the assessment. DCENR would also appreciate notification of any further sources of relevant information or data that need to be taken into account in the baseline environment description and the subsequent assessment process.

Any comments or concerns can be sent to DCENR by letter or e-mail using the address details provided in Section 6 of this document.

¹ Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment.

Section 2 The Draft Plan



2 The Draft Plan

2.1 Introduction

The IOSEA4 is a result of the Irish Government's decision to continue a policy of 'Open Door' licensing in the Irish and Celtic Seas for the foreseeable future, with the award of Licensing Options and Standard Exploration Licenses from time to time. In compliance with EU Directive 2001/42/EU of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, the DCENR intends to publish a Strategic Environmental Assessment (SEA) of this Draft Plan for the Irish and Celtic Sea areas.

This SEA will inform DCENR of specific environmental considerations in its future licensing process in the Irish and Celtic Seas. It will also be an efficient means to provide exploration companies working offshore, with an operational baseline against which they can conduct their work and ensure the protection of the marine environment.

Exploration activity levels offshore Ireland in the Irish and Celtic Seas has been relatively low over the past decade. This area however, does contain both proven oil and gas accumulations at different stratigraphic levels and includes all three of Ireland's currently producing gas fields (Kinsale, Ballycotton and Seven Heads).

License conditions generally require the Operator to undertake a work programme that shall include at a minimum, 2D or 3D seismic data acquisition. The Operator will be required to undertake reasonable site-specific environmental studies as may be appropriate to the work programmes. The Licensing Terms for Offshore Oil and Gas Exploration, Development and Production, 2007 will apply to licenses granted.

The IOSEA4 covers the period 2010 to 2020. It is proposed that subsequent phases of licensing for exploration in this area will be the subject of further SEA at a future date.

2.2 Scenarios and assumptions for Draft Plan

The scenarios being considered for the range in activity levels following licensing awards comprise the undertaking of 2D and 3D seismic data gathering and exploratory drilling in the period 2010 to 2020. Although IOSEA4 is an assessment of exploration activities only, recognition of the possibility that a proportion of the exploration may ultimately result in development drilling taking place is also made. Estimates of maximum levels of each activity have been made by the DCENR on the basis of experience for this offshore province and are shown in Table 2.1.

Table 2.1 Exploration activities (and potential development drilling activity) forecast in the IOSEA4 area between 2010 and 2020 arising from exploration activity in the Celtic Sea and Irish Sea

Type of activity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
2D seismic survey (km)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
3D seismic survey (km ²)	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Exploration drilling (no. of wells)	6	6	6	6	6	6	6	6	6	6	6
Appraisal drilling (no. of wells)	5	5	5	5	5	5	5	5	5	5	5
Development drilling (no. of wells)	7	7	7	7	7	7	7	7	7	7	7

Seismic acquisition intensities could be up to 10,000 line km of 2D data, plus up to 3,000 km² of 3D data per annum. Drilling intensity levels could be up to six exploration, five appraisal and seven development wells per annum.



