



Shell E&P Ireland Ltd

# Corrib Gas Pipeline

Cumulative Impact Update Report

P40036

JULY 2015



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## RSK GENERAL NOTES

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**Author** Wendy Hogben/  
David Watson

**Technical reviewer** W.Hogben

Signature



Signature



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# 1 INTRODUCTION

The Corrib Gas Field Development is divided into a number of distinct but inter-related and inter-dependent elements as follows:

- Offshore seabed installation (subsea wellheads and manifold at the Gas Field);
- Offshore gas pipeline (between wellheads and landfall);
- Onshore gas pipeline (between landfall and gas terminal at Bellanaboy); and
- Bellanaboy Bridge Gas Terminal (BBGT).

The Corrib Pipeline between the Corrib Gas Field and the BBGT received Ministerial Consent under Section 40 of the Gas Act in April 2002. SEPIL applied for consents for a modified route for the onshore gas pipeline in February 2009, including an application to the Minister for Department of Communications, Energy and Natural Resources (the “Minister”).

Further modifications to the proposed onshore gas pipeline development, requested by An Bord Pleanála in November 2009, necessitated the preparation of a new/revised application to the Minister, including a revised Environmental Impact Statement (EIS) for the onshore gas pipeline. This revised application was submitted in June 2010. As the consents processes under the Gas Act apply to the Corrib Pipeline in its entirety (both onshore and offshore), a revised (2010) supplementary update report in respect of the offshore section of the Corrib Pipeline for the 2001 Offshore EIS was also submitted, as outlined in Table 1. Additional information was also submitted to the Minister as part of the application, also listed in Table 1. A new consent was required for the Corrib pipeline in order to implement the proposed modifications to the onshore pipeline route.

**Table 1: Documentation submitted in respect of the Corrib Pipeline (2011 Section 40 Consent)**

Project Element	Environmental Impact Statement / Natura Impact Statement
Offshore Seabed Installation Offshore Gas Pipeline	<ul style="list-style-type: none"> <li>▪ Corrib Offshore Field to Terminal EIS October 2001</li> <li>▪ Offshore Supplementary Update Report May 2010</li> </ul>
Onshore gas pipeline between landfall valve installation at Glengad and the Bellanaboy Bridge Gas Terminal	<ul style="list-style-type: none"> <li>▪ Corrib Onshore Pipeline EIS May 2010, including Appendix P Natura Impact Statement (NIS)</li> </ul>
Offshore and Onshore Pipeline	<p>Additional Information</p> <ul style="list-style-type: none"> <li>▪ (a) Non-Technical Summary;</li> <li>▪ (b) Additional Information to the May 2010 Onshore Pipeline (Volume 1) (which included an Errata and Addendum to the EIS)</li> <li>▪ (c) Geotechnical Data package (Sruwaddacon Bay Ground Investigation Data) 2010 (Vol. 1, 2 and 3), and</li> <li>▪ (d) Engineering Integrity Material.</li> </ul>

The likely significant impacts of the construction and the operation of the Corrib Pipeline from the offshore facilities to the BBGT were fully considered and assessed in the documentation listed above, as were all direct and indirect effects, and cumulative impacts and interactions between plans and projects when either taken alone or in combination with other plans and projects, including other elements of the Corrib Development and the Gas Networks Ireland Mayo to Galway Pipeline.

The Minister granted Consent for the construction of the Corrib Pipeline on 25th February 2011 (the “2011 Section 40 Consent”).

The following sections contain a consideration of any potential cumulative, direct, indirect and interactive impacts of the operation of the Corrib Pipeline with the other elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline), with other plans and projects, arising since the 2011 Section 40 Consent.

## 2. CUMULATIVE, DIRECT, INDIRECT AND INTERACTIVE IMPACTS

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The following section provides a consideration of the cumulative impacts associated with the operation of the Corrib Pipeline with the other elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline), and with other plans or projects. These cumulative impacts are fully considered and assessed in the documentation listed in Table 1. The Srahmore Peat Deposition site (which was assessed in Volume 3 of the Corrib Onshore Pipeline EIS May 2010) at which peat from the construction of the onshore pipeline and the BBGT was deposited has been decommissioned. Monitoring and maintenance activities are ongoing within the boundary of the Srahmore Peat Deposition site but these monitoring and maintenance activities will not have the potential to contribute to cumulative impacts. It is therefore not necessary to consider this site further.

