GDG
GAVIN & DOHERTY
GEOSOLUTIONS

Illaunbaun Wind Farm - Environmental Impact Assessment Report

Chapter 18: Major Accidents and Disasters

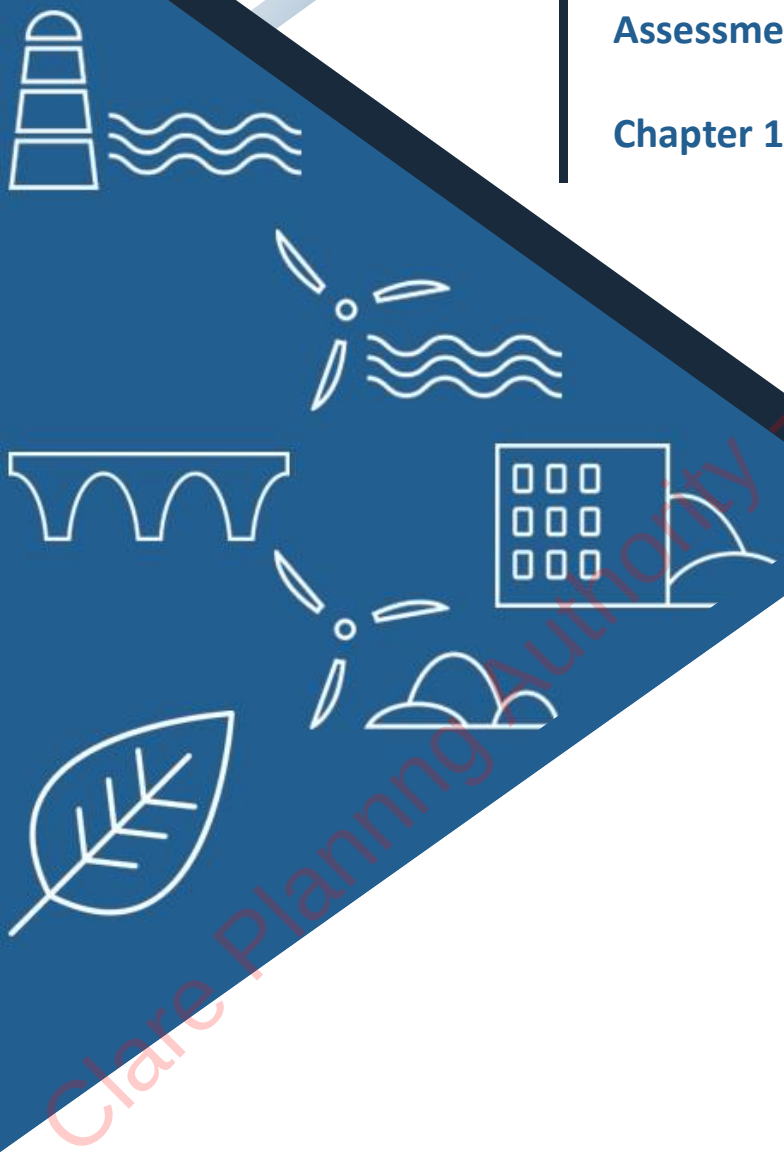


TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS

AA	Appropriate Assessment
ACP	An Coimisiún Pleanála
ATCs	Automatic Traffic Counters
CCRA	Climate Change Risk Assessment
CEMP	Construction Environmental Management Plan
CLP	Classification, Labelling and Packaging (of substances and mixtures)
COMAH	Control of Major Accident Hazards
CTMP	Construction Traffic Management Plan
DEHLG	Department of the Environment, Heritage and Local Government
DEMP	Decommissioning Environmental Management Plan
DoEHLG	Department of the Environment, Heritage and Local Government (older abbreviation)
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
EU	European Union
FRA	Flood Risk Assessment
FSA	Formal Safety Assessment
GDG	Gavin & Doherty Geosolutions Ltd
GSI	Geological Survey Ireland
HDD	Horizontal Directional Drilling
HSA	Health and Safety Authority
HSE	Health and Safety Executive
IEMA	Institute of Environmental Management and Assessment
IMO	International Maritime Organization
INSN	Irish National Seismic Network
N/A	Not Applicable
NCC	National Control Centre
OPW	Office of Public Works
PeSR	Peat Stockpile Restrictions
PPE	Personal Protective Equipment
PSR	Primary Surveillance Radar
PSRA	Peat Stability Risk Assessment
S.I.	Statutory Instrument
SAC	Special Area of Conservation
SEVESO	Refers to the Seveso Directive (e.g., Seveso III Directive 2012/18/EU)
SPA	Special Protection Area
SSR	Secondary Surveillance Radar
TII	Transport Infrastructure Ireland
WFD	Water Framework Directive