Section 3 The IOSEA4 Process

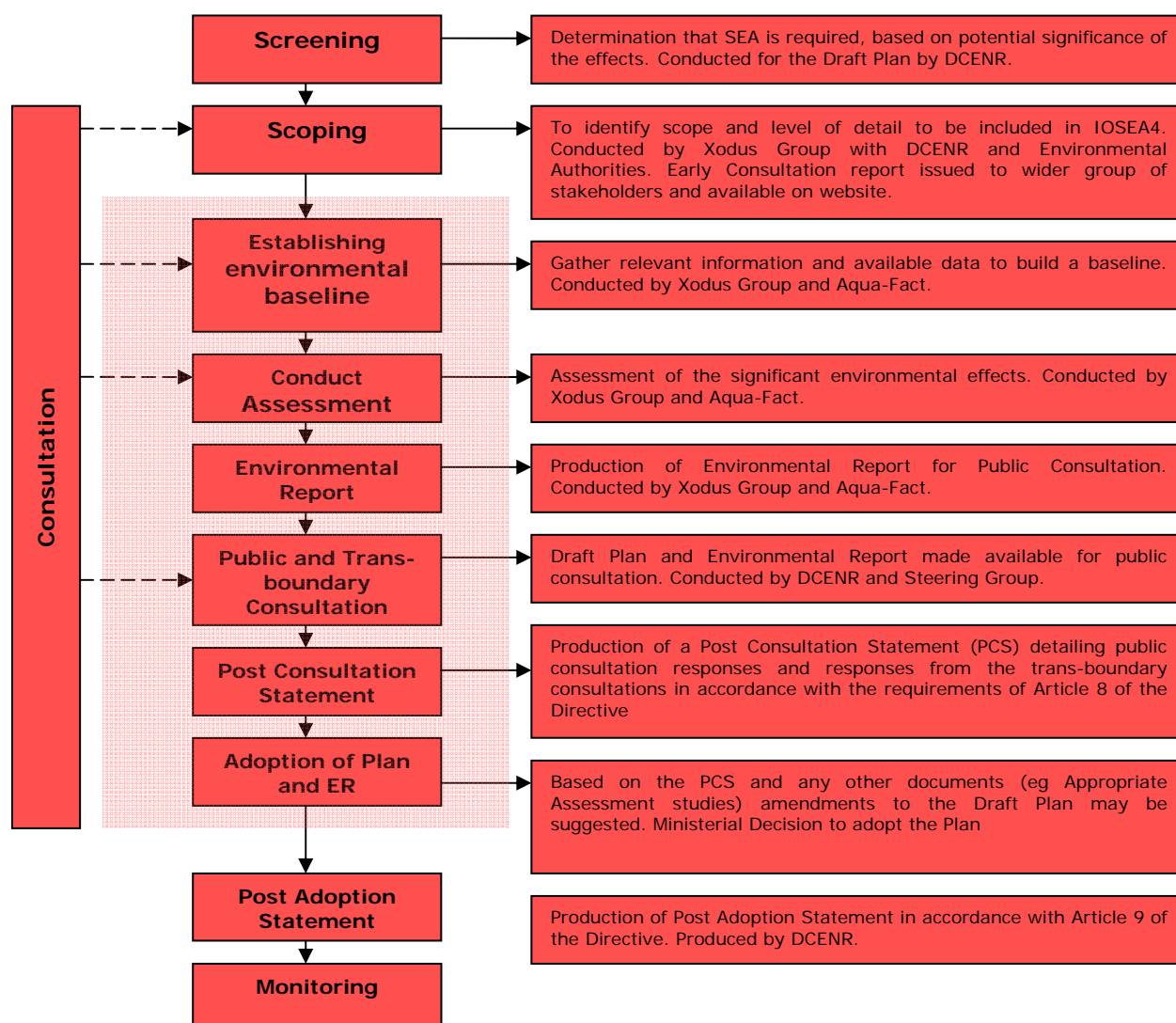
3 The IOSEA4 process

As outlined in Section 2 above, the IOSEA4 will be undertaken in compliance with the SEA Directive 2001/42/EC, as transposed into Irish law by the European Communities (Environmental Assessment of Certain Plans and programmes) Regulations 2004 (SI 435 of 2004) and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI 436 of 2004).

It will also take into account guidelines for SEA prepared by the Environmental Protection Agency (EPA) for the implementation of the Directive (EPA, 2008) and the guidance to implementing the SEA Directive published by the Department of the Environment, Heritage and Local Government (DoEHLG, 2004).

The key stages to be taken in the complete SEA process as outlined in the Directive are described in Figure 3.1.

Figure 3.1 SEA Process (adapted from DoEHLG, 2004)





This early consultation document is part of the ‘scoping’, or ‘informal consultation’, stage in this process (Figure 3.1), and responses will be reported in the Environmental Report. The Draft Plan and Environmental Report will be circulated for a six week formal consultation period in 2011, during which expert bodies and the general public will be able to provide feedback to DCENR through various channels including specially arranged meetings open to the public. The consultation feedback and submissions received from the formal consultation will, in turn, be reported in a Post-Consultation Statement that will incorporate any recommendations as to how the Draft Plan for exploration in the Irish and Celtic Seas may be amended.

Both the IOSEA4 Environmental Report and the Post-Consultation Statement will then be presented to the Minister for Communications, Energy and Natural Resources for adoption of the finalised Plan.

3.1 Schedule

The outline schedule for IOSEA4 is shown in Figure 3.2.



