

17 CUMULATIVE IMPACTS

17.1 Introduction

Cumulative impacts can be defined in a number of ways. The definition used in the Institute of Environmental Management and Assessment (IEMA) guidance on EIA originates from the US Council on Environmental Quality, and is as follows:

“the impacts on the environment which result from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions...”

Cumulative impacts therefore can cover all aspects of the environment. While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or significant) in the same geographical area, and occurring at the same time, result in a cumulative impact that is collectively significant.

The Corrib Natural Gas Field Development (the Project) can be divided into the following distinct elements:

- Offshore, comprising the seabed installations, offshore pipeline, umbilical and treated water discharge pipeline;
- Onshore gas pipeline between the landfall and the gas terminal;
- Bellanaboy Bridge gas terminal;
- Peat removal and Srahmore peat deposition site; and
- Onshore 150km Mayo to Galway pipeline.

The 2001 Offshore EIS assessed the cumulative impacts that may arise during construction and operation of the Project as a whole, taking into consideration interactions between all elements of the development. Based on the updated information presented in this Offshore Supplementary Update Report, a re-assessment of the potential cumulative impacts has been undertaken.

A review was undertaken to determine if impacts associated with any other proposed project in the area would have the potential to give rise to significant cumulative effects.

The Sustainable Energy Authority of Ireland plans to develop a National Wave Energy Test Site, which is proposed to be located off Annagh Head, on the western shore of the Mullet Peninsula in County Mayo. The purpose of the wave energy test site off Annagh Head is to provide a location for the temporary mooring and deployment of wave energy machines so that their performance in generating electricity and their survivability can be tested and demonstrated in open ocean conditions. The project will comprise 5 offshore test sites located between 1km and 12km southwest to west of Annagh Head, in varying water depths, and four submarine cables from the test sites to shore at Belderra Beach. There will be a substation to which the cables will be connected and an onshore power lines from the substation to the power grid. It is proposed that the site will operate for up to 20 years with devices on site intermittently throughout the year. The wave energy devices will float at the surface of the ocean and will be moored to the seabed. The cables to shore will be installed 1m below the ocean floor and the onshore cables will be underground.

Information available in the public domain would indicate that the development of the test site would commence in 2012 subject to the relevant consents and licences. A detailed cumulative assessment has not been possible as the details of the development are not yet available, and the development as such is not committed.

The wave energy devices is expected to occupy a negligible area of ocean surface and the moorings will occupy a negligible area of ocean floor. Installation of the cables will cause a temporary localised disturbance to the habitats and species of a very small area of ocean floor, beach and shore as far as the substation and a temporary

disturbance in the immediate vicinity. The installation phase is expected to be brief and following construction there will be no potential for the cables to impact the habitats or species of the ocean floor, beach and onshore area. Air and water emissions associated with the construction will be of a temporary nature and not expected to be significant.

As wave devices are installed, removed and replaced there may be short term very localised disturbance of seabed, habitat and species at the test sites themselves.

Due to the small scale envisaged for this test project, the timing of its possible construction, and its distance from the offshore elements of the Corrib development (greater than 10 km), it is not predicted to have significant cumulative effects when combined with impacts associated with the proposed offshore elements of the Corrib field development, and it has not been assessed any further in this Section.

17.2 Assessment Methodology

A review has been undertaken of the potential impacts associated with each of the distinct elements of the Project through examination of the following key reports:

- Corrib Field (Offshore Field to Terminal) Environmental Impact Statement, RSK Environment Ltd, October 2001;
- Mayo-Galway Gas Pipeline Environmental Impact Statement, Arup Consulting Engineers, May 2001;
- Proposed Bellanaboy Bridge Gas Terminal Environmental Impact Statement, RSK ENSR, December 2003;
- Proposed Srahmore Peat Deposition Site Environmental Impact Statement, TES Consulting Engineers, December 2003;
- Economic Assessment of the Corrib Gas Project, Goodbody Economic Consultants, November 2007;
- Offshore Supplementary Update Report (Rev02) (this report), RSK Environment Ltd, 2009;
- Corrib Onshore Gas Pipeline (including Srahmore Peat Deposition Site), Environmental Impact Statement, RPS, January 2009; and
- RPS Onshore Pipeline EIS 2010.

