

Section 6

Identification of potential impacts and concerns

6 Identification of potential impacts and concerns

6.1 Introduction

A description of the overall SEA process has been given in Section 2. This section describes the approach and methods used to identify the potential environmental impacts and concerns associated with the proposed oil and gas licensing round.

6.2 Approach

The impact assessment was initiated with an Environmental Issues Identification (ENVID) exercise involving the SEA Steering Group (members identified in Section 15) and independent environmental specialists. The purpose of this was to identify where the interactions were likely to occur between the proposed plan and the receiving environment, and to highlight where environmental concerns were likely to occur at an early stage. As described in Section 4, the proposed plan was considered in terms of the following operations:

- Seismic survey.
- Exploratory drilling.

For each operation, a matrix was compiled in which all of the activities involved could be assessed against the various environment receptors that could be affected by the project. The activities associated with each phase of the project were listed down the left side of the matrix, while the physical, biological, and socio-economic aspects of the environment were listed horizontally across the top of the matrix. These were finalised on the basis of technical input from the DCENR and scientists on the Steering Group, the findings of the review of baseline environment and local environmental sensitivities (Section 5 and Technical Annex), and the experience and knowledge of ERT regarding the impacts of oil and gas activities and wider marine environmental issues. The matrices were populated by considering all aspects of each activity and identifying where any interaction with the environment may occur.

A preliminary assessment of the significance of the impacts resulting from each interaction was then made using significance criteria shown in Table 6.1. Using these criteria, effects can be classified as beneficial, negligible, minor, moderate, major or severe. The frequency and duration of planned activities is considered when rating their environmental consequences, so that both consequence and frequency aspects of environmental risk are integrated into a single scale. In this environmental report, an impact is regarded as 'significant' if it has the potential to cause severe, major or moderate environmental effects. For the purposes of the Environmental Issues Identification, an effect was rated as at least 'moderate' if insufficient information was available at the time to designate it confidently as 'minor'.

The results of the ENVID exercise are presented in the matrices in Tables 6.2 and 6.3. The scorings in these tables are based on no mitigation being in place. The potentially significant impacts arising from this are summarised in Table 6.4. Based on available data, the aspects identified as having a potentially major effect on the environment are the interactions between seismic survey noise generation and marine mammals (ie cetaceans and seals), impacts to seabed features and benthos from muds and drill cuttings discharges, and the risk of accidental events (hydrocarbons releases in particular) from the proposed exploratory drilling. The effects from a number of other activities were identified as potentially moderate, requiring further investigation.

Input on scoping for the SEA was sought from EPA, DoEHLG, DCENR, DoT, DoD) and the Northern Ireland Environment Agency (NIEA). Scoping opinions were only received from NIEA (summarised in Table 6.5) and used to check that all possible interactions had been taken into account, and that the Environmental Report covered everything required by the SEA process. The scoping opinions and any specific concerns were compared against the potentially significant impacts identified in Table 6.4, and used to generate the list of environmental concerns to be assessed in more detail (see Section 6.3).







Table 6.1 Categories of effect used for assessing significance of environmental impact

Significance	Level	Definition
Significant	Severe	Change in ecosystem leading to long term (>10 years) damage and poor potential for recovery to a normal state. Likely effect on human health. Long-term loss or change to users or public finance.
Significant	Major	Change in ecosystem or activity over a wide area leading to medium term (>2 years) damage but with a likelihood of recovery within 10 years. Possible effect on human health. Financial loss to users or public.
Significant	Moderate	Change in ecosystem or activity in a localised area for a short time, with good recovery potential. Similar scale of effect to existing variability but may have cumulative implications. Potential effect on human health but unlikely. May cause nuisance to some users.
Insignificant	Minor	Change which is within the scope of existing variability but can be monitored and/or noticed. May affect behaviour in terms of health or standard of living.
Insignificant	Negligible	Changes which are unlikely to be noticed or measurable against background activities.
Insignificant	None	No interaction and hence no change expected.
Insignificant	Beneficial	Likely to cause some enhancement to ecosystem or activity within existing structure. May help local population.

Table 6.2 Seismic activity matrix

Receptor	Atmosphere	Seawater quality	Seabed quality and seabed features	Plankton	Benthos (including demersal fish and shellfish)	Marine mammals	Other pelagic organism	Seabirds	Fishing	Shipping	Marine infrastructure and archaeology	Protected sites	Onshore/coast
Key activities													
Noise generation from 2D/3D seismic operations (airguns) ¹	-	-	M ¹	L	M ¹	H	M	L	M	L	L	H	-
Noise generation from normal vessel operations	L	-	-	L	-	L	L	-	-	-	-	-	-
Physical presence of survey vessels and towed equipment (including any exclusion zones and lights)	-	-	-	L	-	L	L	L	M	M	L	-	L
Atmospheric emissions due to energy requirements (combustion) of survey vessels (engines/generators)	M	L	-	L	-	-	-	L	-	-	-	-	L
Routine vessel discharges and wastes	-	L	-	L	-	-	L	L	-	-	-	L	L
Accidental events (eg loss of cable oil, diesel, equipment) ²	M	M	M	M	M	M	M	M	M	L	M	M	M

Key			
	No interaction	 L	Insignificant impact (minor, negligible or beneficial)
 M	Potential for significant impact with moderate effects or which cannot be ruled as insignificant		 H
			Potential for significant impact with major or severe effects


¹ Due to the possibility of seismic noise causing slides or avalanches.