Section 4

The local environment

4 The local environment

4.1 The physical environment

4.1.1 Bathymetry and seabed characteristics

Main sources of information for bathymetry and seabed characteristics will be GEBCO, together with the databases held by INFOMAR and the Geological Survey Ireland (GSI), the British Geological Survey (BGS) Regional Report series, regional surveys such as the Southwestern Irish Sea Survey (SWISS) and BIOMÓR programme and site-specific surveys conducted to inform the development of the oil and gas industry in the IOSEA4 area. Basic information regarding bathymetry and seabed types will also be extracted from relevant Admiralty Charts.

The IOSEA4 area lies off the east and south coasts of Ireland, covering an area of approximately 78,096 km² (Figure 1.1). Within the Irish Sea, depths increase gradually from the shoreline to 80 – 90 m at the Ireland transboundary line, and reach a maximum of just over 160 m due east from Dublin. To the southwest, the Irish Sea opens via the St Georges Channel into the Celtic Sea. Here, depths increase gradually from the south coast southwards to approximately 100 – 120 m along the Ireland-UK international line. Water depths in the IOSEA4 area are greatest along its western edge where it just dips down the upper edge of the continental slope to a maximum of approximately 360 m.

Within this, in bathymetric terms, seabed features off the east and south coasts include several banks, islands and rocks. The IOSEA4 area includes an array of smaller seabed features, including a number of gas leak-related seabed structures in the Irish Sea such as pockmarks and mounds, and a number of sand banks.

4.1.2 Oceanography

Oceanographic measurements and model studies have been made over several decades in the IOSEA4 area and repeated measurements have been made at a number of sites. The Irish Sea can be divided into a southern section where tidal velocities are high, and a northern section where tidal velocities are low. There is a frontal system off the Wexford coast also. The oceanography of the Celtic Sea is characterised by a northwest-flowing current that eventually makes its way up the west coast.

4.2 The biological environment

4.2.1 Plankton

The distribution and abundance of plankton within the IOSEA4 area has been extensively studied since the turn of the 19th century. One of the earliest surveys of phytoplankton within Irish waters was by Gough (1906) with fortnightly plankton collections and daily measurements of water temperature made at four light stations around the coast in 1904. Since 1958, the Sir Alister Hardy Foundation for Ocean Sciences (SAHFOS) has been providing analysis of Continuous Plankton Recorder (CPR) data on the phyto- and zooplankton communities found in the Irish and Celtic Seas. The ecology of phytoplankton in IOSEA4 waters has also been studied extensively, and O'Boyle & Silke (2010) provide a detailed historical and geographical account of the current state of research within the region.

Marine plankton consists of mostly microscopic organisms that drift in the water column. Phytoplankton is the plant component, and is responsible for most of the primary production in the sea, where it plays a vital role in the exchange of carbon and carbon dioxide between the atmosphere and the oceans. Marine zooplankton communities are composed of many different animal species, which feed either on phytoplankton or other zooplankton and which form the main food source for higher trophic levels.

The pattern of phytoplankton growth within the Irish and Celtic Seas is primarily driven by seasonal change in the vertical stability of the water column, which in turn determines the availability of light and nutrients for phytoplankton growth. Other factors affecting phytoplankton populations include seasonal stratification and episodic upwelling off the southwestern coast of Ireland. These together result in the typical phytoplankton blooms seen in spring and autumn months.

The zooplankton communities within the Irish and Celtic Seas are dominated in terms of biomass and abundance by copepods, considered to be the major trophic link between phytoplankton primary



production and fish larvae. Any changes in zooplankton communities, due for example to changes in temperature or hydrographic regimes, could have knock-on impacts for fish populations in the region.

4.2.2 Benthos

A vast amount of data on seabed communities (benthos) in the Irish and Celtic Seas are available from work dating back to the late 19th Century. From the 1990s onwards, a series of qualitative surveys has been carried out in the southern Irish Sea in the BIOMÖR programme. This programme included the Southwestern Irish Sea Survey (SWISS). In addition, Cabioch *et al.* (in prep) have carried out extensive surveys of the Celtic Sea. Data are also available from environmental surveys carried out as part of the permitting system for oil and gas exploration carried out to date in the Irish and Celtic Seas.