No long-term cumulative impacts were anticipated in the documentation listed in Table 1, for the operation of the Corrib Pipeline.

The potential direct, indirect and interactive impacts were also considered and no significant environmental impacts were anticipated during the operational stage. As such no further consideration of these potential impacts is required in this report.

A cumulative impact can be considered as an impact on the environment that results from incremental changes to environmental parameters when added to changes brought about by other past, present or reasonably foreseeable actions (*“Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions”* European Commission, 1999). Cumulative impacts can result from individually minor but collectively significant actions taking place over the same period of time or/and within the same geographical area. Cumulative impacts therefore can cover all aspects of the environment.

In identifying plans and projects for consideration in estimating cumulative impacts, only projects with a reasonable certainty of being executed within the next five years were considered (*“Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions”* European Commission, 1999).

### 2.1 Identification of Neighbouring or Relevant Developments since the 2011 Section 40 Consent

The following relevant proposed/permitted developments in the vicinity have been considered in this Report.

#### 2.1.1 Belmullet Wave Energy Test Site

The Sustainable Energy Authority of Ireland plans to develop a National Wave Energy Test Site, off Annagh Head, on the western shore of the Mullet Peninsula in County Mayo. The proposed project lies approximately 6 km from the Corrib Pipeline.

The project was in initial stages of consideration in 2008. A Foreshore Lease application for the development was lodged in December 2011 (DECLG Ref. MS 51/13/426), and a decision is pending.

It was originally proposed that the site would 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.

The relatively benign nature of the operational impacts of this project ensures that there will be no potential for a cumulative impact with the operation of the Corrib Pipeline and other elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline) and operation of the Test Site. Given this conclusion, it is not necessary to consider this project further.

### **2.1.2 Organic Power – Glinsk**

The location of this proposed hydro-electricity pumped storage project is on the North Mayo coast, approximately 11km from the Corrib Pipeline. The project has been at pre-application consultation stage with An Bord Pleanála (Ref. PL16.PC0093) since April 2010 and that process has yet to be concluded. Given that the project is at an early stage of development and that no planning application has been lodged for it, no further consideration is necessary to be given to it here in the context of cumulative impacts as it cannot be said to be a reasonably foreseeable action.

### **2.1.3 Mayo Renewables**

Mayo Renewable Power (MRP) comprises a 50 MW (net) biomass High Efficiency CHP plant located on the former Asahi site in Killala, Co. Mayo. The proposed project lies approximately 35 km from the Corrib Pipeline. In operation, this plant will use virgin biomass (i.e. untreated and uncontaminated clean wood and willow). The fuel will be supplied from a variety of sources including locally grown willow, spruce from local forestry and forestry thinnings along with imported supplies. The 50MW (net) electricity produced by the plant will be exported directly onto the national electrical infrastructure and distributed throughout the country. The project was granted planning permission in May 2011 and construction is due to commence shortly.

The spatial separation between the Corrib Pipeline and other elements of the Corrib Gas Field Development, the Mayo to Galway Pipeline and the MRP plant ensures that there will be no potential for a cumulative impact or interaction. Given this conclusion, it is not necessary to consider this project further below.

### **2.1.4 Grid West Project**

EirGrid are developing a new high capacity power line, known as the Grid West project, which will link the North Mayo area to the existing Flagford substation near Carrick-on-Shannon. The project was launched in May 2012.

The preferred overhead route corridor starts north-west of Moygownagh, runs west of Ballina, east of Foxford and Swinford, south of Charlestown and Ballaghaderreen before linking into the existing Flagford substation, near Carrick-on-Shannon. At its closest this proposed project lies approximately 26 km from the Corrib Pipeline.

An underground option is also under consideration, which would run north of Charlestown and Ballaghaderreen.

