13. MAJOR ACCIDENTS AND NATURAL DISASTERS

13.1 Introduction

This section of the remedial Environmental Impact Assessment Report (rEIAR) describes the potential and actual effects on the environment arising from the vulnerability of the Subject Development to risks of major accidents and/or natural disasters, as well as the potential of the Subject Development itself to cause potential 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 Assessment Reports'* (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'* (2017).

The assessment of the vulnerability of the Subject Development 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, which *"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 Subject Development 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;
- If any major accidents and/or natural disasters occurred that were caused by the Subject Development or that impacted on the Subject Development.

13.1.1 Statement of Authority

This section of the EIAR has been prepared by Thomas Blackwell and reviewed by Michael Watson, both of MKO. Thomas Blackwell is a Senior Environmental Scientists with MKO with over 17 years' of progressive experience in environmental consulting and in the assessment of environmental documents for renewable energy developments. Thomas holds a BA (Hons) in Geography from Trinity College Dublin and a M.Sc. in Environmental Resource Management from University College Dublin.

Michael Watson is a Director of Environment in MKO. Michael has over 20 years' experience in the environmental sector. Following the completion of his master's degree in environmental resource management, Geography, from National University of Ireland, Maynooth he worked for the Geological Survey of Ireland and then a prominent private environmental & hydrogeological consultancy prior to joining MKO in 2014. Michael's professional experience includes managing Environmental Impact Assessments, EPA License applications, hydrogeological assessments, environmental due diligence and general environmental assessment on behalf of clients in the wind farm, waste management, public sector, commercial and industrial sectors nationally. Michael also has a Bachelor of Arts Degree in Geography and Economics from NUI Maynooth, is a Member of IEMA, a Chartered Environmentalist (CEnv) and Professional Geologist (PGeo).

13.2 Assessment Methodology

13.2.1 General

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

- Census of Ireland 2022
- *Regional Spatial and Economic Strategy (RSES)*, published by the Northern and Western Regional Assembly.
- Donegal County Development Plan 2018-2024 (as Varied)
- Draft Donegal County Council Development Plan 2024-2030
- Fáilte Ireland

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

13.2.2 Legislative Context

13.2.2.1 Legislation

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

- The vulnerability of the proposed project to potential accidents and disasters
- The proposed 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 rEIAR 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".*

13.2.2.2 Guidance Documents

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

- Environmental Protection Agency (2022). *Guidelines on the information to be contained in Environmental Impact Assessment Reports*
- Area 1 Emergency Planning Group HSE Emergency Management Area 1 Crisis Management Team Major Emergency Plan (Covering Geographical Areas of Counties Donegal, Sligo, Leitrim, Cavan & Monaghan) (July 2023)
- Department of Defence (2020) *A National Risk Assessment for Ireland*

- European Commission. (2017). *Environmental Impact Assessment of Projects – Guidance on the preparation of Environmental Impact Assessment Reports*
- Environmental Protect Agency (2014) *Guidance on Assessing and Costing Environmental Liabilities*
- Department of Environment, Heritage and Local Government (2010) *A Guide to Risk Assessment in Major Emergency Management.*

13.2.3 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 and/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 13.3 below.

13.2.4 Impact Assessment Methodology

13.2.4.1 Introduction

This assessment is focused on an understanding that the construction of the Subject Development has been completed. Therefore, the overall vulnerability of the project to risks of major accidents and/or natural disasters is considered low during the operational and decommissioning phase.

Since construction has been completed on the Subject Development, it is known that there were no major accidents and/or natural disasters caused by the Subject Development. To provide context, a list of possible major accidents and/or natural disasters that could have occurred during construction and for which mitigation was in place to prevent significant effects are examined below.

Current EIA practice already includes an assessment of some potential accidents and disaster scenarios such as pollution incidents to ground and watercourses as well as assessment of flooding events and peat instability. These are described in detail in the relevant rEIAR assessment chapters (Refer to Chapters 6 to 7 for further detail).

Sources of pollution with the potential to cause significant environmental pollution and associated negative effects such as bulk storage of hydrocarbons or chemicals, storage of waste, management of flammable material, etc. were avoided due to mitigation measures as set out in the Construction and Environmental Management Plan (CEMP) and construction method statements for the Meenbog Windfarm. Therefore, there was an inherently low level of environmental risk associated with major accidents and/or natural disasters impacting the Subject Development and causing environmental damage from environmental pollution due to hydrocarbons or other synthetic materials.

There is low potential for significant natural disasters to occur at the Subject Development locations. Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited to issues such as landslides, flooding, and fires. These are described in the sections below.

Major industrial accidents involving dangerous substances pose a significant threat to humans and the environment; such accidents can give rise to serious injury to people or serious damage to the environment, both on- and off-site of the accident. The Subject Development site is not regulated or connected to or close to any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations, i.e., SEVESO sites, and so there are no potential effects from this source.

The Subject Development has low potential to cause natural disasters or major accidents in the form of peat instability. The Site has been subject to several stability assessments with the initial assessment having been completed for the Meenbog Windfarm prior to construction (AGEC 2017) and subsequent

assessments by Ionic Consulting Ltd (the Project Civil and Geotechnical Engineers) and Fehily Timoney & Company (2021). Finally, a Site Technical note was prepared in October 2023 by AFRY Ireland Limited' (AFRY), which acquired Ionic Consulting. The AFRY report provides an up-to-date stability assessment of all parts of the Site. These assessment reports are included as Appendices 6-1 to 6-4 of this rEIAR.

