

NON-TECHNICAL SUMMARY

Introduction

Shell E&P Ireland Ltd (SEPIL) is developing the Corrib natural gas field off the coast of County Mayo. Discovered by Enterprise Energy Ireland Ltd in 1996, the gas field is the first significant natural gas source and processing development in Ireland for over 30 years.

The Corrib natural gas field development is divided into five distinct but inter-related and independent elements as follows:

1. Offshore seabed installation (subsea wellheads and manifold at the gas field);
2. Offshore gas pipeline (between well heads and landfall);
3. Onshore gas pipeline (between a landfall and gas terminal at Bellanaboy Bridge);
4. Bellanaboy Bridge gas terminal; and
5. Onshore Mayo to Galway pipeline.

All elements of the proposed development have received full regulatory approval. The majority of the offshore and onshore works have been now completed including construction of the gas terminal and associated peat removal since 2004, and laying of the offshore pipeline and associated landfall works at Glengad completed in 2009.

In addition, Bord Gáis Éireann, in recent years, has extended its transmission network from Galway to the terminal at Bellanaboy to facilitate the distribution of Corrib gas into the national grid (see Figure 1).

The gas terminal is near mechanical completion as of May 2009. Final works associated with the installation of the offshore pipeline will commence in spring 2010, with installation of the offshore umbilical scheduled for 2011. It is anticipated that works for the construction of the onshore pipeline, including associated peat disposal will begin in 2011 and will continue to 2013.



Figure 1: Gas Transmission Network in Ireland

In 2002, Shell acquired Enterprise Oil plc and Enterprise Energy Ireland, which was the operator of the Corrib field. The new company was named Shell E & P Ireland Limited and integrated into the Shell Group. Shell E&P Ireland Limited (SEPI) is part of Shell's European Exploration & Production organisation, which has extensive experience in operating gas plants and gas pipelines, subsea developments and offshore oil and gas fields in Europe since the 1960s.

Following public concerns raised about the pipeline between the landfall and the terminal, and following independent reports commissioned by the Minister for Communications, Marine and Natural Resources from both Advantica and Peter Cassells, SEPI agreed in 2006 to limit the pressure in the onshore section to less than 144 bar and to modify "the route of the pipeline in the vicinity of Rosspoint to address community concerns regarding proximity to housing".

The modification of the onshore route affected a number of regulatory consents already granted. This necessitated the preparation of new EIS documents, including a new EIS (by RPS) for the onshore section of the pipeline. A Supplementary Update Report (Rev 02, February 2009) as an addendum to the 2001 Corrib Field Development Offshore Field to Terminal Environmental Impact Statement (the '2001 Offshore EIS'), prepared by RSK Environment Limited, in respect of the offshore section of the pipeline was also produced.

Applications for consent for the onshore pipeline under the Strategic Infrastructure Act, the Gas Act and the Foreshore Act were submitted to An Bord Pleanála, the Department of Communications Energy and Natural Resources, and the Department of Agriculture Fisheries and Food (respectively) in February 2009.

Following statutory periods of public consultation, An Bord Pleanála in November 2009 requested further information on the proposed development including:

- Alterations to the proposed development such that the route between Gleann an Ghad (Glengad) and na hEachú (Aghoos) would be generally in accordance with that indicated as Route Corridor C in the route selection process detailed in the 2009 Onshore EIS (that is within Sruwaddacon Bay).
- A complete, transparent and adequate demonstration that the proposed pipeline does not pose an unacceptable risk to the public.

In order to provide the requested information, a revised EIS for the onshore section of the pipeline, including information required for an Appropriate Assessment (now known as a Natura Impact Statement) of the impact of the development on Natura 2000 sites has been prepared.

This document is the non-technical summary of the Supplementary Update Report (Rev 03, May 2010) for the 2001 Offshore EIS providing an update in respect of the offshore pipeline elements of 2001 Offshore EIS. The Supplementary Update Report provides updates, taking into account new baseline information that has become available since 2001 including additional environmental monitoring data that was collated during 2008 and 2009, as well as modifications to the project description, construction activities (taking into account works that have taken place) and construction schedule that have evolved since 2001.

