

## 11 NOISE

### 11.1 Introduction

The 2001 Offshore EIS assessed the potential impact of noise on the receiving environment during the construction and operation of the various elements of the project. Underwater noise was also considered in the context of marine species that inhabit the area from the offshore gas field to the landfall.

It is noted that whilst nearshore construction activity commenced during 2008, it continued in the summer of 2009 and it will require works over a further season. It is therefore acknowledged that some construction-related impacts will have a greater duration than that originally envisaged.

### 11.2 Study Methodology

There have been some scientific developments since 2001 in the understanding of the impacts of underwater noise on marine species as a result of academic research into this issue, supported by developers and non-governmental organisation (NGOs). The offshore wind farm industry has added to the work traditionally carried out by the oil and gas exploration companies and their geophysical contractors. The National Parks and Wildlife Service (NPWS) has published a Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters (August 2007). The Code of Practice identifies measures to mitigate potential impacts on marine mammals resulting from acoustic seafloor surveys that rely on the generation and analysis of sound to map the profile of the seafloor including side-scan sonar and multibeam bathymetric echo-sounders. Mitigation for underwater noise from construction activity is not addressed in the Code of Practice.

### 11.3 Receiving Environment

The receiving noise environment remains as described in the 2001 Offshore EIS. However, work undertaken since 2001 provides additional information on conditions relevant to the noise assessment as detailed below. Further work on the cetacean usage of Broadhaven Bay carried out since 2001 has also been considered.

### 11.4 Characteristics of the Proposed Development

#### 11.4.1 Near-Shore and Landfall

In the 2001 Offshore EIS, an assessment was provided for the impacts, which could have resulted from the construction of a near-shore trench in Broadhaven Bay, including the use of explosives. On the basis of further detailed studies and site investigations in 2002, Shell concluded that blasting would not be required and that the pipeline trench would be excavated by conventional means. This was confirmed in summer 2005 when the trench was successfully excavated to the depth required by conventional dredging equipment. The trench was re-excavated using dredging techniques and landbased equipment (intertidal zone) before the pipeline was installed in Broadhaven Bay.

The majority of offshore construction works was undertaken in 2009, including the installation of the offshore pipeline. Rock was placed over a near-shore section of the pipeline to protect against scour due to the presence of a bedrock outcrop. Small grade rock was then placed from a fall-pipe rock placement vessel. Further rock placement works will be required during 2010, before placing heavier grade rock armour from a side-stone casting vessel. In addition, installation works will continue at

the offshore field. It is anticipated that the umbilical will be installed in the summer of 2011.

#### **11.4.2 Offshore Pipeline (Pre-) Commissioning Activities**

The offshore pipeline is currently filled with inhibited sea-water and will need to be tied into the completed LVI at Glengad.

During the commissioning phase, a nitrogen generation plant will be established adjacent to the LVI compound at Glengad for a period of one to two weeks.

This station will include a series of mobile diesel generator units. Soundproofing will be provided to ensure that noise levels will be within acceptable limits.

The offshore pipeline will then be dewatered over a period of approximately 14 days. It is currently proposed that the offshore pipeline will be pre-commissioned in the summer of 2012, to coincide with suitable weather required for the associated offshore operations.

### **11.5 Potential Impacts of the Proposed Development**

#### **11.5.1 Near-Shore**

As noted, construction-related noise emissions occurred during 2008 and 2009. These emissions included those resulting from the excavation of the pipeline trench, installation of the offshore pipeline and placement of the first layer of rock protection. Further rock placement works will be required and overall it is acknowledged that the duration of works is greater than initially anticipated.

In addition, further review of available literature since 2001 indicates that noise levels from dredging activities may be slightly higher than those quoted in the 2001 EIS, with a maximum of 180 dB re. 1  $\mu$ Pa at 1m now anticipated rather than the 162 dB re. 1  $\mu$ Pa at 1m estimated in 2001.

Such noise levels would indicate that the maximum distance over which a strong impact could be observed would be less than 18m, while mild avoidance and low likelihood of disturbance would be predicted over distances of 100m and 1800m respectively. Together, these impacts are not considered to present significant disruption or displacement to cetaceans within Broadhaven Bay.

The 2001 Offshore EIS identified that the most significant noise impacts in Broadhaven Bay were likely to be due to underwater noise events related to possible blasting. As detailed above, blasting did not take place and hence the aspect of the project that represents the most significant noise impacts in Broadhaven Bay is the rock placement works due to be undertaken in 2010. It has been estimated that noise levels from this activity will be in the order of that of the pipeline installation (in the order of 180 dB re. 1  $\mu$ Pa at 1 m) (Subacoustech, 2009).

#### **11.5.2 Offshore Pipeline (Pre-) Commissioning Activities**

Noise from the nitrogen compressors and associated generators will occur for approximately 1 to 2 weeks and on the basis of current information is likely to result in a significant increase in noise levels in the local area.

### **11.6 Do-Nothing Scenario**

No change from 2001 offshore EIS. Further consideration of the do-nothing scenario is addressed in Section 13.7.

## 11.7 Mitigation Measures

In terms of mitigation against the noise generated by the marine construction vessels, a code of practice for dredging works was implemented in 2008 and 2009 (in agreement with the NPWS), and will be implemented during the next construction period. The code includes requirements such as a qualified and experienced Marine Mammal Observer (MMO) to be on board near shore construction vessels. The MMO is responsible for ensuring, through visual observations, that an exclusion zone of 1000m around the vessel is free of marine mammals for 30 minutes before operations commence. In September and October 2009, the same code-of-practice was implemented for the rock-placement works, and will be implemented for the continued rock-placement works in 2010 as well as all other remaining near-shore construction works.

