16 MAJOR ACCIDENTS AND NATURAL DISASTERS

16.1 INTRODUCTION

This section of the Environmental Impact Assessment Report (EIAR) describes the likely significant effects on the environment arising from the vulnerability of the Project, as detailed in **Chapter 2: Project Description**, to risks of major accidents and/or natural disasters. It has been completed in accordance with the guidance set out by the Environmental Protection Agency (EPA) in 'Guidelines on Information to be contained in Environmental Impact Statements' (EPA, 2022) and the European Commission in relation to Environmental Impact Assessment of Projects (Directive 2011/92/EU, as amended by 2014/52/EU), namely 'Guidance on the preparation of the Environmental Impact Assessment Report'.

The assessment of the vulnerability of the Project to major accidents and natural disasters is carried out in compliance with the EIA Directive as amended which states the need to assess:
"the expected significant adverse effects of the Project on the environment deriving from the vulnerability of the Project to risks of major accidents and/or natural disasters which are relevant to the Project concerned."

The objective of this assessment is to ensure that appropriate precautionary actions are taken for those projects.
"because of their vulnerability to major accidents and/or natural disasters, are likely to have significant adverse effects on the environment".

Based on the requirements of the EIA Directive, this chapter seeks to determine:

- The relevant major accidents and/or natural disasters, if any, that the Project could be vulnerable to;
- The potential for these major accidents and/or natural disasters to result in likely significant adverse environmental effect(s), and
- The measures that are in place, or need to be in place, to prevent or mitigate the likely significant adverse effects of such events on the environment.

16.1.1 Statement of Authority

This chapter has been prepared by Mr Evan Concar with the assistance of Ms. Breena Coyle and Ms. Angelika Thiel of Jennings O'Donovan & Partners Limited.

16.2 ASSESSMENT METHODOLOGY

The following sources of information and literature pertinent to the area were used in the preparation of this section:

- Census of Ireland;
- Regional Spatial and Economic Strategy (RSES) 2020-2032, published by the Southern Regional Assembly on 31 January 2020;
- Cork County Development Plan 2022 – 2028;
- Cork County Council Website, and
- Fáilte Ireland.

Major accidents or natural disasters are hazards which have the potential to affect the Project and consequently have potential impacts on the environment. These include accidents during construction and operation caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, land, soil (peat stability), water, air and climate and material assets, cultural heritage and the landscape.

16.2.1 Legislative Context

16.2.1.1 Legislation

An assessment of the following key elements was undertaken in accordance with the EIA Directive as amended:

- The vulnerability of the Project to potential accidents and disasters
- The Project's potential to cause major accidents or disasters which pose a risk to the environment

The information relevant to major accidents and/or disasters to be included in the EIAR is set out in paragraph 8 of Annex IV of the EIA Directive as follows:

"(8) A description of the expected significant adverse effects of the Project on the environment deriving from the vulnerability of the Project to risks of major accidents and/or disasters which are relevant to the Project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the

significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies".

16.2.1.2 Guidance Documents

The following guidance documents have been consulted in the preparation of this section:

- European Commission (2017) Environmental Impact Assessment of Projects – Guidance on the preparation of Environmental Impact Assessment Reports;
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- Department of Environment, Heritage and Local Government (2010) A Guide to Risk Assessment in Major Emergency Management;
- Environmental Protect Agency (2014) Guidance on Assessing and Costing Environmental Liabilities;
- Department of Defence (2023) A National Risk Assessment for Ireland, and
- Cork County Council (2021) Major Emergency Plan.

16.2.2 Categorisation of the Baseline Environment

A desk-study has been completed to establish the Baseline environment for which the proposed risk assessment is being carried out. This will influence both the likelihood and the impact of a major accident or natural disaster. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations.

Further detail on the Baseline environment is provided in **Section 16.3**.

16.2.3 Impact Assessment Methodology

16.2.3.1 Introduction

This assessment is focused on an understanding that the Project will be designed, built and operated in line with the methodologies and measures prescribed in this EIAR. Therefore, the overall vulnerability of the Project to risks of major accidents and natural disasters is considered low.

An assessment of potential accidents and disaster scenarios such as pollution incidents to ground and watercourses as well as assessment of flooding events and peat instability are described in detail in the relevant EIAR assessment chapters (Refer to **Chapters 7: Soils and Geology** and **Chapter 8: Hydrology and Hydrogeology** for further details).

16.2.3.2 Site-Specific Risk Assessment Methodology

A site-specific risk assessment identifies and quantifies risks focusing on unplanned, but possible and plausible events occurring during the construction, operation and Decommissioning of the Proposed Development. The approach to identifying and quantifying risks associated with the Project by means of a site-specific risk assessment is derived from the EPA 'Guidance on Assessing and Costing Environmental Liabilities' document[1]. The following steps were taken as part of the Site-specific risk assessment:

- Risk identification;
- Risk classification;
- Likelihood and consequence; and
- Risk evaluation.

16.2.3.2.1 Risk Identification

Risks have been reviewed through the identification of reasonably foreseeable risks in consultation with relevant contributors to this EIAR (Please see **Chapter 1: Introduction** for the contributors). The identification of risks has focused on non-standard but plausible incidents that could occur at or as a result of the Project during construction, operation and Decommissioning phases.

In accordance with the European Commission EIAR Guidance, risks are identified in respect of the projects:

1. Potential to cause accidents and/or disasters, and
2. Vulnerability to potential disaster/accident.

16.2.3.2.2 Risk Classification

Classification of Likelihood

After identifying the potential risks, the likelihood of occurrence of each risk has been assessed. An analysis of safety procedures and proposed environmental controls was considered when estimating likelihood of identified potential risks occurring. **Table 16.1** defines the likelihood ratings that have been applied.

The approach adopted has assumed a 'risk likelihood' where one or more aspects of the likelihood description are met.

[1] EPA (2014) Guidance on assessing and costing environmental liabilities. [Accessed online 05/09/2022] Available at https://www.epa.ie/publications/compliance--enforcement/licensees/reporting/financial-provisions/EPA_OEE-Guidance-and-Assessing-WEB.pdf

Table 16.1: Classification of Likelihood (Source: DoEHLG, 2010)

Ranking	Likelihood	Description
1	Extremely Unlikely	May occur only in exceptional circumstances; once every 500 or more years.
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communities; and / or little opportunity, reason or means to occur; may occur once every 100-500 years.
3	Unlikely	May occur at some time; and /or few, infrequent, random recorded incidents or little anecdotal evidence; some incidents in associated or comparable organisation's worldwide; some opportunity, reason or means to occur; may occur once per 10-100 years.
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years.
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence. Will probably occur more than once a year.