Current EIA practice already includes an assessment of some potential accidents and disaster scenarios, such as pollution incidents to ground and surface-watercourses, as well as assessment of flooding events. These are described in the relevant EIAR assessment chapters (Refer to Chapters 5 to 13 for further details).

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

13.2.4.2 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 and operation of the Subject Development. The approach to identifying and quantifying risks associated with the Subject Development by means of a site-specific risk assessment is derived from the EPA document '*Guidance on Assessing and Costing Environmental Liabilities*'. The following steps were taken as part of the site-specific risk assessment:

- Risk identification
- Risk classification, likelihood and consequence, and
- Risk evaluation

13.2.4.2.1 *Risk Identification*

Risks have been reviewed through the identification of reasonably foreseeable risks in consultation with the relevant contributors to this rEIAR (refer to *Statements of Authority* in Chapters 5 to 13of this rEIAR). The identification of risks has focused on non-standard but plausible incidents that could occur at or as a result of the Subject Development during operation or decommissioning.

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

1. *Potential to cause accidents and/or disasters*
2. *Vulnerability to potential disasters/accidents*

13.2.4.2.2 *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 environment controls was considered when estimating likelihood of identified potential risks occurring. Table 15-1 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. Available at https://www.epa.ie/publications/compliance--enforcement/licensees/reporting/financial-provisions/EPA_OEE-Guidance-and-Assessing-WEB.pdf*

Table 13-1 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. Further, the *HSE Emergency Management: Area 2 Emergency Plan 2022*, if implemented as intended, will work to reduce the consequence of any major accident and/or disaster. The consequence of the impact if the event occurs has been assigned as described in Table 15-2.

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

Table 13-2 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).

Ranking	Likelihood	Impact	Description
2	Limited	Life, Health, Welfare Environment Infrastructure Social	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. Simple contamination, localised effects of short duration €0.5-3M Normal community functioning with some inconvenience.
3	Serious	Life, Health, Welfare Environment Infrastructure Social	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. Simple contamination, widespread effects or extended duration €3-10M Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare Environment Infrastructure Social	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated Heavy contamination, localised effects or extended duration €10-25M Community functioning poorly, minimal services available
5	Catastrophic	Life, Health, Welfare Environment Infrastructure Social	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated. Very heavy contamination, widespread effects of extended duration. >€25M Serious damage to infrastructure causing significant disruption to, or loss of, key services for

Ranking	Likelihood	Impact	Description
			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 the 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 14-3) indicates the critical nature of each risk. This risk matrix has therefore been applied to evaluate each of the risks associated with the Subject Development. 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 13-3 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					

13.3 Baseline Conditions

The HSE *Emergency Management Area 1 Crisis Management Team Major Emergency Plan* (July 2023) outlines several hazard categories which may have the potential to lead to a major emergency in Area 1 Donegal, Sligo, Leitrim, Cavan & Monaghan. 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 15-4.

Table 13-4 HSE Emergency Plan hazard types (HSE Area 1 Crisis Management Team Major Emergency Plan July 2023)

Natural Hazards			
Category	Type	Subtype	Relevance to the project
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 Flooding Falling Trees
	Heavy Snow	Blizzards-	Poor Driving conditions
	Severe Cold / Frost extremes of Temperature	Icy Roads/ Impassable Roads Hypothermia	Poor Driving Conditions Public Health Risk

	Thunder & Lightening		Poor driving conditions Public Health Risk
	Dense/ Persistent Fog	Road Traffic collisions	Poor driving conditions
	Heat Wave /Drought		Not applicable
Hydrological	Flooding	Coastal / Inland	Potential for flooding from rivers and lakes
	Heavy Rain		May lead to flooding in Low Lying areas or areas with poor drainage
Geological	Landslides	Peatslides	Peat instability
Fires	Forest / Wilderness fire - Air Pollution	Lightening Fires lit by others for land management purposes	Majority of Site and some of surrounding area is forested. Potential of wildfires from adjacent hillsides Air Pollution Subject Development not vulnerable to fire
Transportation Hazards			
Category	**Type**	**Subtype**	**Project Hazard**
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	Not Applicable
	Coastal	Car Ferry/ passenger Ferries	Not Applicable
Technological Hazards			
Category	**Type**	**Subtype**	**Project Hazard**
Industrial Accidents	Explosions		Not applicable
	Petrochemical Fires		Personal Injuries, severe burns/ fatalities Air Pollution
	Industrial Fires	LPG Tank Fire	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			Not Applicable
Hazardous substance		Accident at site	Not Applicable
		Transportation accident	Not Applicable
		Weapons	Not Applicable
	Biological	Leak/Weapons	Not Applicable
	Radiological	"Dirty Bomb"	Not Applicable
		Industrial Accident	Not Applicable
		Health facilities	Not Applicable
Pollution/Contamination	Air/Water Pollution		Potential contamination of water courses or ground water due to fuel spills
Civil Hazards			
Category	Type	Subtype	Project Hazard
Major Crowd Safety	(Movement, crushing etc.)	Pop Concerts Sports Events Fireworks displays Air shows	Not Applicable
Loss of Critical Infrastructure	Energy and Power Supply	Electricity	No Applicable
		Fuel Oil	Not Applicable
		Communications	Not Applicable
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.