Cumulative impacts of the Project have been assessed at a national and regional scale.

17.3 National Impact

At a national level, the impacts of the Project as a whole have been considered in the context of effects on the national economy and compliance with national policy.

The Goodbody Report (2007) identifies that the Project will contribute over €3bn to Ireland's GDP over its lifespan, supplying approximately 60% of the country's natural gas needs at peak production. The gas field is estimated to yield approximately one trillion cubic feet of natural gas over an operating life of 15–20 years.

The Project supports Ireland's proposed national strategic fuel switch from solid fuel and oil to natural gas and renewables, and so contributes to Ireland's target to limit national greenhouse gas emissions while ensuring security of energy supply. A national fuel switch from oil and coal towards gas is also likely to result in lower NO_x and SO_x levels nationally.

The Project will make a significant contribution to national energy policy by moderating Ireland's dependence on imported energy. It will also provide stable and economic

energy supplies, enhancing the sustainability of existing industry in the Border Midlands Western Region.

As well as providing natural gas for homes in the region, the Project will make the North West a more attractive investment destination. Potential investors will be attracted by the availability of natural gas as a cheap, reliable source of energy. In addition, the availability of natural gas may lead to electricity generation in the area, which could improve the reliability of electricity supplies. As well as being a benefit for the residents of the area, this is in line with the national need to promote balanced regional development.

17.4 Regional Impact

At a regional level, impacts of the Project have been considered in the context of effects on the physical, biological and socio-economic environment. As detailed in Section 3, the various elements of the Project are at different stages of completion and, therefore, interactions will not necessarily occur between all elements. Installation of the offshore pipeline from the Corrib Field to the landfall at Glengad, and construction of the onshore Mayo to Galway pipeline for example, have already been completed. Construction progress to date for the various elements of the Project and indicative future construction activities are provided in Table 17-1.

The main residual impacts arising from each of the individual elements of the Project have been assessed for their potential to interact with each other. The cumulative assessment has considered impacts arising from the construction and operation of the entire project, and it is considered that cumulative impacts, if any, are more likely to arise during the construction phase. Impacts arising from the operational phase of the Project mainly arise from the operation of the Bellanaboy Gas Terminal, with the remaining elements resulting in few, if any, cumulative operational impacts.

Table 17-4 therefore presents a matrix prepared to aid the identification and assessment of the cumulative impacts of all elements of the Project during construction. Shading has been used to show positive (shades of green) or negative (shades of red) impacts for various aspects of the environment.

An overview of the impacts arising from each of the distinct elements of the Project is provided below in order of their relative construction schedule.

17.4.1 Socio-economic Impacts

17.4.1.1 Traffic

Bellanaboy Bridge Gas Terminal

In terms of the gas terminal, the traffic assessment concluded that the local road network could adequately cater for traffic volumes generated during the construction phase. Since 2001, various road improvements have been undertaken including strengthening of the L1204 associated with the terminal site.

Peat Removal and Srahmore Peat Deposition Site

In terms of the movement of peat from the terminal to the Srahmore peat deposition site, the traffic assessment concluded that the local road network could adequately cater for traffic volumes generated by the construction of the project. The main traffic impact was predicted to result from damage to the pavement due to heavy construction traffic. This was mitigated through extensive road widening and upgrading of local roads. This phase of the overall project is complete and no further transportation of peat from the gas terminal site is envisaged.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was predicted to result in moderate adverse short-term impacts on local traffic along the proposed pipeline route as a result of construction traffic associated with the delivery of pipe, equipment, fencing, hardcore, sand padding and supplies to construction areas and, and the subsequent removal of temporary facilities upon completion.

Offshore Development

The offshore seabed installation (offshore component) was predicted to result in moderate short-term adverse impacts to near-shore-fishing activities as a result of the presence of the pipelay vessels and their associated support vessels during construction. In terms of the landfall component, the 2008 traffic management plan assessment indicated that the existing road network could adequately cater for the volumes of traffic generated during construction but would benefit from strengthening works, which were completed in 2008.

Remaining rock placement works in the near shore sections of Broadhaven Bay and installation of the umbilical will require the presence of various offshore vessels in Broadhaven Bay. It is likely that, due to their size and low manoeuvrability, these construction vessels will cause some impacts to the movements of local vessels over the period in which they are present in the bay.