Classification of Consequence

The consequence rating assigned to each risk has assumed that all proposed mitigation measures and/or safety procedures have failed to prevent the major accident and/or disaster. Furthermore, the Cork County Council Major Emergency Plan (2021), if implemented as intended, would work to reduce the consequence of any major accident or disaster. The consequence of the impact if the event occurs has been assigned as described in **Table 16.2**.

The consequence of a risk to/from the Project has been determined where one or more aspects of the consequence description are met, i.e., risks that have no consequence have been excluded from the assessment.

Table 16.2: Classification of Impact (Source: DoEHLG, 2010)

Ranking	Likelihood	Impact	Description
1	Minor	Life, Health, Welfare	Small number of people affected; no fatalities and small number of minor injuries with first aid treatment.
		Environment	No contamination, localised effects
		Infrastructure	<€0.5M
		Social	Minor localised disruption to community services or infrastructure (<6 hours).
2	Limited	Life, Health, Welfare	Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6-24 hours. Personal support satisfied through local arrangements.
		Environment	Simple contamination, localised effects of short duration
		Infrastructure	€0.5-3M
		Social	Normal community functioning with some inconvenience
3	Serious	Life, Health, Welfare	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation. Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated. External resources required for personal support.
		Environment	Simple contamination, widespread effects or extended duration

Ranking	Likelihood	Impact	Description
		Infrastructure	€3-10M
		Social	Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated
		Environment	Heavy contamination, localised effects or extended duration
		Infrastructure	€10-25M
		Social	Community functioning poorly, minimal services available
5	Catastrophic	Life, Health, Welfare	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated.
		Environment	Very heavy contamination, widespread effects of extended duration.
		Infrastructure	>€25M
		Social	Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.

Risk Evaluation

Once classified, the likelihood and consequence ratings have been multiplied to establish a 'risk score' to support the evaluation of risks by means of a risk matrix.

The risk matrix sourced from the DoEHLG Guide to Risk Assessment in Major Emergency Management (and as outlined in **Table 16.3**) indicates the critical nature of each risk. This risk matrix has therefore been applied to evaluate each of the risks associated with the Project. The risk matrix is colour coded to provide a broad indication of the critical nature of each risk:

- The red zone represents 'high risk scenarios';

- The amber zone represents 'medium risk scenarios', and
- The green zone represents 'low risk scenarios.

Table 16.3: Classification of Impact (Source: DoEHLG, 2010)

		Consequence Rating				
		1.Minor	2.Limited	3. Serious	4.Very Serious	5.Catastrophic
Likelihood Rating	5.Very Likely					
	4. Likely					
	3. Unlikely					
	2. Very Unlikely					
	1. Extremely Unlikely					

16.3 PROPOSED DEVELOPMENT HAZARD ANALYSIS

Under certain specific circumstances Regional Level Major Emergencies may be declared and the Plan for Regional Level Co-ordination activated. This will provide for mutual aid, support and co-ordination facilities to be activated in a region, the boundaries of which are determined to suit the exigencies of the particular emergency. There are eight regions throughout the country of Ireland that have been created for Major Emergency purposes.

The Health Service Executive (HSE) Emergency Management: Emergency Plans outline several hazard categories which may have the potential to lead to a major emergency. The hazard categories include Natural, Transportation, Technological and Civil. The hazard categories, types and subtypes, and their relevance to the Project, are listed below in **Table 16.4**.

As of July 2025, there is no Emergency Plan publicly available for Area 4 (Cork, Kerry). **Table 16.4** below was modelled on available Emergency Plans namely Area 1 (Donegal, Sligo, Leitrim, Cavan, and Monaghan) and Area 2 (Galway, Mayo, and Roscommon).

Table 16.4: HSE Emergency Plan hazard types (HSE, 2024)

Category	Type	Subtype	Relevance to the Project
Natural Hazards			
Meteorological	Storm / Gale Both coastal and inland areas can be affected by high winds	Both coastal and inland areas can be affected by high winds	Poor driving conditions Loss of infrastructure Flooding Falling Trees
	Heavy Snow	Blizzards- 'Poor visibility	Poor Driving conditions
	Severe Cold / Frost extremes of Temperature	Icy Roads/Impassable Roads Hypothermia Freezing of Supply Network	Poor Driving Conditions Public Health Risk Lack of Road Grit
	Thunder & Lightening Dense/ Persistent Fog Heat Wave /Drought	Road Traffic collisions	Loss of Infrastructure Poor driving conditions Public Health Risk Water Shortage
Hydrological	Flooding	Coastal / Inland	Potential for flooding via on-site rivers
	Heavy Rain		May lead to flooding in Low Lying areas or areas with poor drainage
Geological	Landslide		Peat Instability
	Forest / Wilderness fire - Air Pollution		Some of the area surrounding the Site is forested
Transportation Hazards			
Aviation	Aircraft Collision /Loss	Mid Air and Land	Not Applicable
Road	Multiple Road Traffic Collision		Public Roads via which construction staff and materials access the Site.
	Hazmat		Fuel Transport to/from site
	Bridge		Not Applicable
Water	Inland Water ways	Pleasure Craft/Cruises Pollution from above	Not Applicable

Category	Type	Subtype	Relevance to the Project
	Coastal	Car Ferry/ passenger Ferries	Not Applicable
Technological Hazards			
Industrial Accidents	Explosions		Damage to Infrastructure Personal Injuries/ fatalities
	Petrochemical Fires		Personal Injuries, severe burns/ fatalities Air Pollution
	Industrial Fires	LPG Tank Fire	Not Applicable
	Gas Emission		Not Applicable
	Fluid/ Fuel Emission		Refuelling on site
Explosions	Domestic	Natural Gas explosion	Not Applicable
	Bomb		Not Applicable
	LPG		Not Applicable
	Pipeline		Not Applicable
Fires			Air Pollution
Building Collapse			Substation Building to be considered
Hazardous substance		Accident at site	Not Applicable
		Transportation accident	Hazmat on roads
		Weapons	Not Applicable
	Biological	Leak/Weapons	Not Applicable
	Radiological	"Dirty Bomb"	Not Applicable
		Industrial Accident	Damage to Infrastructure Personal Injuries/ fatalities
		Health facilities	Not Applicable
Pollution/ Contamination	Air/Water Pollution		Fire Sediment-laden Water Run Off Fuel/hydrocarbon spill/leak
Civil Hazards			
Major Crowd Safety	(Movement, crushing etc.)	Pop Concerts Sports Events Fireworks displays Air shows	Not Applicable
Loss of	Energy and Power	Electricity	Connection to national grid

Category	Type	Subtype	Relevance to the Project
Critical Infrastructure	Supply		
		Natural Gas	Not Applicable
		Fuel Oil	Not Applicable
		Communications	Telecom operators, mobile phone networks
Food Situation Crisis		Food Contamination Drought	Not Applicable
Water Supply		Shortage/ Contamination Freezing /Flooding	Not Applicable
Epidemics and pandemic		Communicable diseases	Not Applicable
Animal Disease		Foot & Mouth Avian Influenza	Not Applicable
Terrorism	Bombs	Car-bombs	Not Applicable
		Bombs in buildings	Not Applicable
		Fire-bombing	Not Applicable
	CBRNE		Not Applicable
	Disruption	Bomb scares	Not Applicable

The risks which are most relevant to this assessment are described in the sections that follow.