Seabed types and associated faunal and infaunal communities have been mapped for much of the Irish and Celtic Seas through the above programmes. Seabed habitats in the Irish Sea typically vary between sand and muddy sands, with areas of coarser sediments and bedrock in the more exposed and deeper areas. Sedimentary habitats are dominated by animals burrowing or living within tubes beneath the surface (termed infauna) and include polychaetes, crustaceans, bivalve molluscs and burrowing echinoderms and brittlestars. On hard substrata, communities are typically dominated by either sessile or mobile epibiota which include both seaweeds and animals in shallow water where light is sufficient, or just animals in deeper water.

The faunal distributions in the Celtic Sea are complex and heterogeneous. A rocky shelf forms much of the substratum at the northern coastal fringe of the Celtic Sea, typically inhabited by brittlestar and sea urchin species. Off the rocky shelf, there are large areas of muddy/fine sand inhabited by an assemblage that represents a continuum between the classical *Amphiura* and *Chamelea* communities (*Amphiura* spp are burrowing brittlestars, whilst *Chamelea* sp is a bivalve mollusc). Other species characteristic of this community include the small razor shell *Cultellus pellucidus*, the polychaete *Ditrupa arietina*, the starfish *Astropecten irregularis*, the bivalve *Nucula nitidosa* and the tower shell *Turritella communis*.

4.2.3 Fish and shellfish

The main sources of information include the Marine Institute's Fisheries Science Service Stock Book (FSS, 2007), the ICES Advisory Committee on Fishery Management/Advisory Committee on Ecosystems Report (ACFM, 2006) and various fisheries research programmes.

The Irish Sea is an important spawning area for mackerel, horse mackerel and blue whiting. It is also important for spawning of cod, hake, megrim, whiting, haddock and herring.

There are commercial fisheries for cod, plaice and sole in the Irish Sea. The most abundant species in trawl surveys are dab, plaice, solenette and common dragonet along with large numbers of poor cod, whiting and sole. In recent years, abundances of dab, solenette, scaldfish and red gurnard have increased whereas hake, dragonet and pogge have decreased. Lesser spotted dogfish is abundant throughout and there is also a ray assemblage on sand hills in the southern Irish Sea.

The Celtic Sea is a spawning area for key migratory fish species, notably mackerel and horse mackerel. On the continental shelf the main pelagic species are herring, sardine and sprat. The demersal community consists of over a hundred species with the most abundant 25 making up 99% of the total biomass. Surveys have revealed a downward trend in the biomass and abundance of cod, whiting and hake.

The IOSEA4 area is also important for shellfish and crustacean species. There are fishing grounds for lobster and brown and velvet crab along much of the coast in the IOSEA4 area and spider crabs occur along the southern coastline. Scallop grounds are located in the Irish and Celtic Seas, together with grounds for shrimp, whelk, cockles and razor fish.

Various species of shark including basking sharks are known to use the Irish and Celtic Seas. Information about these has been sparse in the past, but is becoming more available from recording schemes, sightings databases and tagging programmes such as those run by the Marine Conservation Society and the Irish Whale and Dolphin Group.

4.2.4 Marine mammals and reptiles

There have been extensive survey works carried out in the IOSEA4 area and inshore of this e.g. SAST, SIAR, ESAS, SCANS. In addition, the Irish Whale and Dolphin Group have initiated and maintain an all-Ireland database of casual cetacean sightings and cetacean strandings record since 1991. Since 2001, regular monthly effort-related surveys from commercial ferries and land-based stations have been conducted. In 2003, the IWDG increased survey effort on offshore platforms on all Irish coasts and under a joint funding initiative – the Irish Scheme for Cetacean Observation and Public Education (ISCOPE II) – commencing in 2006, offshore survey effort has focused on seasons and locations with a previously low record of cetacean survey effort. Seal population assessments have been carried out around the Irish coastline in recent times.