The haul routes associated with the remaining landfall construction works can accommodate the expected traffic and will benefit from any ongoing strengthening works as required.

Onshore Corrib Gas Pipeline

In terms of the onshore pipeline, the traffic impact assessment has predicted that the road network surrounding the development is capable of facilitating the construction activities. There will however be a moderate impact on the local road network surrounding the development during the construction stage but this will be temporary in nature. Maintenance works will result in a local positive impact for local road users.

Deposition of peat at the Srahmore deposition site is predicted to result in a temporary adverse impacts on traffic caused by haulage trucks transporting peat from the onshore pipeline. However, mitigation measures are recommended to limit the impact on local people and visitors. Benefits will occur from road improvement works which will remain for all road users following the completion of the peat deposition activities.

Cumulative

Construction traffic associated with all elements of the Project has, and will continue to result in increased traffic volumes and may cause delays to other road users for the duration of the construction. However, for future works only traffic associated with the continued construction of the terminal, the remaining near-shore works, and the onshore gas pipeline will occur simultaneously. Although there may be some overlap in 2011, which will lead to a cumulative traffic impact on the local road network, the impact will be slight. This will be further reduced through the implementation of a Traffic Management Plan and the maintenance of local road network.

17.4.1.2 Visual Impact

Bellanaboy Bridge Gas Terminal

The gas terminal was predicted to result in minor temporary visual disturbances as a result of continued construction activities including the presence of large plant and cranes. It was also predicted that there would be permanent visual impact in respect of buildings and high features.

Peat Removal and Srahmore Peat Deposition site

Peat deposition from the gas terminal to the Srahmore peat deposition site was predicted to have short-term adverse visual impacts associated with peat transfer traffic during construction. This phase of the overall project is complete and no further transportation of peat from the gas terminal site is envisaged.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was predicted to result in minor short-term visual impacts during construction as a result of site facilities and working widths.

Offshore Development

The offshore seabed installation (near-shore component) resulted in short-term adverse visual impacts on highly scenic views as a result of temporary activity within the nearshore areas of Broadhaven Bay, including the mooring of a large pipelay vessel, workboats, etc. Similarly, short-term adverse visual impacts have resulted from construction activity in the vicinity of the landfall including the beach.

Short-term visual impacts are predicted in the near-shore areas and at the landfall as a result of construction works for the umbilical pull-in and rock-placement works that have yet to be completed.

Onshore Corrib Gas Pipeline

The onshore pipeline is predicted to result in a substantial negative impact that is temporary in nature as a result of construction activities. This is because the viewer sensitivity is high for protected views designed along the scenic routes in the area.

The use of the Srahmore peat deposition site is predicted to result in short term adverse visual impacts associated with haulage vehicles traveling to the deposition site.

Cumulative

Construction activities associated with all elements of the Project have, and will, result in localised temporary moderate visual impacts. Future cumulative visual impacts will be limited to potential overlap in construction activities associated with the ongoing construction of the terminal, the near-shore works, and the onshore pipeline and associated peat deposition at the Srahmore peat deposition site. However, these sequential impacts will be temporary in nature, despite being extended over a construction period of longer duration than originally envisaged.

17.4.1.3 Noise

Bellanaboy Bridge Gas Terminal

The continued construction of the gas terminal will inevitably lead to increased noise levels. However, as the site is remote, compliance with normal construction noise controls has been achieved. Any particularly noisy operations will be planned in advance to ensure that appropriate community liaison can be put in place.

Peat Removal and Srahmore Peat Deposition site

Peat deposition from the terminal to the Srahmore peat deposition site was predicted to result in minor short-term impacts on noise generated by the transfer of material to the site and movement within the site during construction. This phase of works is now complete and no further peat transits from the gas terminal site are envisaged in the future.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was predicted to result in minor temporary short-term impacts on noise during construction as a result of ripping and rock excavation.

Offshore Development

The offshore seabed installation (offshore component) was predicted to result in negligible impacts on noise. At 65km offshore, the drilling rig and vessel activities were too far from human sensitive receivers to be of concern. This phase of works now is complete.