² Dependent on size of spill but considered significant for this exercise, ie a total loss of fuel inventory anywhere between the coast and the IOSEA3 area.


Table 6.3 Drilling activity matrix


Receptor	Atmosphere	Seawater quality	Seabed quality and seabed features	Plankton	Benthos (including demersal fish and shellfish)	Marine mammals	Other pelagic organism	Seabirds	Fishing	Shipping	Marine infrastructure and archaeology	Protected sites	Onshore/coast
Key activities													
Physical presence of the rig and vessels at surface (including any exclusion zones, and light emissions)	-	-	-	L	-	L	L	L	M	L	-	-	-
Presence of subsea equipment (including wellhead, anchors and chains etc)	-	L	M	-	M	-	-	-	M	-	M	H	-
Atmospheric emissions due to energy requirements (combustion) of rigs and associated vessels and helicopters (engines/generators)	M	L	-	L	-	-	-	L	-	-	-	-	L
Routine vessel discharges and wastes	-	L	-	L	-	-	L	L	-	-	-	L	L
Mud, cement and cuttings release from tophole ¹ sections	-	L	M	-	M	-	-	-	L	-	-	H	-
WBM & WBM-contaminated cuttings discharge from surface, including payzone ² cuttings	-	M	M	L	M	L	L	-	L	-	-	H	-
Onshore disposal of oil-contaminated cuttings	L	-	-	-	-	-	-	-	-	-	-	-	M
Well testing (flaring)	M	L	-	L	-	-	L	M	-	-	-	-	L
Noise generation and vibration ³ including VSP/checkshot surveys	-	-	M	L	M	H	M	L	M	-	-	H	-
Accidental events (eg loss of diesel, chemicals, base oil; worst case scenario - blowout)	H	H	H	H	H	H	H	H	H	M	H	H	H

Key

 No interaction

 L Insignificant impact (minor, negligible or beneficial)

 M Potential for significant impact with moderate effects or which cannot be ruled as insignificant

 H Potential for significant impact with major or severe effects

¹ The tophole section is the first section of the well to be drilled and there is no mechanism for returning the cuttings to the drilling rig. These cuttings (a mixture of rock and drilling fluid) are discharged directly to the seabed.

² Payzone cuttings are cuttings contaminated with any reservoir hydrocarbons

³ This includes the noise from use of DP

Table 6.4 Key potential environmental issues identified by Environmental Issues Identification

Stage of project	Significant issues	Possible significant issues
Seismic survey	Underwater noise generation from air guns (on marine mammals, protected sites).	Underwater noise generation from air guns (on seabed quality and features, benthos, other pelagic organisms, fishing).
		Physical presence of survey vessels and towed equipment (on fishing, shipping).
		Atmospheric emissions due to energy requirements (on atmosphere).
		Accidental events (on atmosphere, seawater quality, seabed quality and features, plankton, benthos, marine mammals, other pelagic organisms, seabirds, fishing, marine infrastructure and archaeology, protected sites, onshore/coast).
Drilling		Physical presence of rig and vessels at surface (on fishing).
	Presence of subsea equipment (on protected sites).	Presence of subsea equipment (on seabed quality and features, benthos, fishing, marine infrastructure and archaeology).
		Atmospheric emissions due to energy requirements (on atmosphere).
	Mud, cement and cuttings discharges (on protected sites).	Mud, cement and cuttings discharges (on seabed quality and features, benthos).
		Well testing emissions from flaring (on atmosphere, seabirds).
		Onshore disposal of oil-contaminated cuttings (onshore/coast).
	Noise generation and vibration including VSP/checkshot surveys (on marine mammals, protected sites).	Noise generation and vibration including VSP/checkshot surveys (on seabed quality and features, benthos, other pelagic organisms, fishing).
	Accidental events (on atmosphere, seawater quality, seabed quality and features, plankton, benthos, marine mammals, other pelagic organisms, seabirds, fishing, marine infrastructure and archaeology, protected sites, onshore/coast).	Accidental events (on shipping).



Table 6.5 Summary of issues identified in NIEA scoping response

Topic		Issue raised
1	Environment Baseline.	Include maps of fish spawning and feeding areas, and benthos (in particular, areas where cold water corals may occur).
2	Noise and marine mammals.	General concern regarding noise generation and marine mammals.
3	Oil spills.	The potential for current circulation to carry oil spills into the waters of Northern Ireland should be assessed.
4	SAC	The report should indicate the system dynamics required to maintain the favourable status of the sites in the IOSEA3 area.
5	The Ellet Line	Potential impacts on the oceanographic monitoring results of the Ellet Line should be assessed.
6	Marine archaeological heritage	Agree that shipwrecks are the most significant cultural heritage aspects to be included in the SEA.

6.3 Potential impacts and concerns

The scoping procedure and the ENVID exercise together identified the main environmental concerns associated with the proposed licensing activities. These concerns are the ones being taken through for further more detailed impact assessment, in which possible cumulative and transboundary effects will be considered and for which mitigative measures will be proposed in order to minimise the impacts.

Seismic activities (Section 7):

- Noise generation (Section 7.2);
- Atmospheric emissions (Section 7.3);
- Physical presence (Section 7.4);
- Accidental events (Section 7.5).

Exploration drilling activities (Section 8):

- Noise generation (Section 8.2);
- Disposal of drill cuttings and disturbance to sea bed (Section 8.3);
- Atmospheric emissions (Section 8.4);
- Physical presence (Section 8.5);
- Accidental events (Section 8.6).