GLOSSARY OF TERMS

Appropriate Assessment (AA)	A scientific assessment of the potential effects of a proposed plan or project on a Natura 2000 site, required under the EU Habitats Directive.
Baseline Conditions	The existing environmental state of the project site and surrounding area prior to the development.
Bunded Area	A containment area designed to prevent spillage or leakage of hazardous substances such as fuel.
Construction Environmental Management Plan (CEMP)	A site-specific plan developed to ensure that environmental mitigation measures are implemented during construction.
Control of Major Accident Hazards (COMAH)	Regulations aimed at preventing major accidents involving dangerous substances and limiting their consequences.
Cumulative Impacts	'The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects' (EPA, 2022a).
Decommissioning Phase	The process of safely dismantling and removing infrastructure at the end of a project's operational life.
Do-Nothing Scenario	A reference scenario that describes the condition of the site if the proposed project does not proceed.
Emergency Response Plan (ERP)	A document that outlines the procedures and responsibilities in case of an emergency such as fire or contamination.
Environmental Impact Assessment (EIA)	A process used to identify, predict, and evaluate the environmental effects of proposed projects.
Environmental Impact Assessment Report (EIAR)	The formal report presenting the findings of the Environmental Impact Assessment.
Flood Zone	A geographical area that is at risk of flooding from rivers (fluvial) or surface water (pluvial).
Frack Out	The unintended release of drilling fluid into surrounding soils or surface water during directional drilling.
Hazard	A potential source of harm or adverse effect on human health or the environment.
Horizontal Directional Drilling (HDD)	A trenchless method used for installing underground cables or pipelines.
Indirect Impact	'Impacts on the environment, which are not a direct result of the project, often produced away from (the site) or as a result of a complex pathway' (EPA, 2022a).
Likelihood Rating	A numeric or qualitative estimate of the probability of a particular event occurring.

Mitigation Measures	Actions taken to reduce or eliminate negative environmental impacts of a project.
Peat Stability Risk Assessment (PSRA)	A study assessing the risk of peat movement or landslides during development in peatland areas.
Personal Protective Equipment (PPE)	Equipment worn to minimize exposure to workplace hazards causing injuries or illnesses.
Residual Effect	The remaining environmental impact of a project after all mitigation measures have been implemented.
Risk Score	The numerical product of likelihood and consequence ratings used to classify the severity of a risk.
Seveso Site	An industrial site subject to EU Seveso Directive due to the presence of dangerous substances.
Special Area of Conservation (SAC)	A designated site under the EU Habitats Directive (Council Directive 92/43/EEC). This Directive requires all Member states to establish a strict protection regime for species listed in Annex IV, both inside and outside of Natura 2000 sites.
Special Protection Area (SPA)	A designated site under the. Birds Directive (Council Directive 79/409/EEC). Under this Directive, Member States of the EU have a duty to safeguard the habitats of migratory birds and threatened birds.
Statutory Instrument (S.I.)	A form of legislation which allows provisions of an Act of Parliament to be brought into force or altered.
Vulnerability	The extent to which a project is susceptible to damage from hazards such as natural disasters or industrial accidents.
Water Body	A surface water body as defined under the Water Framework Directive (WFD) i.e., a river/stream, lake, transitional, coastal or groundwater body.
Water Framework Directive (WFD)	An EU directive that aims to improve and integrate the way water bodies are managed throughout Europe.