16.3.1 Meteorological and Climate Change

Meteorology

Ireland has a temperate, oceanic climate, resulting in mild winters and cool summers. The dominant influence on Ireland's climate is the Atlantic Ocean. Consequently, Ireland does not suffer from the extremes of temperature experienced by many other countries at similar latitude. The hills and mountains, many of which are near the coasts, provide shelter from strong winds and from the direct oceanic influence.

The Met Éireann weather station at Cork Airport is the nearest weather and climate monitoring station to the Project that has meteorological data recorded for the 30- year period from 1995 to 2024. The monitoring station is located approximately 57 kilometres north-east of the Project. Meteorological data recorded at Cork Airport over the 30-year period from 1995 - 2024 is shown in **Chapter 9: Air and Climate**. The wettest months are

October and December, June is usually the driest. July is the warmest month with a mean daily temperature of 15.3° Celsius(C) and January is the coldest with a mean air temperature of 5.8°C. The average annual temperature is 10.1°C.

The works programme for the construction stage of the Project will take account of weather forecasts and work will be suspended in the case of extreme weather events.

The following forecasting and weather warning systems are available and will be used on a daily basis at the Site to direct proposed construction activities:

- General Forecasts: Available on a national, regional and county level from the Met Eireann website (www.met.ie/forecasts). These provide general information on weather patterns including rainfall, wind speed and direction but do not provide any quantitative rainfall estimates.
- Weather Warning or Advisories: Met Éireann's main suite of warnings are issued by the duty forecaster between 10am and midday and are updated as necessary as new information becomes available. In general, warnings will not be issued more than 60-hours ahead of the expected adverse weather but advisories on potential hazards are issued up to a week in advance. The three warning categories are:
    - Yellow: Not unusual weather. Localised danger.
    - Orange: Infrequent. Dangerous/disruptive.
    - Red: Rare. Extremely dangerous/destructive.
- MeteoAlarm: Alerts to the possible occurrence of severe weather for the next 2 days. Less useful than general forecasts as only available on a provincial scale.
- 3-hour Rainfall Maps: Forecast quantitative rainfall amounts for the next 3 hours but does not account for possible heavy localised events.
- Rainfall Radar Images: Images covering the entire country are freely available from the Met Éireann website (www.met.ie/latest/rainfall_radar.asp). The images are a composite of radar data from Shannon and Dublin airports and give a picture of current rainfall extent and intensity. Images show a quantitative measure of recent rainfall. A 3-hour record is given and is updated every 15 minutes. Radar images are not predictive.
- Consultancy Service: Met Éireann provide a 24-hour telephone consultancy service. The forecaster will provide interpretation of weather data and give the best available forecast for the area of interest.

Climate Change

Climate change means a significant change in the measures of climate, such as temperature, rainfall, or wind, lasting for an extended period – decades or longer. Earth's climate has changed naturally many times during the planet's existence. However, current human activities are significantly contributing to climate change through greenhouse gas emissions. The global average temperatures have now increased by more than 1°C since pre-industrial times.

Current projections indicate that continued emissions of greenhouse gases, including the burning of fossil fuel to produce electricity, will cause further warming and changes to our climate. Climate is predicted to have indirect and direct impacts on Ireland including:

- Rising sea-levels threatening habitable land and particularly coastal infrastructure;
- Extreme weather, including more intense storms and rainfall affecting our land, coastline and seas;
- Further pressure on our water resources and food production systems with associated impacts on fluvial and coastal ecosystems;
- Increased chance and scale of river and coastal flooding;
- Greater political and security instability;
- Displacement of population and climate refugees;
- Heightened risk of the arrival of new pests and diseases;
- Poorer water quality, and
- Changes in the distribution and time of lifecycle events of plant and animal species on land and in the oceans[2]

If the Proposed Development was not to proceed, greenhouse gas emissions, e.g., carbon dioxide, carbon monoxide and nitrogen oxides associated with construction and Decommissioning works would not arise. However, the greenhouse gas savings that would arise from the operation of the Proposed Development would also be lost leading to a long-term, moderate, negative impact.

16.3.2 Hydrological

As detailed in **Chapter 8: Hydrology and Hydrogeology, Section 8.2.5 Flood Risk Assessment**, the Site has never flooded, and based on several sources, it is not identified as being in a flood zone extent. Having confirmed that the Project site is not within the

[2] https://www.gov.ie/pdf/?file=https://assets.gov.ie/293730/00ee6688-fc2a-4897-8077-de73280ec7fc.pdf#page=null [Accessed 04/07/2024]

potential flood extents and that the completion of the construction works will not change the current hydrology of the Project site, the assessment did not proceed to Stage 2.

Ordnance Survey of Ireland mapping shows areas 'liable to flooding'. The historic 6-inch mapping was inspected. The Site and immediate surrounds are not identified as being at risk of flooding.

Similarly, the TDR upgrade works can be carried out with negligible increases in runoff characterises from the local road. The Grid Connection will be mostly OHL with six sections of underground cabling. The OHL section will cross the Mealagh River and flood zone, but the poles will not change the flood risk. The underground sections will be completed with like-for-like surface finishes, so it is concluded that the Grid Connection can be constructed with little / no changes to runoff characteristics.

A number of past flood events datasets were reviewed. No previous fluvial and pluvial flooding incidents and past flood event are shown to occur at the Site.

As the Project site is underlain by sandstone, the Geological Survey of Ireland's (GSI) groundwater flooding probability maps, which only cover areas with limestone bedrock, don't show groundwater flooding at the Site.

The Catchment-based Flood Risk Assessment & Management (CFRAM) identified 300 Areas for Further Assessment (AFAs); the Site is not included in this mapping. The closest CFRAM mapping is located in Lahadane, Bantry on the lower reaches of the Mealagh River and at Skibbereen on the lower reaches of the Ilen River. The assessment in **Chapter 8: Hydrology and Hydrogeology** also references the National Indicative Fluvial Mapping (NIFM). The NIFM flood mapping extends from Mealagh Bridge downstream to Lahadane (where CFRAM mapping is available).