13.3.2 Meteorological

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 Weather Station in Castlederg, Co Tyrone, run by the Met Office UK, is the nearest weather and climate monitoring station to the Subject Development site that has meteorological data recorded for the 30-year period from 1991-2020. The monitoring station is located approximately 20 kilometres east of the site. The wettest months are January and December, and May is usually the driest. July is the warmest month with an average temperature of 19.04° Celsius.

The windier part of the year lasts for approximately 3 months from January to March, with average wind speeds of approximately 15km/hour. The windiest month of the year in at Castlederg station is January, with an average hourly wind speed of 15.3 kilometres per hour. The calmer time of year lasts for 9 months, from April to December, with an average wind speed between 10.8 km/h in August and 13.9km/h in December. As shown, wind speeds show little variation throughout the year, with an mean annual windspeed of 12.9km/h.

The works programme for the construction stage of the development took into account weather forecasts and work were suspended in the case of extreme weather events.

The following forecasting and weather warning systems were available and used on a daily basis at the site and used during 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 Eireann 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; and,

- Consultancy Service: Met Eireann 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.

13.3.3 Hydrological

Chapter 7 (Hydrology & Hydrogeology) details the risk of flooding on the Site. A Flood Risk Assessment of the Site has been carried out by HES, the findings of which are presented in full in Error! Reference source not found. and are summarised below.

To identify those areas as being at risk of flooding, the OPW's Past Flood Events Maps, the National Indicative Fluvial Mapping, CFRAM River Flood Extents, historical mapping (i.e. 6" and 25" base maps) and the GSI Groundwater Flood Maps were consulted. These flood maps are available to view at Flood Maps - Floodinfo.ie.

The OPW Past Flood Events Maps have no records of recurring or historic flood instances within the Site. Similarly, identifiable text on local available historical 6" or 25" mapping does not identify any lands that are "liable to flood". There is one mapped flood event ~4.24km to the southwest of the Site (ID: 4194) that is of no consequence.

The GSI's Winter 2015/2016 Surface Water Flood Map shows surface water flood extents for this winter flood event. This flood event is recognised as being the largest flood event on record in many areas. The flood map for this event records 1 no. recorded surface water flood zones within the south of the Site. This flood area is not in the vicinity of any of the components of the Subject Development. This area has the possibility of flooding again if there is similar heavy rainfall to 2015/2016 winter.

No CFRAM mapping has been completed for the area of the Site. The closest mapped CFRAM fluvial flood zones are along the Finn River, ~5.5km to the northeast at Stranolar.

The National Indicative Fluvial Flood Map for the Present Day Scenario maps a flood zone within the west of the Site along the Bunadaowen River. The flood zones from this river are constrained to be immediate vicinity of the channel and do not encroach upon components of the Subject Development. These areas of the Site are located in Fluvial Flood Zones A and B while the remainder of the Site, including the Subject Development locations, are located within Fluvial Flood Zone C (low risk).

Furthermore, the Site is not mapped within any historic or modelled groundwater flood zones.

The main risk of flooding is via fluvial flooding from the Bunadaowen River. As stated previously, none of the components of the Subject Development are located within this flood zone.

Surface water ponding/pluvial flooding may occur in some flat areas of the Site due to the presence of low permeability peat at the surface. Mostly the risk of pluvial flooding is low.

In general the risk of flooding at the Site is low due to the elevated and sloping nature of the Site and the high density of mountain streams which flow downslope.

13.3.4 Peat Stability

A detailed discussion of peat stability at the Site is provided in Section 6.3.8 of Chapter 6 (Land Soils & Geology) of this rEIAR and Appendices 6-1 to 6-4 (AGEC, Fehily Timony, Ionic, and AFRY reports) and a brief summary is provided below.

The GSI record the occurrence of 1 no. landslide within the Site (www.gsi.ie). This event dates from 12th November 2020 and occurred during the construction of the Permitted Development. The GSI list the landslide mechanism as being a peat slide. This event is mapped by the GSI to be located ~250m southwest and upgradient of Deviation 23. This event and subsequent site inspections are detailed in Appendix 2-3 of this rEIAR.

The GSI also record an additional historic landslide event ~600m south of deviation 1 and to the west of the Site. This event dates from 1963 and a road cutting was identified as a contributing factor to this historic landslide event (www.gsi.ie).

The GSI Landslide Susceptibility Map (www.gsi.ie) classifies the probability of a landslide occurring based on the soil type and the slope. The landslide susceptibility of the Site is classified by the GSI (2023) as ranging from "low" to "high" susceptibility, with the higher risk areas corresponding to steeper slopes within the Site.

In terms of the Subject Development, the majority of the deviations are mapped in areas of low to moderately low susceptibility. 3 no. deviations (Deviation 4, 8 and 11) are mapped in areas of moderately high susceptibility of a landslide. No deviations are mapped in areas of high landslide susceptibility. This map is to the scale of 1:50,000 and is therefore superseded by site-specific stability assessments.

A Peat Stability Risk Assessment (PSRA) was completed for the Permitted Development by AGEC Ltd (October, 2017). This report is attached as Appendix 6-1. The peat stability assessment analysed the stability of the natural peat slopes for individual areas of the site, including at turbine locations and along access roads.