For marine based work in the intertidal and subtidal zones, activities will run on a 24-hour basis.

Onshore noise will be reduced by screening stationary machinery (generators), use of noise attenuation barriers and turning off such equipment when not in use. Silenced machinery will be used as much as possible to mitigate noise.

For the land-based operations at Glengad which are deemed to be noisy working hours will in general be restricted to 07:00–19:00 Monday to Friday, 07:00–16:00 on Saturday and there will be no activity on Sundays. During the umbilical pull-in operation, it will be necessary to work on a 24-hour basis.

Certain commissioning activities for the offshore pipeline may require 24-hour working. However, current information in respect of the pre-commissioning of the offshore pipeline indicates that this activity would need to be restricted due to elevated noise levels arising from the nitrogen generating plant and associated compressors (See Section 11.8.2 below). If, however, further noise attenuation measures can be identified and proven to reduce noise levels to an acceptable target, it is proposed to carry out this work on a 24-hr basis. Should further noise attenuation not be available, this activity will be curtailed, and not carried out during the period 22:00 – 07:00.

Recognising that noise will be of concern, SEPIL will ensure that local residents are informed of the programme of work proposed, and the dates when 24-hour working may occur.

## 11.8 Predicted Impact of the Proposed Development

### 11.8.1 Near- Shore

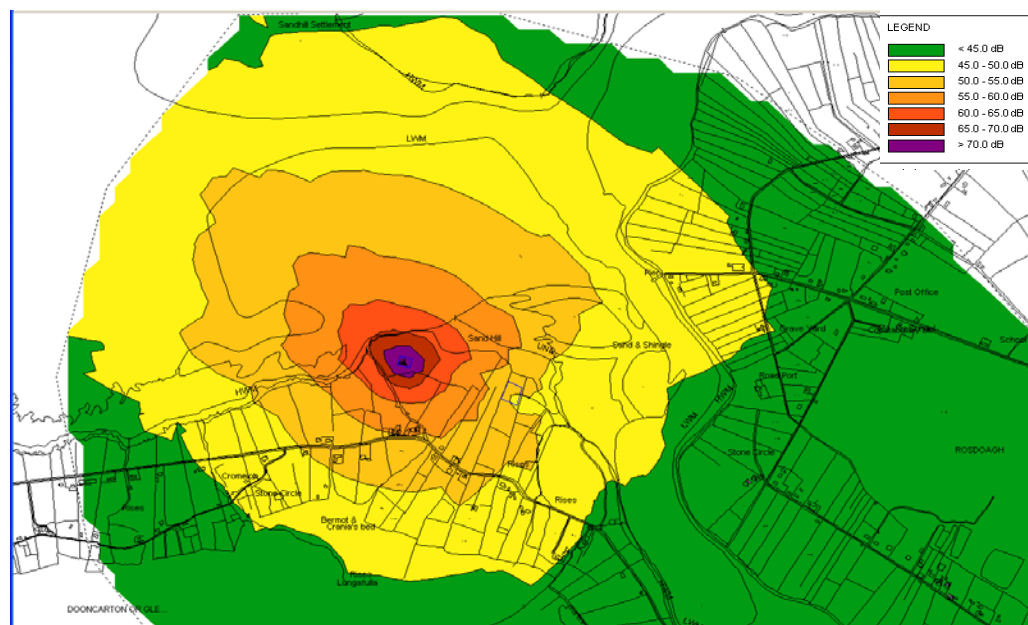
Underwater blasting was not undertaken as part of the proposed works, and as a consequence, no underwater noise impacts resulted. The remaining underwater excavation work required will involve trenching of the umbilical, which is not predicted to result in significant underwater noise impacts. The noise levels from dredging works were higher than predicted in the 2001 Offshore EIS, however the distances from the vessels at which high noise levels were felt by the most common species was still small. Noise impacts of a similar, and slightly elevated level are predicted from the rock-placement works, although this activity is anticipated to be of short duration. It is therefore concluded that this activity will have a negligible and temporary noise impact on the receiving environment.

### 11.8.2 Offshore Pipeline (Pre-) Commissioning Activities

As can be seen from the noise plot below (Figure 11-1), noise levels associated with the pre-commissioning activities are predicted to be within the Environmental Protection Agency (EPA) and the World Health Organisation (WHO) Guidelines assessment criterion for daytime noise levels of 55dB(A), at the noise sensitive receptors in the Glengad area,

with the exception of 1 property where the predicted noise level associated with the commissioning works is 55.8dB(A).

**Figure 11-1. Plot of  $L_{day}$  (Pre-) Commissioning Noise Levels.**



## 11.9 Monitoring

Noise monitoring during marine works will be the same as proposed in the 2001 Offshore EIS, with the addition of MMOs being present on some construction vessels monitoring cetacean presence to reduce the potential for impacts to marine mammals from noise.

Onshore, a noise survey will be carried out before and during works on the site and near local residences to measure/assess the level and impact of construction activities.

## 11.10 Reinstatement and Residual Impacts

Taking the new data detailed above into consideration, there is no change to the residual impacts predicted in the 2001 Offshore EIS.