Table 1: Existing Consents and Approvals for the Corrib Gas Field Development

Licence/Consent	Status
Petroleum Lease by the Minister of Communications, Marine and Natural Resources.	Granted 2001
Plan of Development for the Corrib Field by the Minister of Communications Marine and Natural Resources.	Approved 2002
Consent under Continental Shelf Act 1968 from the Minister of Communications, Marine and Natural Resources.	Granted 2002
Foreshore Licence for pipeline, umbilical and outfall from the Minister of the Marine and Natural Resources.	Granted 2002
Consent to Construct a Pipeline (S40 of the Gas Act) from the Minister of the Marine and Natural Resources.	Granted 2002
Planning Permission (An Bord Pleanála) - Bellanaboy Bridge terminal and associated peat deposition site.	Granted 2004
Waste licence from EPA for peat deposition at Srahmore (Bord na Mona)	Granted 2004
Integrated Pollution Prevention and Control licence from EPA for Bellanaboy Bridge Gas Terminal	Granted 2007
Green House Gas Emission Permit from Environmental Protection Agency, Bellanaboy Bridge Gas Terminal	Granted 2009

The Project

Since the submission of the 2001 Offshore EIS, the majority of the offshore works have been completed, with the remaining offshore elements yet to be undertaken comprising completion of rock placement works over the offshore pipeline, the installation of the offshore umbilical from the landfall site to the offshore gas field, the tie-in of the

offshore pipeline and umbilical to the subsea manifold at the Corrib field and associated commissioning works.

Construction

Final works associated with the installation of the offshore pipeline will commence in spring 2010 and will involve the deposition of additional rock on top of the area that has already been subject to rock placement, and possibly beyond. The rock placed over the installed pipeline in 2009 was a relatively fine grade material, and this will be covered by a heavier coarse grade in 2010, which will provide greater stability against sediment movement. Rock placement is likely to take around 3 months to complete.

Installation of the offshore umbilical is currently scheduled for 2011. An overall schedule is presented in Table 3-1. The umbilical will be placed in a pre-prepared trench, relatively close to the offshore pipeline route and may require further protection in the form of rock placement or matting to aid stability.

Alternatives

As a result of the modification of the onshore pipeline route, a review of new potential landfall locations was carried out in 2007. The new landfalls were:

- Inver Bay;
- Inver Point;
- Portacloy;
- Glinsk; and
- Garter Hill.

A number of factors were considered for each landfall (geohazards, shore approach, offshore routing, access, constructability, safety, environmental and schedule). Each of the other landfalls were found to be less favourable than Glengad for at least three of the factors considered. The study therefore concluded that the landfall at Glengad was the best option.

The location of outfall diffuser for the treated water discharge pipeline – as a result of the conditions attached to the approval of the Plan of Development for the Corrib field and the Foreshore Licence for the pipeline – was moved outside of Broadhaven Bay cSAC, from the position within the bay proposed in the 2001 Offshore EIS. This discharge pipe will now carry treated surface water run-off only. Treated produced water will be discharged via a multipurpose umbilical that runs from the terminal to the Corrib field.

Planning and Development

The consents for the project are listed in Table 1 above. The offshore elements of the project will be constructed under the existing consents. The revised RPS Onshore Pipeline EIS (2010) non-technical summary covers the planning and development context for all onshore elements of the pipeline, including the landfall valve installation.

Human Beings

Construction of the offshore seabed installation to date has involved a workforce of approximately 200 to 300 people over the construction period. However, this was mainly an international specialist workforce with limited local benefits. Construction of the landfall and the subsequent laying of the offshore pipeline in 2009 involved a workforce of approximately 300 to 400 with a positive impact on the local economy, with enhanced opportunities for local service providers.

The remaining offshore works which are limited to the installation of the umbilical and any remaining rock placement work are expected to continue to result in a positive impact on the local economy, with enhanced opportunities for local service providers.

Community liaison officers will be available to discuss aspects of the project during the construction and operational phases.

In terms of the whole development, the Goodbody Report provides an updated assessment of the economic benefits of the Corrib project, reconfirming that overall there will be economic benefits from project. The social investment programme funded by the Corrib partners will also provide indirect economic benefits to the area.