18 MAJOR ACCIDENTS AND DISASTERS

18.1 INTRODUCTION

This chapter of the Environmental Impact Assessment Report presents the assessment of the likely significant effects (as per the "EIA Regulations") on the environment arising from the vulnerability of the Proposed Development to risks of Major Accidents and Disasters. The assessment considers risks during the construction, operation and decommissioning phases of the Proposed Development, both alone and cumulatively with other plans and projects, and its scope was informed by the *Illaunbaun Wind Farm - Environmental Impact Assessment Scoping Report* and stakeholder consultation, described in Chapter 6: Project Scoping and Consultation.

The assessment presented is informed by the following EIAR chapters and associated technical appendices:

- Chapter 7: Population and Human Health
- Chapter 9: Land, Soils, Geology and Hydrogeology
- Chapter 10: Hydrology, Water Quality and Flood Risk
- Chapter 11: Air Quality
- Chapter 12: Climate
- Chapter 17: Material Assets
- Chapter 19: Traffic and Transport

The primary purpose of this chapter is to assess the potential for the Proposed Development to result in significant adverse effects on the environment arising from its vulnerability to major accidents and disasters, including both natural and man-made hazards.

In the context of this chapter, major accidents and disasters refer to low-likelihood but high-consequence events, whether natural or man-made, that have the potential to cause significant adverse effects on human health, the environment, or infrastructure. This includes, but is not limited to, events such as severe weather, flooding, peat failure, fire, explosion, or major contamination incidents. The definition aligns with the approach set out in the European Union's EIA Directive (2014/52/EU), the Environmental Protection Agency's EIAR Guidelines (2022), and the Institute of Environmental Management and Assessment's (IEMA) guidance on Major Accidents and Disasters (2020).

The chapter identifies credible risk events, evaluates their likelihood and consequence, and outlines mitigation measures and emergency response procedures designed to reduce risk and ensure that residual effects are minimized.

This chapter is comprised of the following elements:

- Summary of relevant legislation, policy and guidance;
- Description of data sources used to characterise the Study Area;

- Summary of consultations with stakeholders relevant to this topic;
- Methodology followed in assessing major accident and disaster risks;
- Review of relevant baseline conditions;
- Assessment of likely effects arising from the construction and operation of the Proposed Development;
- Identification of any further mitigation measures and/or monitoring requirements, following the 'mitigation hierarchy' (avoidance, minimisation, restoration and offsetting);
- Summary of residual risk after mitigation.

18.1.1 STATEMENT OF COMPETENCE

This chapter was prepared by David Cahill, an Environmental Scientist at Gavin & Doherty Geosolutions (GDG). David holds a Bachelor's degree in Environmental Science and a Master's degree in Sustainable Energy Engineering, both from University College Cork. He has 2 years of professional experience in the preparation of Environmental Impact Assessment Reports (EIARs) and Scoping Reports for both onshore and offshore wind energy developments.

18.1.2 RELEVANT LEGISLATION AND GUIDELINES

The assessment of the vulnerability of the Proposed Development to major accidents and natural disasters is carried out in compliance with the European Union (EU) Directive 2011/92/EU (as amended by Directive 2014/52/EU), 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."

Recital 15 of the EIA Directive states that for projects:

> "It is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment."

Annex IV of the EIA Directive states, where appropriate, the assessment should:

> "Include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for the proposed response to such emergencies."

The structure and assessment methodology of this chapter is guided by the Institute of Environmental Management and Assessment (IEMA) *Major Accidents and Disasters in EIA: A Primer* guidance (IEMA, September 2020). The IEMA guidance defines a major accident as:

> "An event (for instance, train derailment or major road traffic accident) that threatens immediate or delayed serious environmental effects to human health,

welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage"

The IEMA guidance defines the likely significant effects as something that:

"…could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration."

The following policy, legislation, plans and guidance are considered applicable to this chapter.