Volume 6 of the County Development Plan 2022 (mapping portal) provides information on areas which are liable to flooding. Based on the information gained through the flood identification process, no parts of the Site are mapped within any fluvial flood zones (Flood Zones A - B). The Grid Connection route passes over the flood zone of the Mealagh River, but using OHL, which will have no significant effect on flooding.

All proposed works (except for watercourse crossings) are located at least 65 m from a watercourse.

As the associated drainage - some of which is permeant for the lifetime of the Project, will be attenuated for greenfield run-off, the Project will not increase the risk of flooding elsewhere in the catchment. Based on this information, the Project complies with the appropriate policy guidelines for the area and is at no risk of flooding. A Surface Water Management Plan has been prepared as part of **Appendix 2.1: Construction Environmental Management Plan**.

The Project will use the latest best practice guidance to ensure that flood risk within or downstream of the Site is not increased as a function of the Project, i.e., a neutral impact at a minimum.

The risk of the Project contributing to downstream flooding is also Negligible, as the long-term plan for the Site is to retain and slow down drainage water prior to release. Robust drainage measures on the Site will include swales, silt traps, check dams, settlement ponds and buffered outfalls. Please refer to the **Chapter 8** and **Appendix 2.1** of this EIAR for further details.

16.3.3 Peat Stability

Minerex Environmental Limited (MEL) were commissioned by JOD in May 2010 to undertake a soil / peat stability assessment for the original wind farm environmental impact assessment. This assessment included peat depth probing, gouge coring, shear vane testing and slope measurements. In its assessment, MEL noted that there were no visual indicators of significant slope instability at the Site. The assessment concluded that there was low risk of peat instability during the construction phase and so, adopting the precautionary principle, site-specific mitigation measures were proposed. Mitigation by design (i.e., the avoidance of areas with steep gradient and deeper peat) was used to minimise risk of peat landslide. The construction of the wind farm roads and hardstands was largely completed in 2017/2018 with no incidents of peat/soil/rock instability.

A Geophysical Investigation was carried out on site in 2016 by Priority Geotechnical Ltd.

In 2024 Keohane Geological & Environmental Consultancy (KGEC) was commissioned by JOD to assess the potential impacts of the Proposed Development on the land, soils and the geological environment. No landslide risk issues were noted during the walkovers of the Site between July and March 2025.

The ground conditions of the Site consist of a thin peat cover on steep slopes with slightly thicker peat deposits on shallower slopes. The Wind Farm Planning Guidelines (Appendix 4 – Best Practice for Wind Energy Development in Peatlands) requires that a geotechnical and landslide risk assessment '*is be carried out where depth of peat is in excess of 50cm*'. As the Site is largely developed and no works are required in areas with peat, a peat landslide risk assessment is therefore not required.

Please see **Chapter 7: Soils and Geology** for more details.

16.3.4 Traffic

The Project will utilise the existing road network during the construction phase. Construction related traffic will originate from the delivery of materials to site, removal of surplus excavated material from site and transport of employees to, from and throughout the Site. The localised traffic disruptions will be mitigated through the use of industry standard traffic management measures. Please see **Chapter 11: Traffic and Transport** and **Appendix 11.1** for details.

A Traffic Management Plan (**Appendix 11.1**) is provided specifying details relating to traffic management. Prior to the commencement of the construction phase of the Project, a detailed Traffic Management Plan will be prepared by the Contractor for agreement with the relevant local authorities and An Garda Síochána. The Traffic Management Plan includes recommendations for the following:

- Traffic Management Co-ordinator;
- Delivery Programme;
- Provision of information to locals;
- A Pre and Post Construction Condition Survey;
- Liaison with the relevant local authority;
- Implementation of temporary alterations to the road network at critical locations;
- Identification of delivery routes;
- Delivery times of large turbine components;
- Travel plan for construction workers;
- Additional measures, and
- Re-instatement works.

Please see **Chapter 11: Traffic and Transportation** and Traffic Management Plan (**Appendix 11.1**) for further details.

16.3.5 Industrial Accident

The Project is not connected to or in the vicinity of any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations (SEVESO sites), therefore no significant effects associated with major industrial accidents involving dangerous substances are anticipated. Gas explosions, petrochemical fires and fires from fuel emissions, leakages and spillages could occur causing personal injury, structural damage and forest fires.

16.3.6 Loss of Critical Infrastructure

EirGrid operates and develops Ireland's electricity grid. This includes interconnecting to neighbouring grids and running the wholesale electricity market. The grid safely brings power from generators such as wind farms to the ESB network that supplies homes and business in Ireland. It also brings power directly to large energy users. There are two types of electricity generation: synchronous generation and non-synchronous generation. Synchronous generation produces the same amount of electricity all the time e.g., fossil fuels. Non-synchronous generation produces varying amounts of electricity depending on the energy available. EirGrid operate the grid from National Control Centres in Dublin and Belfast, matching electricity production to customer demand, switching from synchronous to non- synchronous where required to ensure no power outages. Therefore, any technical fault at the Project would not impact the local or national energy supply.

The Project is anticipated to connect to the existing Ballylickey 110kV Substation.

16.3.7 Contamination

The Project has the potential to cause contamination and pollution of groundwater and surface water from potential release of hydrocarbons, earthworks and excavations on site. A Construction Environment Management Plan (CEMP) (**Appendix 2.1**) has been prepared in conjunction with the Environmental Impact Assessment Report and the Natura Impact Statement which accompanies the planning application for the Project.

Section 3 of the CEMP sets out details of the environmental controls to be implemented on site. The CEMP provides details on site drainage measures, peat stability monitoring measures, waste management and pollution prevention measures for refuelling and managing hazardous materials and cement-based products. The CEMP also sets out the Emergency Response Procedure (**Management Plan 1**) to be adopted in the event of an emergency including contamination, health and safety and environmental protection.

The CEMP provides details on all mitigation and monitoring measures to be actioned prior to construction, during the construction, operation and Decommissioning phase. The CEMP will be subject to ongoing review through regular environmental auditing and site inspections during the construction phase. This will confirm the efficacy and implementation of all mitigation measures and commitments identified in the application documentation. Please see **Chapter 2: Project Description** and **Appendix 2.1 Construction Environmental Management Plan** for further details.

16.3.8 Health and Safety

During construction of the Project, all staff will be made aware of and adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013'. This will encompass the use of all necessary Personal Protective Equipment and adherence to the Site Health and Safety Plan. An Emergency Response Plan (ERP) (**Appendix 2.1**) will be implemented and adhered to on site. The ERP provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection.