The pulling in of the umbilical to the landfall, one of the remaining near-shore activities may result in a slight increase in normal daytime noise levels, and potentially a significant increase in noise levels in the evening and at night when the landfall site would normally be quiet. This activity is expected to be of very short duration and therefore impacts will be short-term. Rock placement works in Broadhaven Bay will involve placement of rock over a short section of the completed offshore pipeline. This activity will not generate noise at levels that will have any more than a negligible and temporary impact on the receiving environment.

The pre-commissioning of the offshore pipeline is expected to result in increase in noise levels near the landfall site. The duration of this activity is expected to be in the order of one to two weeks.

Onshore Corrib Gas Pipeline

The onshore pipeline is predicted to result in significant although short term negative noise and vibration impacts during construction as a result of construction noise from pipe trenching operations on land, construction traffic and movement of construction plant, equipment and materials to site.

Cumulative

During construction there has been, and will be, increased noise from construction works and traffic associated with each of the elements of the Project. In the event that works associated with the construction of the terminal, the near-shore works, and the onshore gas pipeline occur simultaneously, it is anticipated that a moderate temporary noise impact would occur. However, as the construction of the onshore pipeline progresses along the route the impact on individual receptors within close proximity to both the terminal and route will diminish rapidly. It should be noted however that the extended duration of the construction schedule will result in cumulative impacts over a longer period of time than originally envisaged.

17.4.1.4 Employment and Local Economy

Bellanaboy Bridge Gas Terminal

Up to 1000 people have been employed during construction of the gas terminal providing a positive impact on the local economy during the construction period with enhanced opportunities for local service providers.

Peat Removal and Srahmore Peat Deposition site

An estimated 50-55 people were required for the peat An Srath Mór (Srahmore) Peat Deposition Site in 2005/2007. These included existing / returning temporary employees. Impacts were predicted to be negligible, as the intention was to utilise existing staff to man the proposed facility. Actual impacts were positive, as the site came into use after existing staff had already been released. This phase of the overall project is complete and no further peat transportation from the gas terminal site is envisaged.

Mayo to Galway Gas Pipeline

An estimated 500 people were predicted to be employed during construction and reinstatement of the Mayo to Galway pipeline. In addition, short-term benefits to local communities in terms of increased income in shops, pubs, cafes/restaurants and accommodation and indirect employment were predicted as a result of pipeline construction activities.

Offshore Development

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. These included increased trade in local shops, pubs, restaurants, and service providers. There were also opportunities for supply of equipment, catering, transport and delivery of goods. There were also tangible economic benefits to Killybegs from the offshore components of the project.

Onshore Corrib Gas Pipeline

Construction of the onshore pipeline is predicted to result in a significant and positive impact on the local economy from major employment opportunities and construction of the pipeline. During construction it is estimated that 120 to 140 personnel will be employed on the onshore pipeline project. The onshore pipeline is predicted to have an overall positive economic impact on the existing community. Peat removal from the onshore pipeline will also provide direct and indirect job creation during the peat deposition activity.

Cumulative

As detailed in the Goodbody Report, construction of the development will result in significant benefits for the local economy. The local Mayo economy will directly benefit by approximately €181m as a result of the Corrib development. Over 800 jobs will be created during the construction phase including direct, indirect and induced employment. In addition, the region will benefit from the Corrib Gas Partners' existing and planned social investment activities, which represent an indirect benefit from their presence in the community. Successful completion of the Corrib project will encourage further energy exploration activity off the Irish coast.

17.4.1.5 Tourism and Recreation

Bellanaboy Bridge Gas Terminal

The gas terminal was predicted to result in negligible short-term impacts on visitors to the area during the construction period. Whilst bed and breakfast and self-catering accommodation would benefit from increased trade, visitors to the local area who have to pass by the terminal site would notice site activity, increased traffic movements and construction activity, and views into the site from nearby footpaths and bridleways.

Peat Removal and Srahmore Peat Deposition site

In terms of the Srahmore peat deposition site, it was noted that most major tourist attractions are sufficiently remote from the site for their associated visitors to be unaffected by the peat deposition activity.

Mayo to Galway Gas Pipeline

The Mayo to Galway Pipeline was completed in 2006. Negligible short term impacts existed on visitors to the area during the construction period.

