

## 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. This was achieved using technical input from the PAD 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 only operational 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) and those resulting from atmospheric emissions associated with well testing and fuel combustion. The effects from a number of other activities were identified as potentially moderate, requiring further investigation. In addition, there is a risk of accidental events (hydrocarbons releases in particular) from the proposed exploratory activity.

Input on scoping for the SEA was received from the Environmental Authorities (EPA, DoEHLG and DCMNR; summarised in Tables 6.5, 6.6 and 6.7) 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**

| Level      | Definition   |
|------------|--|
| Severe     | Change in ecosystem leading to long term (>10 years) damage and poor potential for recovery to a normal state.<br>Likely effect on human health.<br>Long-term loss or change to users or public finance.   |
| 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.<br>Possible effect on human health.<br>Financial loss to users or public.   |
| 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.<br>Potential effect on human health but unlikely.<br>May cause nuisance to some users. |
| Minor      | Change which is within the scope of existing variability but can be monitored and/or noticed.<br>May affect behaviour in terms of health or standard of living.  |
| Negligible | Changes which are unlikely to be noticed or measurable against background activities.  |
| None       | No interaction and hence no change expected.   |
| Beneficial | Likely to cause some enhancement to ecosystem or activity within existing structure.<br>May help local population.   |

**Table 6.2 Seismic activity matrix**

| Activity/aspect   | Atmosphere | Geology        | Seawater/<br>plankton | Demersal<br>fish/shellfish | Mid water<br>species | Benthos | Seabirds | Cetaceans | Fishing/shipping | Other oil and gas<br>infrastructure | Onshore/coast  |
|---|------------|----------------|-----------------------|----------------------------|----------------------|---------|----------|-----------|------------------|-------------------------------------|----------------|
| Noise generation from 2D/3D seismic operations (air guns)                                 | L          | L <sup>1</sup> | L                     | M                          | M                    | L       | L        | H         | L                | L                                   | L <sup>2</sup> |
| Noise generation from normal vessel operations  | L          |                | L                     | L                          | L                    | L       | L        | L         | L                |                                     |                |
| Physical presence of survey vessels and towed equipment (including any exclusion zones)   |            |                | L                     |                            | L                    |         | L        | L         | M                | L                                   | L/M            |
| Emissions due to energy requirements (combustion) of survey vessels (engines/generators)  | M          |                | L                     |                            |                      |         | L        |           |                  |                                     |                |
| Routine vessel discharges and wastes (eg bilge water, sewage, garbage, operational waste) |            |                | L                     |                            | L                    |         | L        | L         |                  |                                     | L              |
| Accidental leaks/spillages of hydrocarbons (eg cable oil, diesel) <sup>3</sup>            | L          |                | H                     | H                          | H                    | H       | H        | H         | H                | H                                   | H              |

| Key                                |  |                                    |   |
|------------------------------------|--|------------------------------------|---|
| <input type="checkbox"/>           | No interaction   | <input type="checkbox" value="L"/> | Insignificant impact (Minor, Negligible or Beneficial)        |
| <input type="checkbox" value="M"/> | Potential for significant impact with Moderate effects | <input type="checkbox" value="H"/> | Potential for significant impact with Major or Severe effects |

<sup>1</sup> Potential for land slides.

<sup>2</sup> Proximity of ISEA to coast (18 km).

<sup>3</sup> Dependant on size of spill but considered significant for this exercise, ie total loss of fuel inventory or minor crude spill.

**Table 6.3 Drilling activity matrix**

| Activity/aspect   | Atmosphere | Geology | Seawater/<br>plankton | Demersal<br>fish/shellfish | Mid water<br>species | Benthos | Seabirds | Cetaceans | Fishing/shipping | Other oil and gas<br>infrastructure | Onshore/coast |
|---|------------|---------|-----------------------|----------------------------|----------------------|---------|----------|-----------|------------------|-------------------------------------|---------------|
| Physical presence of the rig, vessels, and subsea equipment (including any exclusion zones)       |            | M       | L                     | L                          | L                    | C       | L        | L         | M                |                                     | L             |
| Emissions due to energy requirements (combustion) of survey vessels (engines/generators)          | M          |         | L                     |                            |                      |         | L        |           |                  |                                     | L             |
| Routine vessel discharges and wastes (eg bilge water, sewage, garbage, operational waste)         |            |         | L                     |                            | L                    |         | L        | L         |                  |                                     | L             |
| Scouring actions of anchors and chain on seabed   |            | M       | L                     | L                          |                      | H       |          |           |                  |                                     |               |
| Cement release and cuttings from tophole <sup>4</sup> section                                     |            | L       | L                     | L                          |                      | H       |          |           |                  |                                     |               |
| WBM and WBM-contaminated cuttings discharge from surface, including payzone <sup>5</sup> cuttings |            | L       | L                     | M                          | L                    | H       |          | L         |                  |                                     |               |
| Cuttings containment and shipping to shore  | L          |         |                       |                            |                      |         |          |           |                  |                                     | M             |
| Well testing (flaring)  | H          |         | L                     |                            |                      |         | L        |           |                  |                                     | L             |
| Well abandonment/suspension   |            | L       |                       |                            | L <sup>6</sup>       | L       |          |           | M                |                                     |               |
| Noise generation and vibration <sup>7</sup>   | L          | L       | L                     | L                          | M                    | L       | L        | M         |                  |                                     |               |
| Accidental spillage of hydrocarbons or chemicals (eg diesel, chemicals, base oil, blow out)       | H          |         | H                     | H                          | H                    | H       | H        | H         | H                | H                                   | H             |

**Key**

No interaction



L Insignificant impact (Minor, Negligible or Beneficial)



M Potential for significant impact with Moderate effects



H Potential for significant impact with Major or Severe effects

<sup>4</sup> 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.