Both the overhead and underground route corridors are more than 25 km away from the pipeline and therefore no cumulative impacts between this project, the Corrib Pipeline and the other elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline) projects are anticipated. Given this conclusion, it is not necessary to consider this project further.

### **2.1.5 MAREX Initiative**

The MAREX initiative (Method for Atlantic Renewable Energy Export), the project is at Pre-Application Consultation with An Bord Pleanála. Organic Power Ltd are intending to apply for planning permission for a proposed 2000MW wind farm (450 wind turbines) in north Mayo which would be connected to a water storage energy hub at Glinsk. At its closest this proposed project lies approximately 5 km from the Corrib Pipeline.

Given that no planning application has been lodged and the uncertainties surrounding it, it is not necessary to consider this project further as it cannot be said to be a reasonably foreseeable action.

### 2.1.6 Oweninny Wind Farm

Planning permission was sought (ABP Ref. PL16.PA0029) in July 2013 for the 112 wind turbine Oweninny Wind Farm (approximately 11km from the Corrib Pipeline) near the site of the former Bellacorick Peat Fired Power Station, a site comprising approximately 50km<sup>2</sup> formerly utilised for peat harvesting by Bord na Móna. An Bord Pleanála has issued a request for Further Information in relation to this application.

If planning permission is granted, it is anticipated that the wind farm will be developed in 3 phases, beginning in 2015. Commencement of construction of Phase 1 is expected by end of 2015 and to be completed by 2017. Phase 2 is expected to commence in 2016 and to be completed by 2018 and Phase 3 expected to commence post 2018 (dependent on the timing of the Grid West development), as outlined in Table 3.1 of Chapter 3 of the Oweninny Wind Farm EIS (2013). The project would include 112 no. wind turbines, 8 no. meteorological masts, 4 no. substations, over-ground and underground cables, visitor centre and associated works including 85km of access tracks etc.

A review of the EIS (2013) for the proposed wind farm has formed the basis for the cumulative impact assessment discussed in Section 3.

### 2.1.7 Cluddaun Wind Farm

Coillte Enterprise proposed to build a wind farm in Cluddaun, North Western County Mayo with a capacity to generate up to 150 MW. The site comprises 2,434 ha and is located north of and adjacent to the proposed Oweninny Wind Farm. The proposed project lies approximately 13km from the Corrib Pipeline.

A planning application was lodged with An Bord Pleanála in October 2013 (ABP Ref. PL16.PA0031). However permission was refused by An Bord Pleanála in May 2015. Given this conclusion, it is not necessary to consider this project further.

The above projects can be summarised in table 2 as follows:

**Table 2: List of relevant developments for consideration for assessment of cumulative impact since the 2011 S40 Consent**

Project	Date	Status	Approximate Distance from Corrib Gas Pipeline
<b>Bellmullet Wave Energy Test Site</b>	The project initially considered in 2008	Foreshore Licence decision pending	6 km
<b>Organic Power – Glinsk</b>	April 2010	Pre-Application Consultation	11km
<b>Mayo Renewables</b>	The project was granted planning permission in May 2011	Consented	35 km
<b>Grid West Project</b>	The project was launched in May 2012	In Development	26km
<b>MAREX Initiative</b>		Pre-Application Consultation	5 km
<b>Oweninny Wind Farm(Phase 1 &amp; 2)</b>	Planning permission was sought in July 2013	In Planning	11km
<b>Cluddaun Wind Farm</b>	A planning application was lodged in October 2013	Refused Planning	13km

## 2.1.8 Other Considerations

### Mayo County Development Plan 2014 - 2020

Review of the Mayo County Development Plan 2014 – 2020 was undertaken to identify any project or plans which could have the potential to contribute to cumulative, direct, indirect or interactive impacts. There are no changes to zonings, specific objectives, Special Amenity Areas or other important designations in the vicinity of the Corrib Pipeline. The nearest lands that are zoned/designated for development are in Belmullet Town, located approximately 20km away. Of relevance here is reference to the development of a Sustainable Energy Park in Belmullet town,

*‘for the display of working examples of sustainable energy sources, the creation of public awareness regarding the benefits and advantages of renewable energy, and the provision of educational, training, research and development facilities relating to renewable energy and the sustainable development of renewable energy’.*

No further details are given in the Mayo County Development Plan 2014 – 2020 and it is not considered necessary to consider this project further as it cannot be said to be a reasonably foreseeable action.