18.1.2.1 NATIONAL AND INTERNATIONAL LEGISLATION

- Building Regulations (Part A amendment) 2012, S.I. No. 138/2012
- Chemicals (Amendment) Act 2010, S.I. 13/08
- Chemicals Act 2008, S.I. 13/08
- Chemicals Act (Control Of Major Accident Hazards Involving Dangerous Substances) (Revocation) Regulations 2015, S.I. 208/15
- Safety, Health and Welfare at Work (Construction) Regulations 2013, S.I. No. 291/2013
- Safety, Health and Welfare at Work (General Application) Regulations 2007, S.I. No. 299/2007
- Safety, Health and Welfare at Work Act 2005, S.I. No. 10/2005
- The Chemicals Act (CLP Regulation) Regulations 2011, S.I. 102/11
- The Control of Major Accident Hazards (COMAH) Regulations, S.I.209/15

18.1.2.2 RELEVANT POLICIES AND PLANS

- Directive 2012/18/EU (Seveso III)
- National Risk Assessment: Overview of Strategic Risks 2023, Government of Ireland, 2023.
- Strategic Emergency National Structures and Frameworks, Department of Defence, 2017.
- Clare County Development Plan 2023-2029
- Clare County Major Emergency Plan (2018)
- Clare County Emergency Operations Plan 2024

18.1.2.3 GUIDANCE

- A Framework for Major Emergency Management Guidance Document 1-A Guide to Risk Assessment in Major Emergency Management, Department of the Environment, Heritage & Local Government, 2010.
- Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact, 2011/92/EU.
- FSA Criteria Guidance, IMO, 2018.

- Guidance on Assessing and Costing Environmental Liabilities, EPA, 2014
- Guidelines on the information to be contained in Environmental Impact Assessment Reports, EPA, 2022.
- HSE Reducing Risks, Protecting People Guidance, HSE, 2001
- IEMA Major Accidents and Disasters in EIA Guide, IEMA, 2020
- The Guidelines for Formal Safety Assessment, MSC-MEPC.2/Circ.12/Rev.2

18.2 ASSESSMENT METHODOLOGY

This assessment has been carried out on the basis that the Proposed Development will be designed, constructed, and operated in accordance with the methodologies, good practice measures, and embedded mitigation detailed throughout this EIAR, particularly in Chapter 5: Project Description. The Proposed Development incorporates robust health and safety provisions and climate-resilient design principles, which collectively minimise its vulnerability to major accidents and disasters. Accordingly, the overall risk profile of the Proposed Development in this regard is considered to be low.

Relevant risk scenarios are also addressed in detail across other specialist chapters of this EIAR. For example, potential issues relating to peat stability are evaluated in Chapter 9: Land, Soils, Geology and Hydrogeology, while potential pollution incidents affecting soil, groundwater, and surface water are assessed in Chapter 10: Hydrology, Water Quality and Flood Risk. Additional considerations relating to the protection of human health are presented in Chapter 7: Population and Human Health, and potential risks to key infrastructure are covered in Chapter 17: Material Assets. The assessment presented in this chapter is therefore informed by the findings, data, and constraints outlined in those respective chapters, and is subject to the same data limitations where relevant.

No specific consultation responses were received from prescribed bodies or stakeholders regarding the vulnerability of the Proposed Development to major accidents or disasters. Nonetheless, the scope and methodology of this assessment were informed by the Environmental Impact Assessment Scoping Report and the overall consultation process described in Chapter 6: Project Scoping and Consultation.

The Study Area for this chapter is defined by the Proposed Development Boundary, as the assessment focuses on risks that may arise at the site and could affect the environment as a result of the Proposed Development's vulnerability to external hazards

18.2.1 SITE-SPECIFIC RISK ASSESSMENT METHODOLOGY

This chapter presents a site-specific risk assessment to evaluate whether the Proposed Development is likely to result in significant adverse environmental effects arising from its vulnerability to major accidents and disasters during the construction, operational, and decommissioning phases. This assessment considers low-probability, high-consequence events, including both natural and man-made hazards, that could affect environmental receptors, human health, or critical infrastructure.