Offshore Development

The offshore seabed installation was predicted to result in negligible adverse impacts on tourism and recreation as most major attractions are sufficiently remote from the offshore activities. Negligible adverse impacts are predicted to continue while outstanding near-shore construction works are underway.

Onshore Corrib Gas Pipeline

The onshore gas pipeline will have a slight to moderate temporary negative impact upon visiting communities of the local and wider vicinity of the proposed route during the construction phase.

Cumulative

None of the construction activities associated with the elements of the Project is expected to impact significantly on tourism and recreation. The phasing of construction will ensure that impacts from all elements will be minimised. Where cumulative impacts do occur, despite the extended duration of the construction schedule, they will be temporary in nature and are not expected to be significant.

17.4.1.6 Archaeology

Bellanaboy Bridge Gas Terminal

No impacts on known archaeological sites were predicted as a result of the construction of the gas terminal. During earthworks no archaeological features were discovered.

Peat Removal and Srahmore Peat Deposition site

No archaeological features were discovered.

Mayo to Galway Gas Pipeline

No impacts on known archaeological sites were predicted as a result of the Mayo to Galway pipeline. Possible minor/moderate impacts on unknown sites were identified.

Offshore Development

No impacts on known archaeological sites were predicted as a result of the offshore seabed installation. Possible discovery of unknown archaeological material was identified (with none identified to date).

Onshore Corrib Gas Pipeline

The proposed onshore pipeline route avoids all recorded archaeological monuments and specific sites of archaeological potential. As a result, none of these known or

potential archaeological sites will be directly impacted. However, one recorded archaeological site lies adjacent to the temporary working area and four other sites of archaeological potential remain within the temporary working area or lie adjacent to it. As such, these sites are considered to be indirectly impacted by the proposed onshore pipeline. The potential exists to reveal previously unknown and buried archaeological sites in the future.

Cumulative

As there is potential for unknown archaeological material to be discovered archaeological monitoring has been, and will be, undertaken during construction for all elements to ensure the recognition and recording of any such remains.

17.4.2 Biological Impacts

17.4.2.1 Terrestrial Ecology

Bellanaboy Bridge Gas Terminal

The gas terminal was predicted to result in short-term negligible or minor impacts on terrestrial flora and fauna during construction as a result of vegetation clearance and disturbance to habitats of low ecological interest.

Peat Removal and Srahmore Peat Deposition site

Approximately 450,000m³ of peat excavated from the terminal site was deposited in a cutover peatland at An Srath Mór (Srahmore). Deposition of the peat took place within an area of approximately 63 ha.

This site is one from which peat had previously been harvested for a local power station and is saucer shaped with an extensive drainage infrastructure that was installed for industrial peat extraction. On completion, the site has been allowed to re-colonise by natural species. This promotes the re-establishment of peat-forming conditions and re-instates a peatland ecosystem in place of the original Atlantic blanket bog complex. The vegetation succession will lead to a more varied habitat which will contribute to local biodiversity and complement the ecological significance of the adjacent rehabilitated cutover areas. Over time the habitats will blend with the existing fringe habitats that currently border the development site. The long term prospect is therefore considered to be positive, with permanent beneficial impacts on the development site. The residual impacts overall are considered to be significantly positive given that they should result in habitat rehabilitation and increased local biodiversity.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was predicted to result in temporary short-term impacts on terrestrial flora and fauna during construction as a result of disturbance. Short-term impacts on fauna were limited to the working width, with works timed to minimise disturbance. Potential impacts on flora were minimised through route selection and appropriate construction and reinstatement techniques.

Offshore Development

Seabed disturbance from the installation of the field facilities resulted in permanent habitat loss of benthic faunal communities and crustaceans over a footprint of 392 m² of the seabed (combined footprint for the gathering manifold and pipeline end manifold).

The installation of the pipeline on the seabed resulted in a permanent localised loss of benthic habitat. To a lesser extent the same will be true for the umbilical. The total seabed area actually taken up by the offshore pipeline and umbilical will be approximately 4.28ha. In the near-shore area of Broadhaven Bay the section of the

offshore pipeline that has subject to rock placement has taken up an area of seabed of approximately 1.95ha resulting in the permanent loss of habitat. The footprint of the rock berm placed in Broadhaven Bay in 2009 may increase as result of further rock placement activities in 2010. However, the rock berm will provide stable seabed habitat for colonisation by epibenthic species.