The Destination Mayo Tourism Strategy 2015 – 2020 and the Mayo Investment Strategy 2015 – 2020 were also considered, but no plans, projects or developments had the potential to contribute to cumulative, indirect or interactive impacts with the Corrib Pipeline.

## 2.2 Interface of Proposed Developments

Given the current planning status and uncertainty surrounding the majority of the other developments identified, or the large spatial distances between them and the Corrib Pipeline, only the cumulative impacts arising from the Oweninny Wind Farm with the other elements of the Corrib Gas Field Development (and Mayo to Galway pipeline) are considered in Section 3. Table 3 provides an indicative programme of the relevant developments.

Table 3: Indicative Programme of Proposed Developments

	2015				2016				2017	2018	2019
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
<b>Corrib Gas Field Development</b>											
Corrib Gas Field Development											
Mayo to Galway Pipeline*											
Oweninny Wind Farm (Phase 1)											
Oweninny Wind Farm (Phase 2)											
Oweninny Wind Farm (Phase 3)											

Note: Estimated dates are provided. Phase 3 of Oweninny wind farm is unlikely to commence before 2018 (dependent on Grid West Development) \*And associated infrastructure

	<b>Construction</b>
	<b>Commissioning</b>
	<b>Operation</b>

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## 3 PREDICTED CUMULATIVE IMPACTS

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### 3.1 Human Environment

#### 3.1.1 Local Employment

##### Oweninny Wind Farm

The benefits to the local community in the area of Oweninny Wind Farm during the construction of the wind farm will be positive. This will occur through increasing economic activity, with capital investment of approximately €600M and providing an estimated 100 people employed directly on the wind farm site during the peak construction periods, with additional external employment arising from materials production and transport to the site. In the longer term there will be an ongoing requirement for maintenance support, services and equipment. The proposed Visitor Centre will also give rise to local employment opportunities.

##### Corrib Gas Field Development (and Mayo to Galway Pipeline)

It is estimated that approximately 100 - 120 people will be employed on the Corrib Gas Field Development during operations.

During operations, there is a small, but sustained demand for local employees associated with the operation of the BBGT, maintenance and monitoring visits along the Corrib Pipeline and Mayo Galway Pipeline that will continue to contribute to the local economy.

##### Cumulative

The developers of these projects have all made commitments to support the local community through local employment, which will result in a positive cumulative impact for the local community. This will result in a positive cumulative impact.

#### 3.1.2 Tourism and Recreations

##### Oweninny Wind Farm

The proposed Oweninny Wind Farm will include a new Visitor Centre.

##### Corrib Gas Field Development (and Mayo to Galway Pipeline)

During operations, the presence of the offshore pipeline will not impose any restrictions on the use of Sruwaddacon Bay or further offshore, such as boating, fishing or walking in the intertidal areas.

A 14m wide permanent wayleave will remain in place for the lifetime of the Corrib Pipeline and Mayo to Galway Pipeline so that access can be maintained. In peatland a 20m wide permanent wayleave will be required to accommodate the Corrib Pipeline in the stone road. Some restrictions will apply to the use of land within the permanent wayleave (building of structures, tree planting, deep ploughing etc.) but otherwise the land in this area will return to normal use once reinstatement has been completed.

The Community Social Investment Programme will provide planned and targeted community gain, directed specifically at the needs of the local and wider residential community within the Erris region.

### Cumulative

The developers of these projects have all made commitments to support local tourism and/or recreation. This will result in an overall positive cumulative impact.

#### **3.1.3 Traffic**

##### **Oweninny Wind Farm**

The construction of the wind farm at Oweninny will generate construction traffic with heavy goods vehicles (HGVs) transporting stone fill material from quarries, reinforcing iron bar and concrete for foundations. Normal building construction materials, such as blocks, bricks, timber steel and glass will also be delivered to site during construction. There will also be a number of abnormal loads of traffic for wind turbine component delivery and transformer deliveries for the substation.