This site-specific risk assessment follows a structured methodology comprising the following steps:

18.2.1.1 RISK IDENTIFICATION

Based on the European Commission Guidance (2017), identifying potential risk events in this chapter is undertaken by focusing on the potential vulnerability to a major accident and/or disasters, and the potential to cause accidents or disasters. The identification of risks in this chapter focuses on non-standard, but plausible incidents, which may occur at, or as a result of the Proposed Development during the construction, operation or decommissioning.

18.2.1.2 CLASSIFICATION OF LIKELIHOOD

Once the potential risks have been identified, the likelihood of occurrence of each risk event has been assessed. This classification takes into account the effectiveness of proposed mitigation measures, embedded design features, and health and safety procedures, as set out in this EIAR. The likelihood assigned to each risk reflects a realistic scenario in which standard controls and preventative measures are assumed to function as intended. Likelihood ratings have been determined in accordance with definitions adapted from Department of Environment, Heritage and Local Government guidance (DoEHLG, 2010), and are based on whether one or more criteria within a given rating category are met. The likelihood categories applied in this assessment are presented in Table 18-1..

Table 18-1: Risk Classification – Likelihood (DoEHLG, 2010)

Rating	Classification	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.

Rating	Classification	Description
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.

18.2.1.3 CLASSIFICATION OF CONSEQUENCE

The consequence classification assigned to each risk scenario reflects the magnitude of impact that would result if the event were to occur, on the assumption that all proposed mitigation measures or safety procedures fail to prevent or contain the event. This approach aligns with established risk assessment principles, including guidance set out by the DoEHLG (2010), which advocates assigning a rating where one or more criteria within a consequence category are met. Risks that would result in no discernible environmental or health consequence have been excluded from the assessment. While the EPA Guidelines on the Information to be Contained in EIARs (EPA, 2022) do not prescribe a specific classification system for consequence, they support a precautionary approach and recommend that a 'worst-case' scenario be considered when assessing the significance of environmental effects. The consequence categories applied in this assessment are indicated in Table 18-2.

Table 18-2: Classification of Consequences (DoEHLG, 2010)

Rating	Consequences	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, localized effects.
		Infrastructure	<0.5 M€ (in terms of costs of property/infrastructure damage as well as recovery costs of loss of economic production).
		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 injures with hospitalization 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, localized effects of short duration.
		Infrastructure	0.5 – 3 M€
		Social	Normal community functioning with some inconvenience

Rating	Consequences	Impact	Description
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
		Infrastructure	3 – 10 M€
		Social	Community only partially functioning, some services are available.
4	Very serious	Life, Health, Welfare	5 to 50 fatalities, up to 100 serious injuries, up to 2,000 evacuated
		Environment	Heavy contamination, localised effects, or extended duration
		Infrastructure	10 – 25 M€
		Social	Community functioning poorly, minimal services available
5	Catastrophic	Life, Health, Welfare	Large numbers of people impacted with a significant number of fatalities (>50), injuries in the hundreds, more than 2000 evacuated.
		Environment	Very heavy contamination, widespread effects of extended duration.
		Infrastructure	>25 M€
		Social	Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support

18.2.1.4 RISK EVALUATION

Following the classification of likelihood and consequence for each identified event, a numerical risk score has been calculated by multiplying the two ratings. This score provides a consistent basis for evaluating the overall significance of each risk. In accordance with the DEHLG 2010 guidance, a risk matrix (Table 18-3) was used to determine the level of significance of each risk event. The risk matrix (Table 18-3) has three categories:

- High Risk – events that have an evaluation score of 15 to 25, as indicated by the red zones
- Medium Risk – events that have an evaluation score of 8 to 12, as indicated by the amber zones
- Low Risk – events that have an evaluation score of 1 to 6, as indicated by the green zones

Table 18-3: Risk Matrix (DoEHLG, 2010)