The purpose of the analysis was to determine the Factor of Safety (FoS) of the peat slopes. The FoS is a numerical value of the stability on individual areas of a peatland. The acceptable range for factor of safety is typically from 1.3 to 1.4. An undrained analysis was carried out, which applies in the short-term during construction. For the undrained condition, the calculated FoS for load conditions (1) & (2) for the 540 no. locations analysed, shows that at all locations an acceptable FoS of greater than 1.3 was calculated, indicating a low risk of peat instability.

A drained analysis was carried out, which examines the effect of in particular, rainfall on the existing stability of the natural peat slopes on site. For the drained condition, the calculated FoS for load conditions (1) and (2) for the 540 no. locations analysed, shows that at all locations an acceptable FoS of greater than 1.3 was calculated, indicating a low risk of peat instability.

On 12th November 2020, during the construction of a permitted access road to T7, a peat failure occurred. The works that were underway at the time in the area where the peat slide occurred, were fully permitted and were being undertaken in line with the project design that had been subject to both Environmental Impact Assessment (EIA) and Appropriate Assessment (AA).

Following this peat failure, the Environmental Protection Agency (EPA) engaged the services of ARUP Consulting Engineers, to advise and represent the EPA on the geotechnical and peat stability aspects of the follow-up investigations. Following extensive additional site investigation work, geotechnical analysis, site meetings and reporting undertaken by both Fehily Timoney and Company and Ionic Consulting, the EPA concluded in April 2021 that the issues identified had been satisfactorily addressed. The factors which resulted in this peat slide are understood to have been a combination of the construction works and antecedent rainfall. The Subject Development was not deemed to be a contributing factor.

AFRY Ireland Ltd (formerly Ionic Consulting) completed a site inspection to the Site on 19th October 2023 to assess the overall stability of the wind farm from a geotechnical perspective and to assess whether there has been any instability since the peat slide. This inspection was completed alongside a geotechnical engineer from Tara Engineering Consultants.

The Technical Note arising from this site inspection is attached as Appendix 6-4 and concluded that:

> "*the overall site is currently stable based upon our assessment of the roads, hardstanding's, borrow pits, peat storage areas and peat stabilisation areas*".

Since the failure in November 2020, there has been no indication from any of the assessments that the construction of the 25 no. deviations was responsible for the peat failure event.

13.3.5 Forest and Wilderness Fires

Ireland historically is unlikely to experience widespread forest fires, with gorse fires more common. However, due to climate change, forest fires have been more common in recent years. In Ireland there can be a high risk of fires from the end of February until October. The Irish Meterological Service produces a Fire Weather Index, using a Canadian Model, which assesses the fire risk in an area taking into account current and past weather conditions. It also uses forecast weather information to produce a forecast index. The Fire Index is available all year from the MetEireann website.

The likelihood of fire occurring at the Site is low. The likelihood of fire occurring was further lowered by the implementation of good site management practices during the construction and will be further lowered by good site management practices during the operational and decommissioning phases.

During construction of the Subject Development, all staff were 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 encompassed the use of all necessary Personal Protective Equipment and adherence to the site Health and Safety Plan. An Emergency Response Plan (ERP) which was prepared prior to the construction phase and implemented and adhered to on site. The ERP provided details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The ERP is included in the CEMP for the Meenbog Windfarm (Appendix 3-2 of this rEIAR).

13.3.6 Road

The Subject Development utilised the existing road network as upgraded for the Permitted Development and internal roads as constructed for the Permitted Development during the works. Construction related traffic originated from the delivery of materials to site and transport of employees to, from and throughout the Site. The localised traffic disruptions as a result of other proposed works were mitigated through the use of industry standard traffic management measures. Further detail on traffic management and mitigation can be found in chapter 13 Material Assets.

13.3.7 Industrial Accident

The Subject Development 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. Fires from fuel emissions, leakages and spillages could occur causing personal injury and forest fires.

13.3.8 Pollution/Contamination

The Subject Development had the potential to cause contamination and pollution of groundwater and surface water from potential release of hydrocarbons, earthworks and excavations on site. These impacts are addressed in detail in Chapter 7, Hydrology as they are not related to either the vulnerability of the project to natural disasters or major accidents nor the potential for the project to cause natural disasters or accidents. Indirect impacts associated with major accidents and / or natural disasters on contamination are considered in this chapter. No incidents of pollution or contamination occurred as a result of the construction of the Subject Development.

13.4 Risk Assessment

This section outlines the possible risks associated with the Subject Development for the construction and operational phases. These risks have been assessed in accordance with the relevant classification as outlined in Table 15-1 and Table 15-2.

As outlined in Section 15.2.3, 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.

13.4.1 Likely Significant Effects

13.4.1.1 Do-Nothing Scenario

Under the Do-Nothing scenario, the 25 deviations that comprise the Subject Development would be removed and restored to the greatest extent practicable. The Meenbog Wind Farm would then be completed in accordance with the current planning permission (ABP Ref: PA05E.300460). This approach may lead to environmental effects due to the potentially extensive groundworks required to remove and restore the existing peat cells, portions of access roads, laybys, and hardstands, and peat containment berm. New access road sections and hardstands would then be constructed in the slightly different, and less optimal, locations shown on the permitted Meenbog Wind Farm plans. Unauthorised borrow pits would be backfilled to the greatest extent possible with spoil and peat and revegetated. Unauthorised peat cells would be dismantled and the stored peat material would be removed from the site for disposal elsewhere.