##### **Corrib Gas Field Development (and Mayo to Galway Pipeline)**

Regular inspections and maintenance of the Landfall Valve Installation (LVI) will involve one work vehicle per shift, otherwise moderate volumes of traffic associated with personnel and commercial vehicles are expected during the operation of the BBGT

Occasional road traffic movements associated with maintenance and testing of the Corrib Pipeline and Mayo Galway Pipeline will be limited as these and the closest Mayo Galway Pipeline Above Ground Installation (AGI) are remotely operated. Any traffic will be insignificant in terms of existing flows on local roads.

### Cumulative

The existing road network has adequately catered for the volumes of traffic generated during all construction activities associated with the Corrib Gas Field Development, which were much higher than those anticipated during its operation. In combination with the traffic volumes associated with the construction of Oweninny Wind Farm, there is likely to be a temporary slight local cumulative traffic impact.

#### **3.1.4 Material Assets (Waste)**

During operations, the Corrib Gas Field Development is sufficiently remote from the Oweninny Wind Farm project to preclude cumulative impacts on matters regarding waste.

#### **3.1.5 Air Quality**

##### **Oweninny Wind Farm**

There is some potential for local air quality to be impacted during the construction phase periods, but with implementation of mitigation this will not cause a significant impact. The wind farm development overall will have a significant positive impact on air quality and will help meet the Irish Government's international obligations regarding reduction of carbon dioxide (CO<sub>2</sub>) emissions.

##### **Corrib Gas Field Development (and Mayo to Galway Pipeline)**

The BBGT will be subject to monitoring programmes, which will provide the basis for ensuring that emissions are within approved limits, as required by the EPA Industrial Emissions Licence.

There are no impacts anticipated in relation to the operation of the Corrib Pipeline and the Mayo to Galway Pipeline except for localised emissions associated with the vehicles and boats (Corrib Pipeline) during maintenance and monitoring visits. Vehicle movements associated

with the Mayo to Galway pipeline will be limited as the pipeline and the AGI are remotely operated.

The Corrib Pipeline and the Mayo to Galway Pipeline both operate as completely closed systems, i.e, in normal operation there will be no release of gas to the atmosphere. Extremely small amounts of natural gas are emitted when gas is vented during planned pigging operations. These are infrequent occurrences. There are extremely small emissions of natural gas from regulator control systems at the Mayo to Galway Pipeline AGI.

### **Cumulative**

During operations, the Corrib Gas Field Development is sufficiently remote from the Oweninny Wind Farm project to preclude cumulative impacts on air quality.

### **3.1.6 Noise and Vibration**

#### **Oweninny Wind Farm**

Construction noise is unlikely to give rise to significant impact. Distances from the turbines to the nearest dwellings outside the site ensure that noise impacts of significance will not arise from the construction or operation of the wind farm.

#### **Corrib Gas Field Development (and Mayo to Galway Pipeline)**

Noise associated with the offshore gas pipeline will be localised noise associated with the vehicles and boats during maintenance and monitoring visits.

The predicted normal operational noise impacts are moderate at noise sensitive receptors (NSR) dwellings less than 1km from the BBGT and negligible further afield.

During operations no appreciable noise or vibration will be generated by the Corrib Pipeline and Mayo Galway Pipelines. Very low noise emissions occur from the operation of the AGI.

The venting of gas from the Mayo to Galway Pipeline during infrequent pigging operations will generate noise, as had been previously identified and assessed in the 2001 Mayo to Galway Pipeline EIS.

Airborne pipeline inspections will be carried out periodically of the Mayo to Galway pipeline and are unlikely to be of sufficient frequency or duration to attract particular attention or cause undue disruption.

### **Cumulative**

During operations, the Corrib Gas Field Development is sufficiently remote from the Oweninny Wind Farm project to preclude cumulative noise impacts.