<sup>5</sup> Payzone cuttings are cuttings contaminated with any reservoir hydrocarbons.

<sup>6</sup> In case of well suspension seabed structures may provide a reef habitat.

<sup>7</sup> This includes the noise from use of dynamic positioning.

**Table 6.4 Key potential environmental issues identified by Environmental Issues Identification**

| Activity             | Potential impact/issue  |
|----------------------|---|
| Seismic survey       | Noise generation from 2D/3D seismic operations (air guns)   |
|                      | Interference with other sea users (especially the fishing industry) due to physical presence of survey vessels and towed equipment                                    |
|                      | Combustion emissions of survey vessels  |
|                      | Accidental events arising from additional vessel traffic, plus potential leaks or spills of hydrocarbons (eg cable oil, diesel)                                       |
| Exploration drilling | Interference with other sea users (especially the fishing industry) due to physical presence of the rig, vessels, and subsea equipment, including any exclusion zones |
|                      | Combustion emissions of rig and associated vessels and air transport  |
|                      | Impacts to sea bed features and benthos of anchors, chains, and of disposal of drill cuttings and associated chemicals and cement                                     |
|                      | Impact of noise generation and vibration from drilling activities on pelagic and demersal animals   |
|                      | Accidental events arising from additional vessel traffic, plus potential leaks or spills of hydrocarbons or chemicals (eg diesel, drilling chemicals, crude or gas)   |

**Table 6.5 Summary of issues identified in EPA scoping response**

|    | Issue raised  |
|----|---|
| 1  | IOSEA1 to comply with requirements of SEA Directive and SEA Regulations.  |
| 2  | All significant issues to be assessed.  |
| 3  | Alternatives to the proposed plan should be fully detailed.   |
| 4  | Current environmental baseline to be presented.   |
| 5  | The environmental aspects outlined in the SEA Regulations should be assessed in the context of the preferred alternative.   |
| 6  | Specific environmental issues requiring attention include: water quality/sediments; biodiversity, flora and fauna; atmospheric emissions including CO <sub>2</sub> and methane; climate change; waste generation; other sea users; cultural heritage; seascape. |
| 7  | Mitigation of likely significant impacts to be detailed.  |
| 8  | Monitoring of likely significant impacts to be proposed.  |
| 9  | Assessment methodology to be provided.  |
| 10 | Application of SEA in oil and gas industry and other sectors to be reviewed to obtain best practice pointers.   |
| 11 | Transboundary consultation to be undertaken in accordance with Article 14 of SEA Regulations.   |

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**Table 6.6 Summary of issues identified in DoEHLG scoping response**

| <b>Topic</b>  |                     | <b>Issue raised</b>  |
|---|---------------------|--|
| All observations offered on understanding that this SEA only covers exploratory activities within the ISEA1 area. |                     |  |
| 1   | Archaeology         | Noted the potential for impacts to underwater archaeological remains. Also acknowledged that detailed impact assessment of sites would be addressed at the assessment stage for individual projects within the IOSEA1 area.                          |
| 2   | Architecture        | No significant effects on architectural heritage of Mayo, Sligo or Donegal are likely.   |
| 3   | Nature Conservation | Assessment should take note of EU Birds Directive and Habitats Directive, OSPAR, the Convention on Biological Diversity, and the Bonn Convention.  |
| 4   | Nature Conservation | Frontier Exploration Licenses should avoid significant impacts to populations of marine mammals and birds, and occurrence of these in the ISEA1 area should be reviewed, impacts assessed, mitigation suggested and data gaps highlighted.           |
| 5   | Nature Conservation | Frontier Exploration Licenses should avoid causing further decline of habitats and species highlighted under OSPAR, and occurrence of these in the IOSEA1 area should be reviewed, impacts assessed, mitigation suggested and data gaps highlighted. |
| 6   | Nature Conservation | Environmental Management Systems that minimise or eliminate discharges to the marine environment should be reviewed and considered.  |

**Table 6.7 Summary of issues identified in DCMNR scoping response**

| <b>Topic</b>   |   | <b>Issue raised</b>   |
|--|---|---|
| Baseline information should be provided on the following:                  |   |   |
| 1  | Cetaceans   | Numbers and distribution by species, and seasonal variation.  |
| 2  | Commercial fishing activity   | Distribution of commercial species; fishing activity within IOSEA1 area including numbers and size of vessels, and gear type; total annual landings by species. |
| 3  | Shipping  | Numbers and types of vessels using the area, with main ports of origin and destination.   |
| 4  | Biologically sensitive areas  | Size and location of sensitive areas in IOSEA1 area, eg carbonate mounds and coral reefs.   |
| 5  | Sea birds   | Numbers and distribution by species, with seasonal variation.   |
|  | Benthic organisms   | Numbers and distribution of species in the area.  |
| 6  | Sediments   | Distribution of sediment type across the area, with baseline levels of contamination.   |
| 7  | Shore-based activities  | Use of ports by service and supply vessels.   |
| The impacts of the following should be considered and mitigation proposed: |   |   |
| 1  | Impacts on sensitive species from sound and shock waves from exploration and drilling activity. |   |
| 2  | Impacts of disposal of drilling muds and cuttings on water and sediment quality, and benthos.   |   |
| 3  | Impacts of accidental spillages of pollutants.  |   |
| 4  | Impacts on commercial fishing activities.   |   |
| 5  | Impacts on shipping and navigational safety.  |   |
| 6  | Impacts from land-based infrastructural requirements.   |   |

### 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).