		Consequence of Impact				
		1 - Minor	2 - Limited	3 - Serious	4 - Very serious	5 - Catastrophic
Likelihood	5 - Very likely					
	4 - Likely					
	3 - Unlikely					
	2 - Very unlikely					
	1 - Extremely unlikely					

18.3 BASELINE: MAJOR ACCIDENTS AND DISASTERS IN THE RECEIVING ENVIRONMENT

18.3.1 METEOROLOGICAL

Ireland has a temperate, oceanic climate, predominantly influenced by the North Atlantic Ocean and the prevailing south westerly winds. The climate is generally characterised by mild winters, cool summers and frequent rainfall, with low temperature extremes compared to continental regions at similar latitudes (Met Éireann, 2024).

According to Met Éireann (2024), the hills and mountains, many of which are near the coasts, provide shelter from strong winds and from the direct oceanic influence, helping to moderate inland weather conditions.

The nearest Met Éireann weather station to the Proposed Development is located at Shannon Airport, approximately 33 km southwest of the site. Long-term climate observations from this station indicate that the area experiences:

- Mean annual rainfall in the range of 1,000 – 1,250 mm;
- Prevailing south-westerly winds, with stronger wind speeds typically occurring in the autumn and winter months; and
- Occasional Atlantic storm events, most frequently between October and March.

Recent weather records show an increased frequency of named storms and intense rainfall events, with Met Éireann reporting multiple red warning level storms between 2017 and 2023. The 2023 and 2024 climate statements further confirm record-breaking temperatures and sea surface anomalies, with 2024 being the fourth warmest year on record (Met Éireann, 2025). These trends reflect a changing climate baseline, characterised by more extreme weather patterns.

A Climate Change Risk Assessment (CCRA) was undertaken for the Proposed Development and is detailed in Chapter 12: Climate. The CCRA considered a comprehensive range of current and projected climate hazards relevant to the site, including fluvial and pluvial flooding, extreme wind,

heat, cold, drought, landslides, and wildfire. Each hazard was evaluated for both sensitivity and exposure and combined to determine the overall vulnerability of key project components.

The CCRA was supported by national datasets and projections from Met Éireann's TRANSLATE project, EPA climate research, and the Clare County Council Climate Action Plan, incorporating Representative Concentration Pathways (RCPs) that reflect a range of future climate outcomes—from moderate to high global emissions scenarios.

The outputs of the CCRA provide a structured baseline for understanding the project's vulnerability to evolving climate conditions, taking into account current site characteristics and anticipated future climate variability. These findings have informed the identification of climate-related natural hazard scenarios considered within this chapter.

18.3.2 HYDROLOGICAL

The Proposed Development is located within the Mal Bay catchment (EPA Catchment 28) in west County Clare, intersecting three river sub-basins: BALLINPHONTA_010, IN/AGH (ENNISTYMON)_040, and GLENDINE (CLARE)_010. The local hydrology is defined by upland drainage patterns, with surface water generally flowing toward the River Inagh, River Cleedagh, and Glendine River. The site also lies adjacent to Lough Keagh, a small waterbody without a mapped inflow or outflow, but likely hydrologically connected to nearby channels through intermittent surface drainage.

No mapped recurring or historic flood events have been recorded within the Proposed Development site or along the grid connection route, according to the Office of Public Works (OPW) Past Flood Events Mapping and the National Indicative Fluvial Mapping (NIFM) dataset. The closest mapped historic flood event is located 5 km downstream to the southeast of the site at Milltown Malbay.

The OPW Flood Hazard Mapping indicate areas at risk from 1-in-100-year fluvial and pluvial flood events, primarily along downstream sections of the River Inagh and River Cleedagh. These areas show a medium probability of fluvial flooding, with mapped extents located approximately 1.5 km northeast and 3 km southeast of the Proposed Development, respectively. However, no parts of the site itself fall within the mapped flood risk zones.