16.3.9 Turbine Safety

Turbines pose no threat to the health and safety of the general public. The Department of the Environment, Heritage and Local Government (DoEHLG)'s 'Wind Energy Development Guidelines for Planning Authorities 2006' state that there are no specific safety considerations in relation to the operation of wind turbines. Fencing or other restrictions are not necessary for safety considerations. People or animals can safely walk up to the base of the turbines. The Department of Housing, Planning and Local Government's "Draft Revised Wind Energy Guidelines, December 2019" state

'health and safety issues are generally covered by separate legislation and not by planning legislation however developers of wind energy developments should be aware of their requirements.'

The DoEHLG Guidelines 2006 and the draft revised guidelines 2019 state that there is a very remote possibility of injury to people from flying fragments of ice or from a damaged blade. However, most blades are composite structures with no bolts or separate components and the danger is therefore minimised. The build-up of ice on turbines is unlikely to present problems. The wind turbines will be fitted with anti-vibration sensors,

which will detect any imbalance caused by icing of the blades. The sensors will cause the turbine to wait until the blades have been de-iced prior to beginning operation.

Turbine blades are manufactured of glass reinforced plastic which will prevent any likelihood of an increase in lightning strikes within the Site or the local area. Lightning protection conduits will be integral to the construction of the turbines. Lightning conduction cables, encased in protection conduits, will follow the electrical cable run, from the nacelle to the base of the turbine. The conduction cables will be earthed adjacent to the turbine base. The earthing system will be installed during the construction of the Turbine Foundations.

16.3.10 Fire/Explosion

There is a potential risk of fire/explosion at the Project from malfunctioning equipment in the wind turbine tower and nacelle as well as at the Onsite Substation and Control Building.
A Construction Environment Management Plan (CEMP) (**Appendix 2.1**) has been prepared in conjunction with the EIAR and the NIS which accompanies the planning application for the Project. The CEMP also sets out the Emergency Response Procedure (**Management Plan 1**) to be adopted in the event of an emergency including health and safety, environmental protection and fire.

Please see **Chapter 2: Project Description** and **Appendix 2.1 Construction Environmental Management Plan** for further details.

16.4 RISK ASSESSMENT

This section outlines the possible risks associated with the Project for the construction, operational and Decommissioning phases.

These risks have been assessed in accordance with the relevant classification as outlined in **Table 16.1** and **Table 16.2**.

The consequence rating assigned to each potential risk assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster.

16.4.1 Likely Significant Effects

16.4.1.1 Do-Nothing Scenario

If the Project was not to proceed it would not be able to supply the electricity generated to the national grid. The opportunity to generate renewable energy and electrical supply to the

national grid would be lost. Commercial forestry operations, existing land-use practices and recreational amenities would continue at the Site. Climate change would continue unabated without the development of renewable energy infrastructure in sufficient quantities to facilitate the move to net zero as enshrined in Irish, EU and international law.

16.4.1.2 Assessment of Effects During Construction

A risk register has been developed which contains all potentially relevant risks identified during the construction phase of the Project. Six risks specific to the construction of the Project have been identified and are presented in **Table 16.5**.

Table 16.5: Risk Register - Construction Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
A	**Severe Weather** Storm / Gale Both coastal and inland areas can be affected by high winds; Heavy Snow; Severe Cold / Frost extremes of Temperature; Thunder & Lightning Dense/ Persistent Fog Heat Wave /Drought; Forest / Wilderness fire - Air Pollution Risk to construction activity on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
B	**Flooding** Impacts on access to project elements; potential bridge collapse. High levels of surface water on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds Poor drainage
C	**Peat Stability** Movement of peat within the Site during construction	Mismanagement of excavated material on site Severe weather conditions- storm, flooding
Potential to cause accidents and / or disasters		

Risk ID	Potential Risk	Possible Cause
D	**Traffic Incident** Collisions onsite and offsite with vehicles involved in construction of the Project Bridge collapse	Driver negligence or failure of vehicular operations on site roads. Traffic Management Plan not implemented Bridge collapse
E	**Contamination** Discharge or spillage of fuel, chemical solvents into watercourse or percolated to groundwater	Fuel spillage during delivery to site. Failure of fuel storage tank or tanks in plant and machinery and vehicles. Drainage and seepage water resulting from infrastructure excavation; Stockpiled excavated material providing a point source of exposed sediment; Construction of the Project cable trench resulting in entrainment of sediment from the excavations during construction; and, Erosion of sediment from emplaced site drainage channels.
F	Industrial Accident- Fire, gas explosion	Equipment or infrastructure failure; Electrical problems; and Employee negligence.

16.4.1.3 Assessment of Effect During Operation

Six risks specific to the operation of the Project have been identified and are presented in **Table 16.6**.

Table 16.6: Risk Register – Operational Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
G	**Contamination** Discharge or spillage of fuel, chemical solvents, sewage or wastewater into watercourse or percolated to groundwater	A vehicular incident on the public road involving fuel, wastewater or sewage transportation in the operational phase.
Potential to cause accidents and / or disasters		

Risk ID	Potential Risk	Possible Cause
H	**Industrial Accident – Fire / Gas Explosion**	Equipment or infrastructure failure; Electrical problems; and Employee negligence.
I	**Collapse/ damage to structures**	Earthquakes; and Vehicular collisions due to driver negligence on public roads.
J	**Traffic Incident** Collisions onsite and offsite with vehicles involved in operation of the Project.	Driver negligence or failure of vehicular operations on site roads. Traffic Management not implemented
K	**Industrial Accident Fire/ Gas explosion**	Petrochemical Fires causing personal injury, structural damage and forest fires.
L	**Loss of Critical Infrastructure**	Electrical fault at substation bay

16.4.1.4 Assessment of Effect During Decommissioning

Six risks specific to the Decommissioning of the Project have been identified and are presented in **Table 16.7**.

Table 16.7: Risk Register – Decommissioning Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
M	**Severe Weather** Risk to Decommissioning activity on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
N	**Flooding of site** High levels of surface water on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
Potential to cause accidents and / or disasters		
O	**Traffic Incident** Collisions onsite and offsite with vehicles involved in construction of the Proposed Development	Driver negligence or failure of vehicular operations on site roads. Traffic Management not implemented
P	**Contamination** Discharge or spillage of fuel, chemical solvents into	Fuel spillage during delivery to site.

Risk ID	Potential Risk	Possible Cause
	watercourse or percolated to groundwater	Failure of fuel storage tank or tanks in plant and machinery and vehicles. Drainage and seepage water resulting from infrastructure excavation. Erosion of sediment from emplaced site drainage channels.
Q	**Industrial Accident - Fire/Gas explosion**	Petrochemical Fires causing personal injury, structural damage and forest fires.
R	**Loss of Critical Infrastructure**	Electrical fault at substation bay

These risks have been assessed in accordance with the relevant classification (Refer to **Table 16.1** and **Table 16.2**) and the resulting risk analysis is given in **Table 16.8**.