Flora and Fauna

A number of baseline surveys have been carried out since 2001 to provide more information on the area in which the project will be installed and operated. These include benthic invertebrate surveys of the Corrib field and pipeline route out to the Corrib field, in the vicinity of the outfall locations, within Broadhaven Bay and in the intertidal area around the landfall site. The results of these surveys have confirmed that the exposed nature of the bay influences the intertidal and near-shore communities, and that they are relatively species poor because of this. The coarse sand of the seabed is not stable in the long-term and, as such, the communities do not have time to develop before the seabed is moved around by tides and currents. In the area of the outfall for the treated surface water run-off, although deeper at approx 65 metres water depth, the seabed sediments are still relatively coarse in nature, although the communities are more diverse and stable. This situation progresses out towards the Corrib field where the communities in deeper water are more stable and diverse, as they are influenced less by the movement of the surface waters. The results of these surveys support the findings of the baseline surveys carried out for the 2001 EIS, and the predictions made on the basis of these.

The results of the latest fish surveys carried out by the Marine Institute in the area along the pipeline route were reviewed, and the major species caught were found to be the same as those that were reported in the 2001 Offshore EIS.

An updated literature review of the bird species present in the area of the offshore pipeline route was also carried out, revealing that very little further information is available on the area. The little tern colony that was observed using the sand bar to the north of the landfall site is no longer present.

SEPIL has commissioned several extensive marine mammal monitoring surveys in Broadhaven Bay since 2001, all of which have been carried out by the Coastal and Marine Resources Centre of University College Cork. These surveys were undertaken between August 2001 and October 2002, June to September 2005, and the current study, which commenced in June 2008 and is ongoing. Marine mammal observers have also been present during marine works in Broadhaven Bay in 2008 and 2009.

The results of the marine mammal surveys show that Broadhaven Bay and neighbouring waters are nationally important in terms of diversity and abundance of cetaceans, that there may be a resident population of bottlenose dolphins and that the area may be used as a breeding and rearing area by some dolphin species.

Other species of conservation interest noted in the above surveys included grey and common seals, basking sharks and sunfish.

Impacts from the installation of the pipeline in the offshore areas of the pipeline route have been assessed to be similar to those predicted in the 2001 Offshore EIS, these being temporary in nature and negligible in magnitude. While the importance of the area for cetaceans has been established since 2001, no blasting has been required in Broadhaven Bay, an operation that would potentially have been the greatest source of impact to marine mammals. Consequently, the predicted impacts of pipeline construction on marine mammals have been re-assessed and found to be minor.

The footprint of the rock berm placed in Broadhaven Bay in 2009 may increase as result of further rock placement activities in 2010 and 2011. The sandy sediments and rock outcrop seabed habitat within this footprint will be directly impacted in that it will be

smothered by rock. This will result in a slight increase in the permanent loss of the existing habitat.

Geology

During the benthic sampling surveys described above, the surface sediments were analysed for grain size. The results from these analyses were generally in agreement with the information presented in the 2001 Offshore EIS. It is acknowledged that the area of impact in terms of seabed geology will increase slightly as a result of rock placement works in Broadhaven Bay, however there is no change to the residual impacts as predicted in the 2001 Offshore EIS

Water

Three surveys have been carried out in the vicinity of the treated surface water run-off discharge location, one in 2005, the second in 2007 and the third in 2008. These surveys were undertaken in the summer months and recorded very little evidence of thermal stratification, and no salinity stratification. Water quality results indicate that the area is pristine. Whilst updated modelling of the dispersion of discharged water predicted that concentrations of metals and other elements in the discharged water would decrease rapidly from Environmental Quality Standard to background, and the Environmental Protection Agency (EPA) granted the IPPC licence for the terminal, based on these predictions, treated produced water will now be discharged via a multipurpose umbilical to the Corrib Field. Modelling indicates that the discharge is predicted to have a negligible biological impact.

As the construction period has extended over a number of seasons there will be more than one period where construction activities result in raised levels of suspended solids. However, given that the mobile sediments in Broadhaven Bay are naturally raised into suspension by the wave and current regime, raised suspended solids levels from construction operations will not create a cumulative impact above that created naturally.

Given the wide area and long period over which black and grey wastewater discharged from vessels have been, and will be, made the magnitude of the impact is classified as negligible. Such discharges are quickly dispersed by wave and tide action, and discharges during future installation operations will not be "additive".

Air Quality

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 will be greater than initially anticipated, resulting in increased air emissions as compared with the 2001 predicted emissions. However, while they are higher overall, the duration and area over which they will be emitted means that the negligible impact to air quality predicted in the 2001 Offshore EIS is unchanged.