Onshore Corrib Gas Pipeline

The impact of the proposed onshore pipeline on terrestrial ecology is considered neutral or slight negative in the long-term as a result of disturbance during construction. No long-term significant impacts on species of conservation interest present on site, such as otters, badgers, bats and frogs are expected.

Permanent loss of habitat of the onshore pipeline occurs at the LVI, along the access road to the LVI and the tree felling of conifers in the forestry north of Bellanaboy Bridge terminal. This represents approximately 3.5ha. The felling of trees for this pipeline should be viewed as an extension of the forest management in the area, as the mature conifers would be due for felling in rotation.

Cumulative

Construction activities associated with all elements of the Project will result in temporary negative impacts on terrestrial ecology. However, these impacts will not be additive in terms of temporary loss (i.e. in combination they do not result in a greater impact) on ecological resources such as designated conservation sites or natural habitats.

17.4.2.2 Freshwater Ecology

Bellanaboy Bridge Gas Terminal

The construction of the gas terminal was predicted to result in temporary short-term negligible or minor impacts on freshwater aquatic ecology depending upon the successful implementation of pollution control measures, including run-off control.

Peat Removal and Srahmore Peat Deposition site

The Srahmore peat deposition site was predicted to result in negligible impacts on freshwater aquatic ecology with the implementation of appropriate mitigation measures to control discharges. This aspect of the Project is completed and no further peat deposition from the gas terminal site is anticipated.

Mayo to Galway Gas Pipeline

Discharge of hydrotest water into the freshwater aquatic environment as a result of the construction of the Mayo to Galway pipeline was predicted to result in negligible impacts on aquatic ecology.

Offshore Development

There are no predicted impacts to the aquatic (freshwater) ecology from the remaining offshore construction works (see below for marine impacts).

Onshore Corrib Gas Pipeline

Residual impacts on freshwater ecology including salmonids are predicted to be slight to negligible impacts post construction.

Cumulative

Construction activities associated all elements of development (with the exception of the offshore development where there are no predicted impacts) will result in negligible or minor temporary impacts on freshwater aquatic ecology. Cumulative impacts will be limited as impacts on freshwater aquatic ecology will generally be local to individual elements of the overall development.

17.4.2.3 Marine Ecology

Bellanaboy Bridge Gas Terminal

In terms of the treated produced water discharge, the predicted impact of the discharge is considered negligible, in that all of the constituents of the waste water are discharged at or below EQS and are now proposed to be discharged at the Corrib Field. There are no predicted impacts to the marine ecology associated with the construction phase of the terminal.

Peat Removal and Srahmore Peat Deposition site

No impacts were predicted on marine ecology as a result of peat removal and operations at the Srahmore peat deposition site.

Mayo to Galway Gas Pipeline

No impacts were predicted on marine ecology as a result of the Mayo to Galway pipeline.

Offshore Development

The installation of the umbilical will cause some temporary localised disturbance to the seabed sediments, but it is expected that recovery and recolonisation by benthic communities will occur fairly rapidly. Where rock armour or concrete mattresses are laid on the seabed the existing seabed habitats will be permanently lost, however the new introduced hard substrates may attract new species to the area. Overall, the predicted impact to benthic communities is considered negligible, with the exception of the rock-placement works in Broadhaven Bay, which is considered minor, due to the extent of the rock placed area. Projected underwater noise levels associated with the rock-placement operations are not anticipated to have significant impacts. It is considered likely that marine mammals within 200m of operations would demonstrate an avoidance response. Controls to limit any impacts to marine mammals from the generation of noise during remaining near-shore construction will be implemented, and the construction techniques that will be used do not generate high noise levels. Any effect is likely to be transient and restricted to a behavioural response (avoidance).

Onshore Corrib Gas Pipeline

In the unlikely event that an emergency surface intervention should be required during tunnelling, there would be a potential to cause some disturbance of the seabed predominantly due to altered sediment mobility around temporary structures causing scour and deposition. Allowing for mitigation and coupled with the fact that most of the scour will naturally refill with mobile re-deposited material post construction, the residual impacts are expected to be neutral to negative or imperceptible to slight.