The risk register is based upon possible risks associated with the Proposed Development. As outlined in **Section 16.3**, the consequence rating assigned to each potential risk assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster.

16.4.1.5 Assessment of Effect - Summary

Table 16.8: Risk Assessment

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
Construction Phase								
A	Severe Weather	Extreme weather-periods of heavy rainfall, taking into account climate change and strong winds	Illness or loss of life; Sedimentation of nearby watercourse Damage to, or depletion of aquatic habitats and species;	3	The risk of severe weather is unlikely when considering the assessment in **Chapter 9: Air and Climate** and weather conditions recorded over the last 30 years within the area.	1	The risk of severe weather conditions during the construction phase will result in a minor consequence in that a small number of people would be affected' should a severe weather occur, with 'no fatalities and a small number of minor injuries with first aid treatment'. No contamination, localised effects.	3
B	Flooding	Extreme weather-periods of heavy rainfall, taking into account climate	Illness or loss of life; Sedimentation of nearby watercourse;	2	The risk of flooding is considered very unlikely when taking into account the	1	The risk of flooding during the construction phase will result in a minor consequence in	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		change and strong winds	Damage to, or depletion of aquatic habitats and species;		Baseline assessment in **Chapter 8: Hydrology and Hydrogeology** and due to no recurring or historic flood incidents being recorded within the Wind Farm site or along the Grid Connection route.		that a small number of people would be affected' should a severe weather occur, with no fatalities and a small number of minor injuries with first aid treatment'. No contamination of environment (e.g., watercourses), localised effects.	
C	Peat Stability	Mismanagement of excavated material on site Extreme weather conditions	Movement of peat within the Project; Sedimentation of nearby watercourse; Damage to, or depletion of aquatic habitats and species;	2	The Proposed Development has been designed to minimise the potential for peat instability and failure. Refer to **Chapter 7: Soils and Geology**	2	The risk of peat instability during the construction phase will result in a limited consequence in that there would be a limited number of people affected' with 'localised effects of short duration.	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							Contamination of environment (e.g., watercourses), localised effects of short duration.	
D	Traffic Incident	Driver negligence or failure of vehicular operations on Site Access Roads. Traffic Management not implemented or not adhered Bridge collapse	Injury or loss of life.	3	A limited number of vehicles will be permitted on the Site as part of the construction phase. As such, it can be determined that there is some 'opportunity, reason or means' for a vehicle collision to occur on site, 'at some time.' An unlikely risk is therefore predicted.	1	A minor consequence is predicted. Having regard to on-site speed limits and vehicular movements, a small number of people would be affected' should a vehicular collision occur, with no fatalities and small number of minor injuries with first aid treatment.'	3
E	Contamination	Fuel spillage during delivery to site.	Damage to, or depletion of aquatic habitats and species	2	As outlined in **Chapter 2: Project Description** and the **Appendix 2.1 Construction**	2	The risk of a fuel spillage or impact on surround drainage during the construction phase will	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		Failure of fuel storage tank or tanks in plant and machinery and vehicles. Drainage and seepage water resulting from infrastructure excavation; Stockpiled excavated material providing a point source of exposed sediment; Construction of the Project resulting in entrainment of sediment from the	Release of suspended solids to surface watercourses and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies		**Environmental Management Plan**, fuel will be stored on-site but in a bunded area to ensure containment and prevent spillages of fuel. No fuels, chemicals or solvents will be stored outside of the confines of the Site. Setback distances from sensitive hydrological features means that adequate room is maintained for the proposed drainage mitigation measures as detailed in **Chapter 8: Hydrology and Hydrogeology.**		result in a limited consequence in that there would be a limited number of people affected' with 'localised effects of short duration through the use of bunded containment areas and proposed drainage mitigation measures during construction. Contamination of environment (e.g., watercourses), localised effects of short duration.	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		excavations during construction; and, Erosion of sediment from emplaced site drainage channels						
F	Industrial Accident - Fire/Gas explosion	Equipment or infrastructure failure; Fuel spillage/storage Electrical problems; and Employee negligence	Illness or loss of life; Damage to, or depletion of habitats and species; and Impacts on ambient air quality.	2	As outlined in **Chapter 2 Project Description** and **Appendix 2.1: Construction Environmental Management Plan**, fuel will not be stored on-site post construction, therefore fuel is not considered to be a significant fire risk. There are no Gas Networks within the vicinity of the Project.	2	Should a fire/explosion occur at the Site, it will be of a limited consequence in that there would be a limited number of people affected' with localised effects of short duration due to the nature of the Project and the lack of infrastructure or fuel storage during operation that would result in any such incident. There will be normal community functioning in the area	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					Therefore, there is low risk of explosion. In accordance with Chapter 19 of the Safety, Health and Welfare at Work Act 2005 (the 2005 Act), the Project will be subject to a fire safety risk assessment which would assist in the confirmation of any major risks of fire on site e.g., wind turbines, substation, vandalism.		with some inconvenience. Simple contamination of environment (e.g., watercourses), localised effects of short duration.	
Operational Phase								
G	Contamination	A vehicular incident, refuelling incident, wastewater or sewage	Damage to, or depletion of aquatic habitats and species.	2	As outlined in **Chapter 2: Project Description** and **Appendix 2.1 Construction Environmental**	2	The risk of a fuel spillage or impact on surrounding drainage during the operational stage will result in a limited	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		transportation in the operational phase.	Release of suspended solids to surface watercourses could result in an increase in the suspended sediment load. Increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies		**Management Plan**, fuel will be stored on-site but in a bunded area to ensure containment and prevent spillages of fuel. No fuels, chemicals or solvents will be stored outside of the confines of the Site. Setback distances from sensitive hydrological features means that adequate room is maintained for the proposed drainage measures as detailed in **Chapter 8: Hydrology and Hydrogeology**.		consequence in that there would be a limited number of people affected with localised effects of short duration through the use of bunded containment areas during operation. Simple contamination of environment (e.g., watercourses), localised effects of short duration.	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
H	Industrial Accident - Fire/Gas explosion	Equipment or infrastructure failure; Fuel spillage/storage Electrical problems; and Employee negligence	Illness or loss of life; Damage to, or depletion of habitats and species; and Impacts on ambient air quality.	2	As outlined in **Chapter 2: Project Description**, fuel will not be stored on-site post construction therefore fuel is not considered to be a significant fire risk. Gas will not be used onsite; therefore, it is not considered a fire/explosion risk. In accordance with Chapter 19 of the Safety, Health and Welfare at Work Act 2005 (the 2005 Act), the Project will be subject to a fire safety risk assessment which would assist in the	2	Should a fire/explosion occur at the Site, it will be of limited consequence in that there would be a limited number of people affected with localised effects of short duration due to the nature of the Project and the lack of infrastructure or fuel storage during operation that would result in any such incident. There will be normal community functioning in the area with some inconvenience. Simple contamination of environment (e.g., watercourses), localised effects of short duration.	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					identification of any major risks of fire on site e.g. wind turbines, substation, vandalism			
I	Collapse/ damage to structures	Landslide/ Earthquake; and Extreme weather conditions such as flooding and storms. Vehicular collisions due to driver negligence Mismanagement of excavated material on site	Injury or loss of life. Movement of peat within the Site; Sedimentation of nearby watercourse; Damage to, or depletion of aquatic habitats and species;	2	According to the Irish National Seismic Network, earthquakes measuring ~2 on the Richter Scale are "normal" in terms of seismicity in Ireland. These are known as microearthquakes; they are not commonly felt by people and are generally recorded only on local seismographs. As such, buildings in Ireland are extremely unlikely to be damaged or collapse due to seismic activity.	1	The risk of infrastructure collapse or damage to structures during the construction phase will result in a minor consequence in that a small number of people would be affected, with no fatalities and a small number of minor injuries with first aid treatment. No contamination of environment (e.g., watercourses), localised effects.	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					Having regard to public speed limits within the Site, it is not predicted that any collision of vehicles and any infrastructure would result in significant damage/collapse. The Project has been designed to take into account any issues on peat or spoil stability			
J	Traffic Incident	Driver negligence or failure of vehicular operations on Site Access Roads. Traffic Management not implemented	Injury or loss of life.	3	A limited number of vehicles will be permitted on the Site as part of the operation phase. As such, it can be determined that there is some 'opportunity, reason or means for a	1	A minor consequence is predicted. Having regard to on-site speed limits and vehicular movements, a small number of people would be affected should a vehicular collision occur, with no fatalities and small number of minor	3