The "Do-Nothing" scenario would likely carry a greater risk of causing a major accident and/or natural disaster as a result of the extensive groundworks required to remove the Subject Development. Furthermore, removal of peat retaining berms and the T7 access road (Deviations 6 and 23, respectively) would carry a significantly increased risk as these were constructed as emergency works, in accordance with the CEMP for the Permitted Development, in response to excessive peat movements at the site.

13.4.1.2 Assessment of Effects During Construction

A risk register has been developed which contains all relevant risks that had potential to cause accidents during the construction phase of the Subject Development. Five risks specific to the construction of the Subject Development were identified and are presented in Table 13-5. The construction phase of the Subject Development has been completed. As such, no potential of future risks in this phase are identified and any risks that may have occurred are known.

Table 13-5 Risk Register - Construction Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
A	**Severe Weather** Risk to activity on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
B	**Flooding** Risk of fluvial flooding in areas surrounding the site impacting the construction phase and leading to environmental emissions	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
Potential to cause accidents and / or disasters.		
C	**Peat Stability/Landslide** Movement of peat within the site	Potential for construction activities to cause peat instability on the site.
D	**Traffic Incident**	Driver negligence or failure of vehicular operations on site roads.

	Collisions onsite and offsite with vehicles involved in construction of the Subject Development	Traffic Management not implemented
E	**Contamination** Discharge or leakage of fuel, chemical solvents, untreated water into watercourse or percolated to groundwater.	Accidental fuel spillage during delivery to site. Failure of fuel storage tank or tanks in plant and machinery and vehicles leading to uncontrolled emissions. Drainage and seepage water resulting from accident associated with water storage or treatment. Stockpiled excavated material becoming unstable and providing a point source of exposed sediment. Excavation works during the construction/operational phase of the Subject Development which may result in entrainment of sediment from the excavations.

13.4.1.3 Assessment of Effects During Operation

The Subject Development is part of the Meenbog Wind Farm. The only activities associated with Subject Development during the operation phase will be routine maintenance of site roads.

Only one risk specific to the operation of the Subject Development has been identified and presented in Table 15-6.

Table 13-6 Risk Register – Operational Phase

Risk ID	Potential Risk	Possible Cause
Potential to cause accidents and/or disasters to		
F	**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. Spill or leak of oil during operational maintenance of site roads.

13.4.1.4 Assessment of Effects During Decommissioning

The Subject Development is part of the Meenbog Wind Farm. Therefore, the decommissioning of the Subject Development must be discussed in the context of the overall wind farm. The wind turbines that will be installed as part of the Meenbog Wind Farm, are expected to have a lifespan of approximately 30 years.

Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Windfarm may be decommissioned fully. The onsite substation will remain in place as it will be under the ownership of the ESB/EirGrid. On-site borrow pits will have been restored by the completion of the construction phase of the development and

therefore no decommissioning will be required. Similarly, on-site peat storage cells will be completely revegetated and will remain in-situ.

Site roadways will be in use for other purposes other than the operation of the wind farm by the time the decommissioning of the project is to be considered, and therefore it may be more appropriate to leave the site roads in situ for future use.

Since none of the Subject Development will be removed in the event of the decommissioning of the Meenbog Windfarm there is no potential for effects during the decommissioning phase.

13.4.1.5 Assessment of Effects – Summary

These risks have been assessed in accordance with the relevant classification (Refer to Tables 15-1 and 15-2) and the resulting risk analysis is outlined in Table 15-8. The risk register is based upon possible risks associated with the Subject Development. As outlined in Section 15.2.3, the consequence rating assigned to each potential risk assumes that all mitigation measures and safety procedures have failed to prevent major accidents and/or disasters.

Further details regarding the assigned Risk Scores, as set out in Table 15-8, are provided below the table.

Table 13-7 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;	2	The risk of severe weather is unlikely when considering the weather conditions recorded over the last 30 years within the area. Construction works will take account of weather forecasts and predicted rainfall in particular and construction/operation will be paused if required.	1	The risk of severe weather conditions during the construction 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'. Severe weather may cause increased mobilisation of sediment which will be controlled via the project design and mitigation measures.	2
B	**Flooding**	Extreme weather-periods of heavy rainfall, taking into account climate change	Illness or loss of life; Groundwater Flooding	2	The risk of flooding is considered very unlikely when taking into account the baseline assessment in Chapter 7 of the rEIAR and due to the fact that no recurring or historic flood incidents are recorded	1	The risk of flooding during the construction/operation phase will result in a minor consequence in that 'small number of people would be affected' should a severe weather occur, with 'no fatalities and a small	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		and strong winds			within the Subject Development site.		number of minor injuries with first aid treatment'. Flooding has the potential to cause increased sediment mobilisation however flooding is not anticipated and should any flooding occur it would be localised.	
C	**Peat Stability**	Mismanagement of excavated material onsite Extreme weather conditions Unidentified	Movement of peat within the site; Sedimentation of nearby watercourse; Damage to, or depletion of aquatic habitats and species;	2	The Subject Development has been designed to minimise the potential for peat instability and failure. Refer to **Appendices 6-1 to 6-4**	3	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'. Simple contamination of environment (e.g. watercourses), localised effects of short duration.	6
D	**Traffic Incident**	Driver negligence or failure of vehicular operations within the site and public road network in which Grid	Injury or loss of life.	3	A limited number of vehicles will be permitted on the site during the construction phase. As such, it can be determined that there is some 'opportunity, reason or means' for a vehicle	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	3

