

10 AIR EMISSIONS

10.1 Introduction

The 2001 Offshore EIS considered the potential impacts of emissions to the atmosphere arising as a result of drilling, construction, installation, commissioning, operation and decommissioning activities. As detailed in Section 3, some construction activities have been completed and others rescheduled. An updated schedule and further details on construction methodologies are now available for components of work yet to be completed. A re-assessment of the potential impacts of emissions to the atmosphere associated with the offshore, near-shore and landfall works has been undertaken based on up-to-date information.

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.

10.2 Study Methodology

The 2001 Offshore EIS used standard oil and gas industry factors from the United Kingdom Offshore Operators Association (UKOOA)¹ to calculate the air emissions from the project, from the tonnages/volumes of fuel used or estimated, or well test gas flared.

10.3 Receiving Environment

The state of the receiving environment has not changed significantly since the 2001 Offshore EIS. Ambient air quality monitoring is generally not undertaken offshore and whilst additional onshore air quality data is available, it is unlikely to be representative of the offshore environment.

10.4 Characteristics of the Proposed Development

The characteristics of the proposed development are as detailed in Sections 2 and 3.

10.4.1 Offshore Pipeline (Pre-) Commissioning Activities

The offshore pipeline is currently filled with inhibited sea-water and will need to be tied into the completed landfall valve installation 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 which generate emissions of combustion gases.

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.

¹ In 2007, the United Kingdom Offshore Operators Association (UKOOA) changed its name to Oil and Gas UK.

10.5 Potential Impacts of the Proposed Development

Emissions arising from future construction activities, include those resulting from the transit of the umbilical laying vessel and other construction/support vessels to and from the area and pre-commissioning activities. It is acknowledged that the duration of impacts is greater than initially anticipated.

10.5.1 Remaining Facilities Installation

Offshore Work

There is a requirement for a rock placement vessel to undertake (remedial) works in 2010 and 2011 to aid the stability of the flowlines and jumpers on the seabed into the Corrib Field, as well as the offshore pipeline and water outfall pipe. This work will be predominantly carried out by a fall-pipe vessel. A side stone casting vessel and bulk carrier will be present, as well as attending support vessels such as an ROV and dive support vessels.

In the Corrib field itself, a construction vessel will also be required for installation of the tie-in spool between the central manifold and the pipeline. These vessels will emit engine exhaust gases, according to the size of the engine concerned.

Umbilical laying in 2011 will be carried out by a reel-lay vessel supported by a survey vessel and a trenching support vessel. Although the offshore umbilical will be trenched throughout its length it may be necessary to stabilise certain section with rock or matting.

Total estimated emissions as a result of rock placement over the sections of the offshore infrastructure and umbilical installation, based on typical construction vessels are presented in Table 10-1.

Table 10-1: Estimated Emissions from Remaining Offshore Construction Works Associated with the Pipeline and Umbilical Installation

Emissions	Offshore Construction Works for the Pipeline and Umbilical (tonnes)
CO ₂	5773
NO _x	106
CO	14
SO ₂	36
VOC	4
CH ₄	0

Assumptions:

- umbilical installation takes place over three weeks (umbilical vessel mobilised for two weeks, one week in Broadhaven Bay);
- sulphur content of fuel is 0.1% (wt); and
- emissions have been calculated using emission factors from the UKOOA EEMS Guidelines for the Compilation of an Atmospheric Emissions Inventory.

Near-shore Work

In the nearshore waters remedial rock-placement works is planned to be undertaken in Broadhaven Bay in the area where the rock berm was placed on the offshore pipeline in 2009. The detailed requirements for this work will be determined following a survey in second quarter 2010. If remedial works are required to the filter layer of rock, a fallpipe vessel will undertake these works. Following this rock placement, a side stone-casting vessel will be utilised (supported by a bulk carrier for supply of rock) to place a armour layer of rock of heavier grade on top of the already installed filter layer.

The estimated emissions resulting from nearshore rock placement works are included in Table 10-2 below.