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					vehicle collision to occur on site, 'at some time.'		injuries with first aid treatment.	
K	Loss of Critical Infrastructure	Equipment or infrastructure failure; Electrical problems; Employee negligence Landslide/ Earthquake; Extreme weather conditions such as flooding and storms.	Injury or loss of life	1	EirGrid operate the grid from National Control Centres matching electricity production to customer demand, switching from synchronous to non-synchronous where required to ensure no power outages. The Project will be connected to Ballylickey 110kV Substation and any shortages or failures will not impact other connections to the same substation	2	Should a power failure occur at the Ballylickey 110kV Substation, it will result in a limited number of people affected- localised effects of short duration	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
Decommissioning Phase								
L	Severe Weather	Extreme weather-periods of heavy rainfall, taking into account climate change and strong winds	Illness or loss of life; Sedimentation of nearby watercourse Damage to, or depletion of aquatic habitats and species.	2	The risk of severe weather is unlikely when considering the assessment in **Chapter 9: Air and Climate** and weather conditions recorded over the last 30 years within the area.	1	The risk of severe weather conditions during the Decommissioning phase will result in a minor consequence in that small number of people would be affected should a severe weather event occur, with no fatalities and a small number of minor injuries with first aid treatment. No contamination of environment (e.g., watercourses), localised effects.	2
M	Flooding	Extreme weather-periods of heavy rainfall, taking into	Illness or loss of life;	1	The risk of flooding is considered very unlikely when taking	1	The risk of flooding during the Decommissioning phase	1

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		account climate change and strong winds	Sedimentation of nearby watercourse Damage to, or depletion of aquatic habitats and species;		into account the Baseline assessment in **Chapter 8: Hydrology and Hydrogeology** and due to no recurring or historic flood incidents recorded within the Site or along the Grid Connection route.		will result in a minor consequence in that 'small number of people would be affected should a severe weather event occur, with no fatalities and a small number of minor injuries with first aid treatment. No contamination of environment (e.g., watercourses), localised effects.	
N	Traffic Incident	Driver negligence or failure of vehicular operations on Site Access Roads. Traffic Management not implemented	Injury or loss of life.	3	A limited number of vehicles will be permitted on the Site as part of the Decommissioning phase. As such, it can be determined that there is	1	A minor consequence is predicted. Having regard to on-site speed limits and vehicular movements, a small number of people would be affected should a vehicular collision occur, with no fatalities and	3

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					some 'opportunity, reason or means for a vehicle collision to occur on site, 'at some time.' An unlikely risk is therefore predicted.		small number of minor injuries with first aid treatment.	
O	Contamination	Fuel spillage during delivery to site. Failure of fuel storage tank or tanks in plant and machinery and vehicles. Drainage and seepage water resulting from infrastructure removal. Erosion of sediment from site drainage channels.	Damage to, or depletion of aquatic habitats and species Release of suspended solids to surface watercourses and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water	2	As outlined in **Chapter 2: Project Description** and **Appendix 2.1 Construction Environmental Management Plan**, fuel will be stored on-site but in a bunded area to ensure containment and prevent spillages of fuel. No fuels, chemicals or solvents will be stored outside of the confines of the Site.	2	The risk of a fuel spillage or impact on surrounding drainage during the Decommissioning phase will result in a limited consequence in that there would be a limited number of people affected with localised effects of short duration through the use of bunded containment areas during operation. Simple contamination of environment (e.g.,	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
			quality and fish stocks of downstream water bodies.		Setback distances from sensitive hydrological features means that adequate room is maintained for the proposed drainage measures as detailed in **Chapter 8: Hydrology and Hydrogeology**.		watercourses), localised effects of short duration.	
P	Industrial Accident-Fire/gas explosion	Equipment or infrastructure failure; Fuel spillage/storage Electrical problems; and Employee negligence	Injury or loss of life Structural damage Forest fires Air Pollution Damage to, or depletion of habitats and species Contamination	2	As outlined in **Chapter 2: Project Description** and **Appendix 2.1 Construction Environmental Management Plan**, fuel will not be stored on-site post construction therefore fuel is not considered to be a significant fire risk.	2	Should a fire/explosion occur at the Site, a limited consequence in that there would be a limited number of people affected with localised effects of short duration due to the nature of the Project and the lack of infrastructure or fuel storage during Decommissioning that would result in any such	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					In accordance with Chapter 19 of the Safety, Health and Welfare at Work Act 2005 (the 2005 Act), the Project will be subject to a fire safety risk assessment which would assist in the identification of any major risks of fire on site.		incident. There will be normal community functioning in the area with some inconvenience. Simple contamination of environment (e.g., watercourses), localised effects of short duration.	
Q	Loss of Critical Infrastructure	Equipment or infrastructure failure; Electrical problems; and Employee negligence	Injury or loss of life	1	EirGrid operate the grid from National Control Centres matching electricity production to customer demand, switching from synchronous to non-synchronous where required to ensure no power outages.	2	Should a power failure occur at the Ballylickey 110kV substation, it will result in a limited number of people affected- localised effects of short duration	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		Landslide/ Earthquake; and Extreme weather conditions such as flooding and storms.			The Project will be connected to Ballylickey 110kV substation and any shortages or failures will not impact other connections to the same substation			

The risk assessment for each of the potential risks identified are consolidated in **Table 16.9** which provides their 'risk score.' A corresponding risk matrix is provided in **Table 16.10**, which is colour coded to provide an indication of the critical nature of each risk. As outlined in **Table 16.3**, the red zone represents 'high risk' scenarios', the amber zone represents 'medium risk scenarios and the green zone represents 'low risk scenarios.