Irish waters are some of the most important in Europe for a wide range of marine mammals (seals, whales, dolphins and porpoise) species (Berrow, 2001). To date, 24 cetacean species have been recorded in Irish waters. The toothed whale, dolphin and porpoise species known from the IOSEA4 area include the common dolphin, the bottlenose dolphin, the Atlantic white-sided dolphin, the white-beaked dolphin, Risso's dolphin, the striped dolphin, the harbour porpoise, the pilot whale, the northern bottlenose whale, Cuvier's beaked whale, True's beaked whale, the killer whale, the false killer whale and the sperm whale. The baleen whale species known from the IOSEA4 area include the minke whale, the humpback whale, the northern right whale, the Sei whale, the fin whale and the blue whale. Additionally, the grey and harbour seal have established themselves in coastal colonies (or haul-outs) along all coastlines of Ireland, which they leave when foraging or moving between areas and to which they return to rest ashore, rear young, or engage in other social activity. It is also highly likely that other seal species may occur occasionally in the IOSEA4 area

The leatherback turtle *Dermochelys coriacea* is reported annually in Irish waters and is considered a regular and normal member of the Irish marine fauna. It occurs within the IOSEA4 area. Loggerhead turtles occur less frequently in the IOSEA4 area than the leatherback turtle, with most specimens thought to have been carried north from their usual habitats by adverse currents. It is also possible that other marine turtle species might occur, if only rarely within the IOSEA4 area, including Kemp's Ridley, hawksbill and green turtles.

4.2.5 Seabirds

A number of seabird surveys have been carried out in the Irish and Celtic Seas Ireland e.g. SAST and ESAS. In addition the Coastal and Marine Resources Centre (CMRC) of University College Cork has carried out seabird research surveys throughout the IOSEA4 area and there are numerous data sets from sea watches carried out at the bird observatory on Cape Clear, County Cork.

A wide variety of seabirds occur in the IOSEA4 area e.g. petrels and shearwaters, northern gannet, skuas, gulls, terns, auks and waders.

4.3 Other users of the sea

4.3.1 Commerce and industry

The waters surrounding Ireland are some of the most productive fishing grounds in the world. The IOSEA4 area and adjacent waters are nationally and internationally important with a wide range of species targeted by pelagic, demersal and shellfish fleets. Although not as extensive as the west coast, the south coast of Ireland does support a number of mariculture sites cultivating mostly shellfish species. Small commercial fishing activities, such as creeling, may also occur in the coastal waters of the IOSEA4 area. Analysis of the fishing industry in the IOSEA4 area will be carried out using up to date site specific landings data from the Marine Institute of Ireland (MI) and vessel sighting data from the Fisheries Monitoring Centre of the Irish Naval Service.

The Celtic and Irish Seas have historically been traversed by major shipping routes and this continues to be the case. The Celtic Sea off the south coast is considered the densest shipping area off the coast of Ireland. A number of the principal ports on the Irish coast are located within the IOSEA4 area, including Cork, Waterford, New Ross, Rosslare and Dublin. A shipping study for the IOSEA4 area will be carried out and will provide detailed information on shipping activity in and around the area.

Inland resources of sand and gravel are becoming depleted, especially those close to large towns. Consequently the Irish aggregate industry has begun looking towards marine aggregates for future supplies. At present the marine aggregates sector in Ireland is relatively undeveloped, although



recent projects have highlighted the significant resources in the Irish Sea. Marine waste disposal is also conducted within the IOSEA4 area, mostly in the Irish and northern Celtic Sea sectors, where permits have been granted for the disposal of material excavated for a number of purposes including capital maintenance dredging of harbours, marinas and estuaries.

Since the 1970s approximately 190 wells have been drilled in Irish waters, of which just under 100 are located in the North Celtic Basin. Significant developments in this area have included the Kinsale and Seven Heads gas fields.

In the counties bordering IOSEA4 there are a number of onshore wind farms predominantly in County Cork. There is currently one offshore wind development; the Arklow Offshore Wind Power Plant located 5 miles offshore from County Wicklow. Ocean energy in Ireland is still in its infancy but research and development are on going. The Sustainable Energy Authority of Ireland (SEAI) and the MI have established an Ocean Energy Development Unit (OEDU) to implement the Government's policy decision to accelerate the development of ocean energy (Wave and Tidal) in Ireland. Its objectives are to create a centre of excellence in ocean energy technology to help stimulate a world-class industry cluster, and to connect 500 MW of ocean energy by 2020. This initiative includes an Ocean Energy Strategy, a Prototype Development Fund, research projects, establishment of test sites and an Offshore Renewable Energy SEA. The Scoping Report for the SEA has already been out to consultation, with a view to publication of the SEA Environmental Report in November 2010. Its area of extent overlaps that of the IOSEA4 area.