### **3.1.7 Visual impact**

#### **Oweninny Wind Farm**

The presence of Oweninny Wind Farm will have an impact on the overall landscape and visual character within the landscape basin due to its extent and height. However, considering the large scale of the surrounding generally homogeneous landscape, and the presence of the existing wind farm, the introduction of the new wind farm will not be perceived as being out of context with the overall underlying landscape character.

#### **Corrib Gas Field Development (and Mayo to Galway Pipeline)**

The Landfall Valve Installation (LVI) will be the main component of the Corrib Pipeline that has the potential to cause environmental impact during operation. This will result in a moderate impact for surrounding sensitive receptors.

The site of the BBGT was chosen to take maximum advantage of extensive coniferous plantations, which have provided immediate, significant and effective screening. The inherent screening provided, combined with careful attention to the design, layout and colour treatments applied to component parts of the facility, have ensured that the vast majority of the buildings and operating equipment is not discernible in the landscape

Along the Mayo Galway Pipeline the presence of the AGI approximately 20km away and aerial marker posts will be the only visible evidence of the operational pipeline. The presence of this feature in the landscape was deemed to be of negligible significance.

### **Cumulative**

Visually, the LVI, the BBGT, the AGI and aerial marker posts will be the only long term visible elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline) and cumulatively these elements are expected to result in a moderate impact for surrounding sensitive receptors. During operations, these features are sufficiently remote from the Oweninny Wind Farm project to preclude cumulative visual impacts.

## **3.2 Natural Environment and European Sites**

### **3.2.1 Terrestrial Ecology**

#### **Oweninny Wind Farm**

The Oweninny site supports an important diversity of bird species that is characteristic of western blanket bog, wetland habitats and forest/scrub habitats. The development of the wind farm will result in some changes to the habitats within the site but these changes can be considered as being consistent with the rehabilitation of the site since commercial peat extraction ceased in the early 2000s.

The Oweninny Natura Impact Statement (NIS) concluded that:

“While two SAC sites (Lough Dahybaun and Bellacorick Bog complex) partly overlap with the Oweninny development site, and a third (Bellacorick Iron Flush) is located entirely within but is not part of the development property, there will be no direct impacts by the project on any of these SAC sites. Similarly, the project will not have any direct impacts on the various European sites which lie outside of the development site. It can be concluded that the proposed project will not result in any loss of habitat or physical disturbance to habitats in any of the identified European sites.”

“Most bird species, including wintering Hen Harriers, will not be affected by the project. Some bird collisions may occur but species particularly prone to collision, especially swans and geese, occur within the site area only on an occasional basis and even then only in small numbers. With regard to SPAs within 15 km of the Oweninny site, the NIS concluded, “with a high degree of certainty” that “activities associated with the proposed project either during the construction and/or operation phases could not have any impacts, direct or indirect, on the conservation objectives of the SPAs”.

Protected non-avian fauna species, such as otters, bats and the common frog, are unlikely to be affected by the project.

#### **Corrib Gas Field Development (and Mayo to Galway Pipeline)**

The remaining impacts on Flora and Fauna are deemed to be negligible or minor in terms of effects on species and habitats, with likely slight positive impacts as a result of biodiversity enhancement and habitat creation in the long term in relation to the interaction of the Corrib Pipeline, Corrib Gas Field Development and the Mayo to Galway Pipeline. Habitat creation and enhancement include the provision of created wetlands and the planting of deciduous woodland

along the Corrib Pipeline wayleave and at the BBGT. Tree planting at the AGIs along the Mayo to Galway Pipeline has also provided a slight net gain in terms of biodiversity, with some 678m<sup>2</sup> having been planted at Moneynierin, the nearest AGI to the BBGT.

### **Cumulative**

The cumulative impacts on flora and fauna from the interaction of the Corrib Field Development (and Mayo to Galway Pipeline) and the Oweninny Wind Farm will be negligible and will not have a likely significant effect on the environment (including any European site). Any minor temporary habitat loss associated with the development of the Oweninny Wind Farm will be offset by the extensive habitat restoration plans associated with that project, together with tree planting at the AGIs along the Mayo to Galway Pipeline; and the habitat restoration and creation associated with the Corrib Gas Field Development – both implemented and planned.