Cumulative

The offshore and near-shore installation is the only element of the development predicted to impact on marine ecology. In the event that emergency surface intervention is required during tunneling underneath Sruwaddacon Bay, the cumulative impacts are predicted to be imperceptible in the short term.

17.4.3 Physical Impacts

17.4.3.1 Soils and Geology

Bellanaboy Bridge Gas Terminal

Construction of the terminal resulted in the excavation of approximately 450,000m³ of local peat and excavation of both weathered and unweathered bedrock. However, there was no predicted negative impact on the geology of the area.

Peat Removal and Srahmore Peat Deposition site

The Srahmore peat deposition site was predicted to have no adverse impacts on soils and geology with the implementation of mitigation measures including appropriate timing of works. No further deposition of peat from the gas terminal site is envisaged.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was identified as having a number of potential impacts on soils and geology during construction associated with the crossing of peat areas, the crossing of flood plain areas, the crossing of low-lying sand and gravel areas, areas underlain by karstified limestone, and areas of shallow hard rock. Mitigation measures were identified to minimise such impacts on soils and geology including minimising the length of crossings in these areas.

Offshore Development

The offshore seabed installation (offshore component) was predicted to have minor adverse geological impact, as it is not an area known to be especially important in geological terms. Installation of the umbilical will disturb the seabed and shallow sub-seabed geology temporarily during the construction phase. The umbilical will be buried and the seabed is expected to return to its present morphology within a matter of weeks after construction. Rock placement and any concrete mattresses introduced for seabed sediment scour protection will permanently impact seabed geology by smothering. The rock-placed section of the offshore pipeline in Broadhaven Bay will have a footprint area of approximately 1.95 ha, and the existing seabed geology over this entire area will be permanently impacted. Hard rock substrate will be introduced, which will result in a permanent alteration to the seabed geology in these areas.

Onshore Corrib Gas Pipeline

In the short-term, there will be a slight impact due to the localised loss and/or compaction of peaty soils during construction of the onshore pipeline. Once construction has been completed and following the full implementation of the mitigation measures, there will be an imperceptible impact on soils and geology.

Cumulative

Some individual elements of the Project have and/or will have the potential to result in localised impacts on geology and soils. Any cumulative impacts would not be synergistic, i.e. the combination of these impacts will not result in a more significant impact on soils and geology. Therefore the cumulative impact is considered to be slight.

17.4.3.2 Hydrology and Hydrogeology

Bellanaboy Bridge Gas Terminal

Construction of the gas terminal was predicted to result in minor adverse impacts on hydrology.

Peat Removal and Srahmore Peat Deposition site

The Srahmore peat deposition site was predicted to result in negligible impacts on watercourses adjacent to the site. with the implementation of appropriate mitigation measures to treat and control discharges.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was predicted to result in negligible adverse impacts as a result of changes to drainage during construction.

Offshore Development

The remaining offshore seabed installation works are predicted to result in minor or negligible impacts to the aqueous environment, as releases to the environment are both small in quantity and of very low toxicity.

Onshore Corrib Gas Pipeline

In the short-term, there will be a slight impact due to the localised loss and/or compaction of peaty soils during construction. Once construction has been completed and after the full implementation of the mitigation measures, there will be an imperceptible impact to the original drainage pattern.

Cumulative

A number of the individual elements of the Project have and/or will have the potential to result in localised impacts on hydrology and hydrogeology. However, each element is committed to stringent pollution prevention measures that are considered sufficient to address any impacts. Therefore the cumulative impact is considered to be imperceptible.

17.4.3.3 Air Quality

Bellanaboy Bridge Gas Terminal

Construction of the gas terminal has resulted in emissions of dust and emissions from traffic and machinery. However, construction activities are not predicted to result in significant negative air quality impacts.

Peat Removal and Srahmore Peat Deposition site

The Srahmore peat deposition site was predicted to result in a minor localised impact on air quality through dust generated during positioning of peat at the depository, and exhaust fumes from haulage and on-site vehicles and equipment.

Mayo to Galway Gas Pipeline

The Mayo to Galway pipeline was predicted to result in a minor localised impact on air quality through exhaust fumes from machinery used during construction.