Noise

Underwater blasting was not undertaken as part of the proposed works and therefore 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 those 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 and will have a negligible and temporary noise impact on the receiving environment.

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 all subsequent construction.

For the land-based operations at Glengad, working hours will normally 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. 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.

Landscape

Remaining offshore installation activities in the Corrib Field will be located beyond the horizon; therefore, there will be no landscape or visual impact associated with the remaining field activities.

Some construction-related visual impacts associated with the presence of construction vessels in Broadhaven Bay and landfall facilities at Glengad took place during 2008 and 2009, and will be expected over a further season. Whilst it is acknowledged that the landfall construction works have a greater duration than that originally envisaged, there is no change to the level of overall predicted impact associated with the near-shore and landfall works to the level predicted in 2001. The impact remains one of short term, but significant impacts to the 'Highly Scenic Views' across Broadhaven Bay.

Sustainable Development

Greenhouse gas emissions will be generated as a result of construction and operation of the project. However, the supply of gas to Ireland's gas network will support a strategic fuel switch from solid fuel and oil to natural gas and renewables, and so contribute to a reduction in national greenhouse gas emissions.

Cultural Heritage

Archaeologists were present during the construction work that took place around the landfall and in the near-shore area in 2002, 2005, 2008 and 2009. During the work, nothing of archaeological interest was recorded. Given that no finds or features of interest have been recorded from any survey work in the area to date, it is anticipated that there will be no impact upon archaeology. However, there is always the possibility that previously unknown archaeological remains could be encountered during construction. A monitoring licence will be obtained for any new marine trenches or onshore topsoil stripping in areas not stripped previously. Given the previous monitoring that has been carried out in the area, the Underwater Archaeology Unit of the DOEHLG have confirmed that no further archaeological monitoring will be required for the umbilical installation works.

Material Assets

The 2001 Offshore EIS predicted that there would be no impact on the local environment from the production of solid waste associated with installation and operation of the offshore works. New legislation concerning the management of waste will further serve to ensure that there are no impacts associated with the remaining works.

In terms of impacts to marine and onshore traffic, there is likely to be some disruption caused to the local road networks during the remaining construction works. For remaining offshore works, a fisheries liaison officer (FLO) will be responsible for communicating the construction schedule to the relevant fisheries and maritime organisations to enable their members to plan their activities accordingly, while for the remaining near-shore/landfall works a Traffic Management Plan will be in place to reduce the impacts to local traffic movements as far as possible. Following completion of the construction works, a survey of the roads used by construction traffic in the area will be carried out, and damage attributed to the project traffic will be repaired.

Cumulative Impacts

There are a number of elements to the overall Corrib development with the potential to create cumulative impacts if several of them were constructed at the same time or were located in the same area. The phasing of the overall project has, and will, restrict the possibility of cumulative impacts occurring to traffic, landscape, noise, tourism and air quality. The geographical separation of the different elements will reduce the potential for cumulative impacts to archaeology, ecology, geology, hydrology and hydrogeology. In terms of employment and the local economy, the sequential phasing of the project is expected to be more beneficial than a more restricted and intense construction period.

Environmental Management

From the outset, the project has been designed to limit its environmental impact as far as possible, indeed SEPIL's contractors (and their subcontractors) have been, and will be, expected to conduct their activities in such a way that any impact on the environment during construction is minimised. The remaining offshore related construction activities will be undertaken in accordance with the Project's existing Environmental Management Plan. The EMP will outline procedures to meet the environmental management requirements for the remaining works.

SEPIL staff on site will act primarily in an overseeing role, observing the contractors' performance against their own management plans, and by raising issues or intervening where appropriate.

Monitoring

A number of environmental monitoring surveys associated with construction activities undertaken to date have already been completed. These surveys include a pre-construction survey of subtidal and intertidal (landfall) sediments in Broadhaven Bay prior to pipeline installation, the monitoring of marine mammal activity during the construction and pipe-laying phases, post-construction monitoring of subtidal and intertidal (landfall) sediments in Broadhaven Bay, and post-drilling survey in Corrib Field to monitor impact of drilling operations. Monitoring will continue to take place in accordance with agreed monitoring commitments.