The cumulative impacts and interaction on flora and fauna will therefore be negligible and will not have a likely significant effect on the environment (including any European site).

### **3.2.2 Freshwater Ecology**

There are no cumulative freshwater ecology impacts or interactions associated with the presence of the Corrib Pipeline, Oweninny Wind Farm, and the Corrib Gas Field Development (and Mayo to Galway Pipeline).

### **3.2.3 Marine Ecology**

There are no cumulative marine ecology impacts or interactions associated with the presence of the Corrib Pipeline, the Oweninny Wind Farm and the operation of the Corrib Gas Field Development (and Mayo to Galway Pipeline).

### **3.2.4 Soils and Geology**

#### **Oweninny Wind Farm**

The principal risks associated with soil and geology at the proposed wind farm site are associated with the management of soils, particularly with regard to the generation of silty waters, and the loss of construction and operational materials (concrete, fuel, oil and lubricants) to water. It is expected that these risks can be fully mitigated through the adoption of construction and operational good practice.

It is therefore not expected that the project will give rise to any significant residual impacts with regard to soil and geology.

#### **Corrib Gas Field Development (and Mayo to Galway Pipeline)**

There will be an imperceptible impact on soils and geology associated with the operation of the Corrib Gas Field Development (and Mayo to Galway Pipeline).

### **Cumulative**

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 during operation of Corrib Gas Field Development with the construction and operation of the Oweninny Wind Farm is considered to be imperceptible.

### **3.2.5 Hydrology and Hydrogeology**

#### **Oweninny Wind Farm**

The hydrology and sediment control system on the wind farm development is designed to be sustainable and integrating with the bog rehabilitation plan. The drainage regime at the site is

already a modified one, with its natural hydrology having been amended by peat extraction and by commercial forests.

Pollution control and other preventative measures have been incorporated into the project design to minimise adverse impacts to water quality

#### [Corrib Gas Field Development \(and Mayo to Galway Pipeline\)](#)

The drainage systems at the BBGT have been designed to ensure that rainwater, which could become contaminated with hydrocarbons, is segregated, treated and discharged to the water outfall 12.7km offshore. Only clean rainwater (stormwater) and groundwater are discharged via the settlement ponds to local watercourses. Treated produced water will be discharged 65km offshore, from the BBGT.

There are no operational emissions from the Mayo to Galway pipeline. Clean rainfall runoff from the AGI will flow to local drainage ditches or to ground.

There are no operational effects on hydrology or hydrogeology from the point of view of quantity or availability of supply anticipated in relation to the operation of the Corrib Pipeline or the Mayo to Galway Pipeline. There is potential for groundwater to reach the floor level of the LVI during extreme conditions (inclement weather, high ground water levels and tides) however this will not have a negative impact on the local hydrology or hydrogeology. This is because the LVI compound is located at the bottom of the dished area specific provisions are included in the design to manage surface water drainage and changes in the water table level. A drainage system is installed around the boundary of the compound area and this drains to a designated surface water drain with an outfall through the cliff.

#### Cumulative

These developments have the potential to result in minor temporary and short duration localised impacts on hydrology and hydrogeology. However, as outlined in the EIS, risks can be fully mitigated through the adoption of construction and operational good practice. Therefore the cumulative impact is considered to be imperceptible.

### **3.2.6 Cultural Heritage**

#### [Oweninny Wind Farm](#)

It is not envisaged that any impacts will occur with respect to archaeology and cultural heritage as a result of the wind farm project proceeding.

#### [Corrib Gas Field Development \(and Mayo to Galway Pipeline\)](#)

There are no operational effects anticipated in relation to cultural heritage associated with the operation of the Corrib Gas Field Development (and Mayo to Galway Pipeline).

#### Cumulative

The pooled knowledge gained from investigation of each of the development sites will enhance the understanding of the local area. There is not expected to be any cumulative impact.