A Flood Risk Assessment (FRA) was undertaken as detailed in Chapter 10: Hydrology, Water Quality and Flood Risk and its associated Technical Appendix. Baseline hydrological mapping, topographic analysis, and catchment data were reviewed, alongside site walkovers and drainage design inputs. The FRA considered potential flood sources, including fluvial, pluvial, groundwater, and coastal pathways. Infrastructure was designed with consideration of site elevation and proximity to mapped flow paths and watercourses. Key mitigation features such as culvert sizing and flow path avoidance were integrated into the layout from an early stage. These baseline characteristics and design considerations have informed the subsequent assessment of flood-related major accident risk.

18.3.3 PEAT STABILITY

A Peat Stability Risk Assessment (PSRA) was carried out by GDG in 2023, to inform the assessment of major accident risk associated with peat failure. The PSRA consisted of a desk study, site walkover

and field work, stability analyses and a risk evaluation. The study also proposed appropriate actions to guide the design and construction of the Proposed Development.

The PSRA allowed for the calculation of a deterministic factor of safety value at each infrastructure location, taking into account key geotechnical and hydrological parameters

As part of the PSRA, the following constrains were identified:

- Safety buffer zones were delimited, within which construction activities will be restricted and the storage of peat or soils will be avoided.
- Peat Stockpiles Restrictions (PeSR) were mapped, highlighted as areas not suitable for side casting or stockpiling of peat or soils.

A review of Geological Survey Ireland (GSI) Landslide Event mapping confirmed that no known landslides have been recorded within the Proposed Development boundary or within a 15 km radius. Furthermore, the Proposed Development area is classified by the GSI Landslide Susceptibility Map as having low to moderately-low susceptibility to landslide events.

This baseline characterisation of peat depth, slope gradient, drainage features, and historical landslide context informed the PSRA and subsequent design considerations presented in the EIAR. These site-specific ground conditions have been considered further in the evaluation of potential major accident risks associated with peat movement

18.3.4 TRAFFIC

The Proposed Development will utilize the road networks surrounding the site during the construction, operational and decommissioning phases of development. The transport study area, described in detail in Chapter 19: Traffic and Transport of this report, includes key roads such as the N85, R460, L1074, and Slievenalicka, which provide access to the site. These roads are primarily rural in nature, with some sections characterised by narrow carriageways, constrained geometry, and limited overtaking opportunities.

Traffic baseline data was collected through Automatic Traffic Counters (ATCs) in 2023. Local roads typically experience low traffic volumes, but a relatively high proportion of HGVs was recorded, consistent with local agricultural and commercial use.

A review of historical collision data for the surrounding area found no evidence of high-frequency accident clusters on the approach routes. The L1074 and Slievenalicka, which connect directly to the site, pass through residential and agricultural areas, and also provide access to a local primary school.

Further detail on baseline traffic flows, road conditions, and sensitive receptors is provided in Chapter 19 and its supporting Technical Appendices.

18.3.5 INDUSTRIAL ACCIDENTS

The Proposed Development is not located within the consultation distance of any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations 2015 (the

SEVESO III Regulations). A review of the Health and Safety Authority (HSA) SEVESO site database confirms that no upper or lower-tier SEVESO establishments regulated under the Control of Major Accident Hazards (COMAH) Regulations 2015 are present within the defined consultation distances of the Proposed Development site. The nearest SEVESO sites, Moneypoint Power Station, ENVA Ireland Ltd., and Shannon Airport, are all located over 30 km from the site

As part of the construction and operational phases, the Proposed Development will involve the transport, storage and handling of fuels, lubricants, and other construction-related hazardous materials in limited quantities. These materials are not expected to meet SEVESO thresholds but represent typical sources of industrial hazard on large-scale infrastructure projects.

The potential for accidental release, ignition, or spillage of such substances during transport, fuelling, or maintenance activities has been considered in the design of the development and is addressed in further detail in the Assessment of Effects section of this chapter, under the topic 'Contamination'

18.3.6 LOSS OF CRITICAL INFRASTRUCTURE

The Proposed Development is located in a rural area of County Clare, approximately 4.2 km northeast of Milltown Malbay, on land primarily comprising commercial forestry and open peatland. Baseline data from Chapter 17: Material Assets confirms that there is no gas, water, or wastewater infrastructure within the site boundary or its immediate vicinity. Similarly, no waste management facilities are located within the Proposed Development area, with the nearest landfill situated approximately 24 km away.