Offshore Development

The remaining offshore seabed installation works are not predicted to have a significant impact on air quality in view of the short duration or periodic nature of the remaining works. In general, there are no resident sensitive receptors offshore and impacts will be negligible. The distances from the landfall are such that there will be no impacts from emissions to air upon local residents.

Onshore Corrib Gas Pipeline

The onshore pipeline will result in emissions of dust (during dry weather only) from construction and emissions from construction traffic. However, this is not predicted to result in significant air quality impacts. Local impacts to air quality along the proposed haul routes as a result of construction traffic are considered to be temporary slight negative.

Cumulative

Construction activities associated with all elements of the Project have and/or will result in temporary impacts on local air quality. In the event that the remaining construction activities associated with the terminal, near-shore works, and onshore gas pipeline occur simultaneously, there will be potential for cumulative air quality impacts. However, where cumulative impacts do occur they will be slight and temporary in nature. Peat deposition associated with the onshore pipeline will not result in an increased cumulative impact on air quality, as Srahmore peat deposition site is located sufficiently away from the other elements of the Corrib development.

17.4.3.4 Assessment of Total Greenhouse Gases

An assessment of the cumulative emissions of greenhouse gas emissions arising from the construction and operation of the Corrib Gas Field Development is provided below. This cumulative assessment includes the carbon losses arising from any peat disturbance for the Project.

Bellanaboy Bridge Gas Terminal

The total greenhouse gas emissions associated with the construction of the Gas Terminal were 43,340 tCO₂eq, of which 6,369 tCO₂eq was due to peat removal.

Mayo to Galway Gas Pipeline

The total estimated greenhouse gas emissions are presented in Table 17-2 below. Details relating to the construction of the Mayo to Galway Pipeline were limited in the EIS and where data was not available, scaled up construction details from the Corrib Onshore Pipeline have been included.

Table 17-2: Total GHG Emissions of the Mayo to Galway Pipeline

Item	Estimated GHG Emissions (tCO ₂ eq)
Construction Materials	37,764
Metals (pipeline Steel)	86,474
Plant Emissions	1,056
Peat Removal	29,670
Material Transport	3786
Personnel Transport	269
Total GHG Emissions	159,019

Offshore Development

The total greenhouse gas emissions for the offshore element of the project are estimated to 164,499 tCO₂eq.

Corrib Onshore Gas Pipeline

The total greenhouse gas emissions for the onshore element of the project are estimated at 30,590 tCO₂eq, 4,059 tCO₂eq of which are the carbon losses from peat disturbance.

Cumulative Impact

Table 17-3 below provides an estimate of the total greenhouse gas emissions associated with the construction and operation of the Corrib Gas Field development.

Table 17-3: Summary of Total Greenhouse Gas Emissions associated with the Corrib Gas Field Development

Project	Construction Emissions (tCO ₂ eq)	Operational Emissions (tCO ₂ eq)	Total Emissions (tCO ₂ eq)
Offshore Pipeline & Well Installation	164,499	-	164,499
Onshore Gas Pipeline	30,590	-	30,590
Bellanaboy Gas Terminal	43,340	691,725	735,065
BGE Mayo to Galway Pipeline	159,019	-	159,019
Total	397,448	691,725	1,089,173

Note: 1. Assumes 15 years of Terminal Operations and 46,115 tonnes per year

Table 17-4: Cumulative Impact Assessment Matrix - Construction Phase

	Bellanaboy Bridge Gas Terminal	Peat Removal & Srahmore Peat Deposition Site	Offshore Development	Mayo to Galway Pipeline	Onshore Corrib Gas Pipeline	Cumulative
Human Environment						
Material Assets (Traffic)						
Noise						
Employment and Local Economy						
Tourism and Recreation						
Landscape and Visual						
Archaeology						
Physical Environment						
Soils and Geology						
Hydrology and Hydrogeology						
Air Quality						
Total Greenhouse Gases						
Biological Environment						
Terrestrial Ecology						
Aquatic Ecology						
Marine Ecology						

Significant negative impact
Moderate negative impact
Slight negative impact
Neutral
Slight positive impact
Moderate positive impact
Significant positive impact