### **3.2.7 Assessment of Total Greenhouse Gases**

#### [Oweninny Wind Farm](#)

There will be some CO<sub>2</sub> emissions associated with the turbine life (manufacture, construction and decommissioning), and the disruption of the natural on-site natural sink resources. However, the wind farm development overall will contribute to reducing green house gas emissions.

It is estimated that Oweninny Wind Farm will produce enough electricity per annum to displace over half million tonnes of carbon dioxide and without leading to additional emissions of sulphur dioxide (SO<sub>2</sub>) or nitrogen oxides (NO<sub>x</sub>). It is also acknowledged that wind power, along with energy efficiency and fuel switching will play the major role in reducing emissions in the power sector in the next 10- 20 years.

#### [Corrib Gas Field Development \(and Mayo to Galway Pipeline\)](#)

There are no operational effects anticipated in relation to the Corrib Pipeline except for localised emissions associated with the vehicles and boats during maintenance and monitoring visits.

The conservatively predicted total greenhouse gas emission from the BBGT's operation in 2016 (the year of maximum predicted emissions) is approximately 0.05 million tCO<sub>2</sub>e.

Operation of the Mayo to Galway Pipeline will have no significant direct impact on climate. Any release of natural gas during operations and maintenance, emitted at AGI will be extremely small, and will have a negligible impact.

#### [Cumulative](#)

Whilst the emissions from the BBGT and operation of the Mayo Galway Pipeline will produce greenhouse gas emissions, these will be offset with the operation of the Oweninny Wind Farm, though it is not possible to quantify the cumulative impact from the proposed developments as a whole.

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## **4 CONFIRMATION UNDER THE WILDLIFE ACTS**

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There have been no known new nature reserves or refuges or Natural Heritage Area's (NHA's) designated, nor any new notified proposed Natural Heritage Area (pNHA) and Flora and Fauna Protection Orders made under the Wildlife Acts since the last assessments were carried out in the documentation previously submitted as part of the 2011 Section 40 consent.

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## 5 CONCLUSIONS

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This Cumulative Impact Update Report considers and assesses the potential contribution of cumulative impacts arising from the operation of the Corrib Pipeline with the other elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline), with other proposed plans or projects in the vicinity, further to those which were fully considered and assessed in the application documentation submitted in respect of the Corrib Pipeline (2011 Section 40 Consent). In effect, it has considered and assessed the potential cumulative impacts of relevant proposed plans and projects arising since the 2011 Section 40 Consent.

The assessment of the cumulative impacts on the environment indicates that the overlap between the following developments has the potential to result in cumulative impacts:

- Operation of the Corrib Pipeline,
- Operation of other elements of the Corrib Gas Field Development,
- Operation of the Mayo Galway Pipeline and associated infrastructure, and
- The likely construction and operation of the Oweninny Wind Farm.

In terms of cumulative impact on the human environment, there will be a positive cumulative impact on local employment, tourism and recreation. There is a potential for a slight local cumulative traffic impact during the construction of the wind farm with the operation of the Bellanaboy Bridge Gas Terminal, but this impact will be reduced with the implementation of traffic control measures as per site requirements. No significant cumulative impacts are anticipated associated with air quality, noise and vibration, whilst visually, the Corrib Gas Field Development (and Mayo to Galway Pipeline) are sufficiently remote from the Oweninny Wind Farm project to preclude cumulative visual impacts.

In terms of cumulative impact on the natural environment the nature of the predicted impacts, together with the spatial and temporal separation of other projects, and the activities associated with the operation of the Corrib Pipeline, including the LVI, are such that there is no potential for any cumulative impact on European sites. It can be concluded that the operation of the Corrib Pipeline either individually or when taken in combination with other elements of the Corrib Development (and Mayo to Galway Pipeline), and with other plans or projects in the wider locality, is not likely to have a significant effect on the European sites under consideration.

The above updated assessment of cumulative impacts therefore supports the conclusions of the previous assessments that the impacts arising from the operation of the Corrib Pipeline with the other elements of the Corrib Gas Field Development (and Mayo to Galway Pipeline) and the Oweninny Wind Farm, will not give rise to any significant cumulative impacts on the human and natural environment.