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		Connection is proposed. Traffic Management not implemented			collision to occur on site, 'at some time.' An unlikely risk is therefore predicted.		number of minor injuries with first aid treatment.'	
F	**Contamination – Fuel storage and handling** **-General Construction**	An accident causing failure of fuel storage tank or tanks in plant and machinery and vehicles.	Contamination of local drinking water supplies, surface waters and groundwater aquifers.	2	As outlined in Chapter 3, no fuel will be stored on-site. Refuelling will be carried out in a dedicated refuelling area or using a mobile fuel bowser. A small quantity of oils and hydraulic fluids may be stored on site. These will be stored in a bunded area to ensure containment and prevent spillages of fuel. Standard and specific mitigation to prevent accidents and indirect effects of accidents are included in the project design and will be implemented.	2	The risk of a fuel spillage or impact on surrounding drainage as a result of an accident during the construction/operational phase will result in a limited consequence in that there would be 'a limited number of people affected' with 'localised effects of short duration' on environmental receptors through the use of bunded containment areas. The potential residual environmental effects are described in detail in Chapter 7 which concludes that there will be no significant environmental effects.	4
Operational Phase								

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
F	**Contamination**	A vehicular incident on the public road or within the site involving fuel, chemicals or untreated water, in the operational phase	Damage to, or depletion of aquatic habitats and species Contamination of local drinking water supplies and groundwater aquifers.	2	As outlined in Chapter 3, very little fuel will be stored on-site, therefore fuel is not considered to be a contamination risk in the operational phase.	1	The risk of a fuel spillage or impact on surround drainage during the operational stage 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. The potential residual environmental effects are described in detail in Chapter 7 which concludes that there will be no significant environmental effects.	2

The risk assessment for each of the potential risks identified are consolidated in Table 13-9 which provides their risk scores. A corresponding risk matrix is provided in Table 13-10, which is colour-coded in order to provide an indication of the critical nature of each risk. As outlined in Section 13.2.4.2.2, the red zone represents high-risk scenarios, the amber zone represents medium-risk scenarios and the green zone represents low-risk scenarios. Further elaboration on the assigned risk ratings are provided in Sections 13.4.1.5.1 and 13.4.1.5.2 following the Tables.

Table 13-8 Risk Scores

Risk ID	Potential Risk	Likelihood Rating	Consequence Rating	Overall Risk Score
Construction Phase				
A	Severe Weather	2	1	2
B	Flooding	2	1	2
C	Peat Stability	2	3	6
D	Traffic Incident	3	1	3
E	Contamination	2	2	4
Operational Phase				
F	Contamination	2	2	4

Table 13-9 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	C			
	2. Very Unlikely	A, B	E, F,			
	1. Extremely Unlikely					

Table 13-10, presents the potential risks identified during the construction and operation of the Subject Development all of 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 phase of the Subject Development is identified below.

13.4.1.5.1 Peat Stability During Construction, Operation, and Decommissioning

There were a number of incidents of peat movement during the construction phase of the Meenbog Windfarm. However, none of these incidents were caused by or impacted upon the Subject Development. Deviation Nos. 6 and 23 were constructed as emergency measures in response to peat movements not caused by the Subject Development. Comprehensive peat stability assessment has been undertaken at the Site both prior to construction and on-going during the construction stage. These stability assessments are discussed in detail in Chapter 6 of this rEIAR.

Given the history of peat movements at the Site there was a risk of peat instability during the construction of the Subject Development. The risk of peat instability has been given a risk score of 6 as a reflection of this history. The risk of peat instability was minimised through the implementation of the best practice construction control measures outlined in Appendix 6-1 of the rEIAR.

The risk of peat instability was 'unlikely' to occur and could have had 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction phase. There was no peat instability or peat movement caused by the construction of the Subject Development. Therefore, there was no effect on peat stability as a result of the Subject Development.

The Subject Development has been determined to be stable and there is no real likelihood of peat instability during the construction and decommissioning phases since there will be no ground disturbing activities associated with the Subject Development in the post-construction phases.

13.4.1.5.2 Contamination During Construction, Operation, and Decommissioning

There was a potential risk of contamination from site activities during the construction, and operational phases from potential release of hydrocarbons. The risk of contamination was given a risk score of 4. However, as outlined in Chapter 3 Section 3.5, measures were proposed and 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 and will have 'limited' consequences should it do so, representing a 'low-risk scenario' during the construction, operation and decommissioning phases.

There were no instances of contamination associated with the construction phase of the Subject Development and therefore no effects on the receiving environment associated with contamination. The relevant chapters of the rEIAR also conclude that there will be no significant residual effects associated with this potential impact during the operational and decommissioning phases.

13.4.2 Mitigation Measures

As outlined in Section 13.4.1, the scenario with the highest risk score in terms of the occurrence of major accident and/or disaster was identified 'Peat Stability' followed by 'Contamination' of the Subject Development Site during the construction , operation and decommissioning phases.

The Subject Development was built in line with current best practice and, as such, mitigation against the risk of major accidents and/or disasters was embedded through the design. In accordance with the provision of the European Commission '*Guidance on the preparation of Environmental Impact Assessment Reports'*, a Risk Management Plan was prepared and implemented on site to ensure an effective response to disasters or the risk of accidents. The plan included sufficient preparedness and emergency planning measures.