Table 16.9: Risk Scores

Risk ID	Potential Risk	Likelihood Rating	Consequence Rating	Risk Score
Construction Phase				
A	Severe Weather	3	1	3
B	Flooding	2	1	2
C	Peat Stability	2	2	1
D	Traffic Incident	3	1	3
E	Contamination	2	2	4
F	Industrial Accident - Fire/Gas explosion	2	2	4
Operational Phase				
G	Contamination	2	2	4
H	Industrial Accident - Fire/Gas explosion	2	2	4
I	Collapse/ damage to structures	2	1	2
J	Traffic Incident	3	1	3
K	Loss of Critical Infrastructure	1	2	2
Decommissioning Phase				
L	Severe Weather	2	1	2
M	Flooding	1	1	1
N	Traffic Incident	3	1	3
O	Contamination	2	2	4
P	Industrial Accident- Fire/gas explosion	2	2	4
Q	Loss of Critical Infrastructure	1	2	2

Table 16.10: Risk Matrix

		Consequence Rating				
		1.Minor	2.Limited	3. Serious	4.Very Serious	5.Catastrophic
Likelihood Rating	5.Very Likely					
	4. Likely					
	3. Unlikely	D,N				
	2. Very Unlikely	A,C,I,L,J,M	B,E,F,G,H,O,P			
	1. Extremely Unlikely		K,Q			

Table 16.10, presents the potential risks identified during the construction, operation and Decommissioning of the Proposed Development all or which can be classified as 'low risk scenarios.'

The scenario with the highest risk score in terms of a major accident and/or natural disaster during the construction, operation and Decommissioning phase of the Project is identified below:

Peat Stability During Construction

The likelihood of peat instability during the construction of the Project is considered very unlikely as the soil stability risk assessment classified the Site as low risk. The risk of peat instability has been minimised through the careful design of the Project and will be further limited through the implementation of the best practice construction control measures outlined in **Chapter 7: Soils and Geology**, and **Appendix 2.1: CEMP**.

The risk of peat instability is 'very unlikely' to occur and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction phase.

Contamination During Construction, Operation and Decommissioning

There is a potential risk of contamination from site activities during the construction, operational and Decommissioning phases from potential release of hydrocarbons. The risk of contamination was given a risk score of 4. However, as outlined in **Chapter 2: Project Description**, **Appendix 2.1**: Construction Environmental Management Plan (CEMP) and **Chapter 8: Hydrology and Hydrogeology**, measures are proposed and will be put in place

to reduce the risk of accidental spillage and contamination of pollution risk to groundwater, surface water and associated ecosystems, and to terrestrial ecology.

The risk of contamination is 'very unlikely' to occur as adherence to the CEMP mitigation measures will be required and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction, operation and Decommissioning phases.

Industrial Accident-Fire/Gas Explosion During Construction, Operation and Decommissioning

There is a potential risk of fire/explosion at the Project. However, as outlined in **Section 16.2.1**, the scope of this assessment has been based on the understanding that the Project will be designed, built and operated in line with current best practice. Further, in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, the Project will be subject to a fire safety risk assessment which will assist in the identification of any major risks of fire on site e.g., wind turbines, substation, vandalism.

Therefore, the risk of fire/explosion occurring at the Project resulting in a major accident and/or disaster was given a risk score of 4. This indicates a scenario that is 'very unlikely' to occur and having 'limited' consequences should it do so, representing a 'low-risk scenario' during the operational phase.

16.4.2 Mitigation Measures

As outlined in **Section 16.4.1**, the scenarios with the highest risk score in terms of the occurrence of major accident and/or disaster were identified as 'Contamination' of the Project and risk of 'Industrial Accident- Fire/Gas Explosion' during the construction, operation and Decommissioning phases.

The Project has been designed in accordance with the best practice measures described in detail in this EIAR and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design.

As discussed, the application for the Project is accompanied by a CEMP (**Appendix 2.1**) which sets out details of the environmental controls to be implemented on site. The CEMP sets out the Emergency Response Procedure to be adopted in the event of an emergency including contamination, health and safety and environmental protection. The CEMP provides details on all mitigation and monitoring measures to be actioned prior to construction, during the construction, operation and Decommissioning phase. The CEMP will be subject to ongoing review through regular environmental auditing and site

inspections. This will confirm the efficacy and implementation of all mitigation measures and commitments identified in the application documentation.

The CEMP includes an Emergency Response Plan (**Management Plan 1**). It provides details of procedures to be adopted in the event of an emergency relating to health & safety or environmental protection. The Emergency Response Plan includes details on the response required and the responsibilities of all personnel in the event of an emergency. Please see **Appendix 2.1** for details.

16.4.3 Residual Effects

The risk of a major accident and/or disaster during the construction of the Project is considered 'low' in accordance with the 'Guide to Risk Assessment in Major Emergency Management' (DoEHLG, 2010).

It is considered that when the mitigation and monitoring measures outlined in the CEMP are implemented and adhered to, there will not be significant residual effect(s) associated with the construction, operation and Decommissioning of the Proposed Development.

16.4.4 Assessment of Cumulative Effects

16.4.4.1 Cumulative Impact Assessment

A search in relation to developments that may have the potential to result in a cumulative impact with the Project on the environment was carried out as part of the EIAR (Please see **Appendix 2.2**). The Project has been considered, cumulatively with these developments. The nearest operational wind farm is Milane Wind Farm which is located 4.9km to the southeast of the Site. The nearest permitted but not yet constructed wind farm is Dromleena 7.6km to the east. Due to the separation distance of the projects, lack of connectivity of forestry parcels and the implementation of proposed mitigation measures, there is no potential for significant cumulative increase in the vulnerability of the Project to risks such as peat stability, flooding, contamination, fire or traffic or loss of critical infrastructure.