Table 10-2: Estimated Emissions from Remaining Nearshore Construction Works Associated with the Pipeline and Umbilical Installation

Emissions	Nearshore Construction Works for the Pipeline and Umbilical (tonnes)
CO ₂	2034
NO _x	38
CO	5
SO ₂	13
VOC	2
CH ₄	0

Landfall

The installation of the umbilical will be carried out by pulling the umbilical from a ship located approximately 2km from the landfall through a pre-installed conduit to the landfall site at Glengad. The umbilical pull will be done from a temporary winch to be installed at the landfall site in Glengad.

The estimated emissions arising from typical plant associated with the landfall activities are included in Table 10-3.

Table 10-3: Estimated Emissions from Remaining Onshore Construction / Commissioning Works Associated with the Pipeline and Umbilical

Emissions	Onshore Construction Works for the Pipeline and Umbilical (tonnes)
CO ₂	498
NO _x	13
CO	3
SO ₂	1
VOC	1
CH ₄	0

Assumptions:

- In order to account for activities undertaken during 2008 and 2009, emissions have been doubled and therefore represent a conservative estimate.

Offshore Pipeline (Pre-) Commissioning Activities

During the commissioning phase a nitrogen generating plant and associated compressors will be located adjacent to the Landfall Valve Installation compound at Glengad for a period of 1-2 weeks. The equipment will be powered by three 200 kW diesel generators. The nitrogen itself will not result in any impact on air quality as nitrogen makes up approximately 78% of the air in the atmosphere and does not pose a risk to human health.

The AERMOD air dispersion model was employed to simulate the emissions arising from the pre-commissioning and the potential impact on sensitive receptors close to this site. It was assumed that all three generators will operate on an average 50% capacity throughout the pre-commissioning period. All results presented have been compared to the statutory limits for the protection of human health (S.I. 271 of 2002).

The results of the modelling, incorporating background concentrations, are presented in Table 10-4. Only pollutants that have the potential to cause an acute effect (short term) and the associated short term statutory limits have been assessed as the operation period of the plant is planned for one to two weeks.

Onshore Pipeline The emissions associated with the construction of the onshore pipeline via the Sruwaddacon Estuary are addressed in the RPS Onshore Pipeline EIS 2010.

Table 10-4: Predicted impact of generator emissions associated with the nitrogen generation equipment at Gleann an Ghad (Glengad)

Parameter	Averaging Period	Background	Predicted Impact from Generators	Total Predicted Impact	Limit for the Protection of Human Health
Nitrogen Dioxide (NO ₂)	Hourly Maximum	6 µg/m ³	78 µg/m ³	84 µg/m ³	200µg/m ³
Particulate Matter PM ₁₀	24-hour Average	10 µg/m ³	1.82 µg/m ³	11.82 µg/m ³	50µg/m ³
Carbon Monoxide	8-hour limit	0.4 mg/m ³	0.03 mg/m ³	0.43 mg/m ³	10 mg/m ³

The results indicate that the predicted impact to air quality arising from generators powering the nitrogen plant on the nearest residential dwellings will be a slight adverse impact of a temporary nature. However, the results will remain well below the limits for the protection of human health at all times. The nearest residential receptors affected are those approximately 200 metres south of the compound. Based on the EPA air quality index, the air quality in this area will remain in the range of “good” to “very good” with the generators in operation.

10.6 Do-Nothing Scenario

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

10.7 Mitigation Measures

Taking the new data detailed above into consideration, there is no change to the nature of the mitigation measures as described in the 2001 Offshore EIS.

10.8 Predicted Impact of the Proposed Development

Estimated emissions from the project were summarised in Table 10.6 in the 2001 Offshore EIS. Whilst the primary activities that could generate impacts to air quality remain almost unchanged the greater definition in vessel and equipment to be used, and the increased duration of the works have resulted in an increase compared with the 2001 predicted emissions. Although this does not affect the overall conclusions of the assessment or the justifications for those conclusions.

10.9 Monitoring

There is no change to the monitoring as proposed in the 2001 Offshore EIS.

10.10 Reinstatement and Residual Impacts

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