A CEMP was prepared for the Meenbog Windfarm and is included in Appendix 3-2 of this EIAR, this CEMP was applicable to the construction phase of the Subject Development. The CEMP provided mitigation measures to ensure that potential risks of major accident and/or disaster were identified, avoided and mitigated, as necessary, as well as an Emergency Response Plan in the event of excessive peat movement. The site geotechnical engineer assessed real-time conditions, to reduce risk. This led in part, to the arising of components of the Subject Development. Mitigation measures that were followed during

the construction of the Subject Development and will be followed during its operational phase are set out in Chapter 15 Schedule of Mitigation Measures.

13.4.2.1 Mitigation – Peat Stability During Construction

Peat stability during the construction phase of the Subject Development is discussed in detail in Chapter 6 (Land, Soils, and Geology) of this rEIAR. The PSRA (AGEC, 2017) for the Permitted Development, attached as Appendix 6-1 of this rEIAR, assessed the risk of peat instability at the Meenbog Wind Farm development site and prescribed detailed mitigation and control measures to ensure that the construction of the wind farm development did not impact the stability of the Site.

Whilst the location, alignment and size of 25 no. deviations differ from those which were detailed in the original planning application, these infrastructure elements were constructed as per the methodology and guidelines prescribed in the PSRA.

The standard mitigation measures implemented at all deviation locations during the construction works with respect to peat stability, as detailed in the PSRA and included in the CEMP, were as follows:

- The project geotechnical engineer carried out inspections and monitoring of all development on site and did not note any concerns with any of the deviations;
- Experienced and competent contractors were appointed;
- The Site was supervised by experienced and qualified personnel;
- Sufficient time was allocated for the project;
- Prevented undercutting of slopes and unsupported excavations;
- Maintained a managed robust drainage system;
- Prevented placement of loads/overburden on marginal ground;
- Set up, maintained and reported findings from monitoring systems (as outlined in the PSRA);
- Ensured construction method statements were developed and agreed before works commenced and all method statements were followed by the contractor; and,
- Revised and amended the Construction Risk Register as construction progresses to ensure that risks are managed and controlled for the duration of construction.

As stated above, some deviation locations are located outside of the area assessed in the AGEC PSRA. These deviations and any additional mitigation measures which were implemented are detailed in Section 6.5.2.6 of this rEIAR.

13.4.2.2 Mitigation - Contamination During Construction and Operation

In order to mitigate the risk of contamination of soil or water resources the following mitigation measures were implemented during the construction works and will also be implemented during any operational phase maintenance works associated with the Subject Development:

- Minimal refuelling or maintenance of construction vehicles or plant took place on site. Off-site refuelling occurred at a controlled fuelling station;
- On-site refuelling of machinery was carried out at designated refuelling areas at various locations throughout the Site.
- Heavy plant and machinery were refuelled on-site by a fuel truck that came to the Site as required on a scheduled and organised basis.
- Other on site re-fuelling was undertaken using a double skinned bowser with spill kits on the ready for accidental leakages or spillages;
- Re-fuelling was undertaken by suitably trained personnel only;
- Mobile measures such as dips trays, spills kits and fuel absorbent mats were used during all refuelling operations.
- The plant used during construction was regularly inspected for leaks and fitness for purpose; and,
- An emergency plan for the construction phase to deal with accidental spillages was detailed within the Construction and Environmental Management Plan (Appendix 3-2 of this EIAR). Spill kits were available to deal with and accidental spillage in and outside the re-fuelling area.

13.4.3 Residual Effects

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

No major accidents and/or disasters occurred as a result of the construction of the Subject Development or impacted on the Subject Development during the construction phase. Reporting of Site stability in 2021 and 2023 has found that all as built infrastructure, including all the deviations, are currently stable and there is no evidence of excessive peat movement associated with any of the deviations. Therefore, there were no residual effect(s) associated with the construction phase of the Subject Development

It is considered that when the above mitigation is implemented, and all mitigation detailed in the rEIAR is implemented, there will not be significant residual effect(s) associated with the construction, operation, or decommissioning of the Subject Development.

13.4.4 Monitoring

13.4.4.1 Monitoring During Construction

A detailed CEMP was prepared prior to the commencement of any works. Refer to Appendix 3-2 for an outline CEMP that sets out the minimum standards that were to be employed by the contractor. Monitoring measures employed during the construction phase of the Subject Development are also summarised in Chapter 15 of this rEIAR.

13.4.4.2 Monitoring During Operation

The operator of the Meenbog Windfarm will continue to assess the risk of major accidents and/or disasters on site on an on-going basis during operation.

The maintenance programme, record of reported incidents, as well as general site activities will be monitored on an on-going basis to ensure risk of major accidents does not increase over time. Monitoring measures are summarised in Chapter 15 of this rEIAR.

13.4.5 Assessment of Cumulative and In Combination Impacts

13.4.5.1 Cumulative Impact Assessment

All elements of the Subject Development were assessed in order to identify any potential cumulative effects. The Subject Development including all its various components is not a recognised source of pollution. It is not subject to Industrial Emissions Directive regulation or any other Environmental Protection Agency environmental regulatory consent. Should a major accident and/or natural disaster occur the potential sources of pollution onsite during the operational and decommissioning phases are limited and of low environmental risk. To date, the construction phase of the Subject Development has been completed without any major accident and/or natural disaster relating to pollution. Sources of pollution with the potential to cause significant environmental pollution and associated negative effects such as bulk storage of hydrocarbons or chemicals, storage of wastes, management of flammable materials etc. are limited and so there is an inherent low level of environmental risk associated with major accident and/or natural disaster.