A number of submarine cables traverse the Celtic Sea, many connecting England and the US via the Atlantic. In the Irish Sea a number of cables are found connecting Ireland and England. Kingfisher cable awareness charts will be consulted to determine the exact number of functioning and out of use cables in the area.

4.3.2 Military activity

A number of sites on the coast and offshore are used for military training and firing ranges, or practice and exercise areas (PEXA). Further information on the use of these areas and other potential activities within the IOSEA4 area will be gathered from the Department of Defence, Irish Navy and the Department of Agriculture, Fisheries and Food.

4.3.3 Culture and heritage

Ireland has a rich marine archaeological heritage, the understanding of which is being expanded by the work of a number of national research institutes including the Underwater Archaeology Unit (UAU) and the National Monuments Service (NMS). There are known to be thousands of shipwrecks in Irish waters that represent an important legacy of historical maritime activity. The majority of wrecks around the Irish coast lie in inshore areas in depths to 50 m. In addition there is potential for the occurrence of ancient submerged landscapes off the south and southeast coast of Ireland. Information will be collected regarding the known marine archaeological heritage within the IOSEA4 area.

4.3.4 Amenity and leisure

The coastal landscape and seascape around Ireland supports well-kept beaches, rugged cliffs, picturesque harbours and an abundance of wildlife. These natural and developed features possess significant amenity and recreational value for the local residents in addition to major opportunities for domestic and international tourism. Popular water-based leisure activities relating to the coastal and open sea environment include visiting beaches, coastal walking, diving, sailing and boating, angling (shore and sea-based), surfing and wildlife watching. The wide range of activities alongside the natural environment and heritage form the basis of a significant tourist industry in Ireland. Data will be collected on the type and spatial distribution of recreational activities undertaken in the IOSEA4 area.

4.4 Conservation areas

Extensive areas of Ireland's offshore waters are covered by international and national designations, e.g. as a Whale and Dolphin Sanctuary, and as a Particularly Sensitive Sea Area. Under the European Habitats Directive there are currently four offshore candidate Special Areas of Conservation (cSAC) in deep water to the west of Ireland, and one of these is close to the western boundary of the IOSEA4 area in the Celtic Sea. There are currently no offshore SACs in the Irish Sea or Celtic Sea.

In addition, the eastern and southern coastlines of Ireland hold numerous SAC and Special Protection Area (SPA) designations, together with Ramsar sites, Statutory Nature Reserves, Natural Heritage Areas and others. There are also conservation interests to be taken account of within UK waters, the closest of which is the Haig Fras offshore SAC, located approximately 5 km from the boundary of the IOSEA4 area. The west coasts of Wales, England and Scotland together with the Isle of Man also have sites of conservation importance that include marine components.

4.5 Data Sources

A range of data sources, organisations and studies have been identified at this early stage of the SEA process to assist production of the environmental report.

Table 4.1 lists each source by the topic areas described earlier in this section. It should be noted that this list is not considered to be exhaustive. Organisations and individuals are therefore encouraged to provide feedback on the present list of sources and highlight additional relevant sources of environmental information for the IOSEA4 area that would be important or useful to consult.

Table 4.1 Data Sources for Information on Other Users of the Sea in the IOSEA4 Area

Topic Area	Data Source
The Physical Environment	
Bathymetry and seabed characteristics	GEBCO Geological Survey of Ireland (GSI) INFOMAR (Marine Institute/GSI) Regional surveys: e.g. BIOMÛR programme , Southwestern Irish Sea Survey (SWISS)
Oceanography	Marine Institute Department of Oceanography, NUI Galway National Oceanographic Centre (NOC) (Formally Proudman Oceanographic Laboratory) British Oceanographic Data Centre (BODC) Quality Status Report by the Irish EPA
The Biological Environment	
Plankton	Sir Alister Hardy Foundation for Ocean Sciences (SAHFOS) Numerous historical surveys
Benthos	BIOMÛR programme Southwestern Irish Sea Survey (SWISS) Environmental surveys carried out as part of the permitting system for oil and gas exploration in the Irish and Celtic Seas.
Fish and shellfish	Marine Institute's Fisheries Science Service Stock Book ICES Advisory Committee on Fishery Management/Advisory Committee on Ecosystems Report (ACFM, 2006) Fisheries research programmes