Major industrial accidents involving dangerous substances pose a significant threat to humans and the environment; such accidents can give rise to serious injury to people or serious damage to the environment, both on and off the site of the accident. The Subject Development is not regulated or connected to or close to any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances

Regulations i.e., SEVESO sites and so there are no potential effects from this source. There is no real likelihood of significant environmental effects cumulatively associated with major accidents.

There is low potential for significant natural disasters to occur at the Subject Development Site. Ireland is a geologically stable country with a mild temperate climate. The potential natural disasters that may occur are therefore limited and these have been assessed in the context of the Subject Development, cumulatively in this chapter and in the wider rEIAR. Notwithstanding the generally low risk of natural disaster, there was nonetheless a potential risk for construction activities to result in excessive peat movement that could have had a negative effect on the receiving environment or on other parts of the Subject Development. While instances of excessive peat movement did occur during the construction of the Permitted Development, most notably the November 2020 Peatslide, this did not occur as a result of the construction of the Subject Development. Subsequent assessments of the site, as discussed in Chapter 6 of this rEIAR, have shown that the Site is stable and therefore there is no real likelihood of peat instability occurring in the future. This is discussed in detail in Chapter 6 of this rEIAR.

Any risks associated with flooding, impacts on infrastructure, accidents etc are addressed in the sections above. There were no natural disasters or major accidents caused by the Subject Development and there is no real likelihood of significant environmental effects in the future. Therefore, the cumulative residual effect of the Subject Development to cause or be impacted by major accidents and natural disasters is not significant.

13.4.5.2 In Combination Impact Assessment

The potential for the Subject Development to result or have resulted in significant effects on the environment as a result of a major accident and/or natural disaster was assessed cumulatively and in combination with the projects listed in Appendix 2-3 of this rEIAR, including the Permitted Wind Farm Development and the November 2020 Peatslide together with the emergency works associated with it and all subsequent remediation works. In addition, the components of the Subject Development have been considered cumulatively and in-combination with other land uses in the area as detailed below.

13.4.5.2.1 *Cumulative Effects when considered in combination with the Permitted Meenbog Wind Farm (ABP Ref: PA05E.300460)*

The components of the Subject Development are located within or immediately adjacent to the Permitted Development infrastructure. The deviations are entirely contiguous with the Permitted Development and are commensurate with works that have already been assessed in the EIAR and NIS for the Permitted Development. They do not require any additional mitigation or best practice and are of a nature and scale such that there is no potential for them to contribute or have contributed to any cumulative effect when considered in combination with the Permitted Development.

The construction phase of the Subject Development did not cause or contribute to any major accidents or natural disasters. Furthermore, the Site has been determined to be stable (AFRY 2023) and there is no evidence to suggest that the components of the Subject Development have the potential to result in likely significant effects in relation to major accidents or natural disasters in the post-construction phases.

13.4.5.2.2 *Cumulative Effects When Considered in Combination with the November 2020 Peat Slide and all Subsequent Remediation Works.*

The components of the Subject Development were considered cumulatively with the November 2020 Peatslide and subsequent remediation works. Details of the November 2020 Peatslide and associated remediation efforts are provided in Appendix 2-3 of this rEIAR. With respect to the peat slide event, there was a noted deterioration in water quality within the Mourne Beg River, which is designated as part of the River Finn SAC, immediately following the event. However, results since then have shown a recovering trend in water quality such that the Mourne Beg River now exceeds pre-construction baseline water quality. Following, the peat slide event, emergency stabilisation and remediation works were undertaken on the site of the Permitted Wind Farm Development, and on the Shruhangarve River.

No evidence of the components of the Subject Development having led to natural disasters or major accidents was identified during any of the surveys and assessments undertaken. Furthermore, with the

implementation of the mitigation measures set out in this rEIAR, there is no evidence to suggest that the components of the Subject Development have the potential have resulted in likely significant cumulative effects when considered in combination with the November 2020 Peat slide and all subsequent remediation works.

The Subject Development has been determined to be stable and there is no evidence to suggest that the components of the Subject Development have the potential to result in likely significant effects in relation to major accidents and/or natural disasters in the post-construction phases. In addition, the remediation works undertaken in response to the November 2020 Peatslide have prevented further movement of peat into the receiving environment and there are unlikely to be further impacts associated with this event. Therefore, there is no potential for significant cumulative effects associated with the Subject Development in combination with the November 2020 Peatslide.

13.4.5.2.3 *Cumulative Effects when considered in combination with other plans and projects as listed in Chapter 2 of this rEIAR.*

The Subject Development has not, and is not likely to, result in any major accidents or natural disasters during the construction phase. Therefore, there was no in-combination effects with any other project, plans or landuses listed in Chapter 2 or Appendix 2-2 of this rEIAR.

The Subject Development has been determined to be stable and there is no evidence to suggest that the components of the Subject Development have the potential to result in likely significant effects in relation to major accidents or natural disasters in the post-construction phases. The projects listed in Appendix 2-1 of this rEIAR were reviewed and the potential for cumulative impacts in-combination with the Subject Development was considered. It is determined that there is no real likelihood for in-combination effects to occur with any other project, plans or landuses listed in Chapter 2 or Appendix 2-2 of this rEIAR in the post-construction phases.