Table 4.1 (Continued)

The Biological Environment (continued)	
Mammals and reptiles	Seabirds at Sea Team (SAST), Survey in western Irish waters and the Rockall Trough (SIAR) European Seabirds at Sea (ESAS) Small Cetaceans in the European Atlantic and North Sea (SCANS) Irish Whale and Dolphin Group Irish Scheme for Cetacean Observation and Public Education (ISCOPE II)
Seabirds	Seabirds at Sea Team (SAST) European Seabirds at Sea (ESAS) Coastal and Marine Resources Centre (CMRC), University College Cork
Other Users of the Sea	
Commerce and industry	Marine Institute of Ireland (MI) Fisheries Monitoring Centre of the Irish Naval Service Shipping study to be undertaken for the IOSEA4 project Hydraulic and Maritime Research Centre (Cork) Sustainable Energy Authority of Ireland (SEAI) Department of Communications, Energy and Natural Resources European Aggregates Association (UEPG) Irish Offshore Operators Association Ocean Energy Development Unit National Offshore Wind Association of Ireland (NOW Ireland) Kingfisher Cable Awareness Charts
Military activity	Department of Defence Irish Navy Department of Agriculture Fisheries and Food (within fishery limits)
Culture and heritage	Underwater Archaeology Unit (UAU) National Monuments Service (NMS) Geological Survey of Ireland (GSI) Department of the Environment, Heritage and Local Government (DoEHLG): Record of Monuments and Places (RMP) Irish Archaeological Guide
Amenity and leisure	Irish Sailing Association (ISA) The National Parks and Wildlife Service (NPWS) The Heritage Council Department of Environment, Heritage and Local Government (DoEHLG) Environmental Protection Agency (EPA) Regional Fisheries Boards Marine Irish Digital Atlas

Table 4.1 (Continued)

Conservation areas	
Conservation areas	National Parks and Wildlife Service (NPWS) UK Joint Nature Conservation Committee (JNCC) UK Countryside Council for Wales (CCW)



Section 5 Main Environmental Issues Identified So Far

5 Main environmental issues identified so far

Based on issues raised during the previous three offshore SEA programmes for oil and gas exploration undertaken in Ireland, the following aspects of offshore oil and gas exploration have thus far been identified to have the potential to cause significant effects on the environment:

- interactions between seismic survey and drilling noise generation and marine mammals (i.e. cetaceans and seals);
- impacts to seabed features and benthos from drilling muds and cuttings discharges;
- the risk of accidental events (oil spills in particular);
- atmospheric emissions generated during the various exploration operations (including flaring from well testing operations);
- the physical presence of seismic survey vessels and drilling rigs, potentially interacting with other commercial and recreational interests and users of the sea (and possibly within visual and audible range of coastal inhabitants);
- potential cumulative and transboundary impacts.

All concerns raised both through formal scoping with the environmental authorities and through the informal consultation process (including responses to this document) will be thoroughly assessed in the environmental report. Any potential cumulative and transboundary effects will also be considered, and appropriate mitigative measures will be proposed in order to minimise their impacts. The assessments will look at a range of possible scenarios and alternatives.



Section 6 Responses to DCENR

6 Responses to DCENR

This document is the first step in initiating the IOSEA4 process, and has been prepared to facilitate a programme of informal consultation so that any potential concerns of stakeholders are identified at an early stage and can be addressed appropriately in the Environmental Report. Other information, notices and documents about IOSEA4 and its progress over the coming months will be available at the following web address:

<http://www.dcenr.gov.ie/Natural/Petroleum+Affairs+Division/Irish+Offshore+Strategic+Environmental+Assessment+%28IOSEA+4%29/>

If you have any comments or suggestions on any of the issues raised in this early consultation document, or have information about data or information sources that should be consulted and taken into account, please send them to the e-mail address below:

E-mail address: IOSEA4@xodusgroup.com



Section 7 References

7 References

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