The Proposed Development will include a new 38kV on-site substation to facilitate grid connection. The surrounding area contains limited existing electrical infrastructure, with only one mast identified within a 600 m radius. The site is not critical to the resilience of the national grid, which is operated by EirGrid and supported by National Control Centres that dynamically manage supply and demand.

Telecommunications infrastructure includes five microwave radio links intersecting the Proposed Development boundary. No physical telecoms infrastructure lies directly on site, although signal pathways may traverse the area. Television signal coverage in the southern portion of the site is understood to be weak due to topography and distance from transmitters. No aviation radar, PSR or SSR, is located within the development boundary; the nearest such infrastructure is situated at Shannon Airport, approximately 33 km to the southeast.

These baseline conditions confirm that the Proposed Development is not co-located with critical utility or communication infrastructure whose disruption would pose a national or regional risk.

18.3.7 CONTAMINATION

The Proposed Development is located within the Mal Bay catchment in west County Clare, with local drainage discharging toward the River Inagh, Glendine River, and River Cleedagh sub-basins. The site itself is predominantly underlain by peat and glacial till with localised outcrops of bedrock. According to EPA groundwater vulnerability mapping, the site lies within areas of low to moderate vulnerability, and the underlying aquifer is classified as poor with low productivity.

No known groundwater abstraction points for drinking water supply are located within the site boundary. The nearest known Group Water Schemes (Ballard and Miltown Malbay) are located over 2 km away, and there are no mapped karst features or regionally important aquifers present. While some unmapped private wells may exist in the wider area, baseline sampling indicates that surface and groundwater bodies in the vicinity of the site are of good chemical and ecological status under the Water Framework Directive (WFD).

Site walkovers confirmed that the area is predominantly forestry and upland peatland, with limited existing infrastructure and no evidence of previous industrial use or contaminant legacy. There are no licensed or unlicensed waste facilities within or near the site, and no EPA-licensed discharges have been identified along the drainage pathways downstream of the Proposed Development.

These baseline conditions indicate a relatively low baseline contamination risk, but with the potential for adverse effects on water quality arising from construction-related activities, such as earthworks, use of hydrocarbons, and accidental discharges. Chapter 10: Hydrology, Water Quality and Flood Risk, provides further detail on drainage design, sediment control, and surface water protection measures developed in response to this context.

18.3.8 HEALTH AND SAFETY

The Proposed Development is located in a rural area of west County Clare, comprising predominantly commercial forestry, peatland, and agricultural lands. The surrounding population is dispersed, with low residential density and no permanent dwellings located within the development boundary. The nearest sensitive receptors include individual rural homes and farmsteads located over 500 m from proposed turbine locations, and a primary school situated approximately 500 m from the proposed haul route on Slievenalicka.

There are no hospitals, nursing homes, or emergency services facilities located in the immediate vicinity of the Proposed Development. The road network is lightly trafficked, with baseline vehicle counts indicating limited daily volumes, though a relatively high proportion of HGVs due to agricultural activity. No elevated background levels of noise, vibration, or air pollution have been identified in the area.

During the construction and decommissioning phases, the site will be occupied by a rotating workforce engaged in excavation, turbine assembly, grid connection works, and transport operations. These activities involve the use of heavy plant, hazardous materials (e.g. fuels, cement), and working at height, all of which introduce typical occupational health and safety hazards associated with infrastructure projects of this scale.

This baseline characterisation informs the assessment of potential health and safety risks to both workers and the local community in the event of major accidents or unplanned incidents. Further detail on these population receptors is presented in Chapter 7: Population and Human Health.

18.4 ASSESSMENT OF EFFECTS

18.4.1 "DO-NOTHING" SCENARIO

Under the Do-Nothing scenario, the Proposed Development would not proceed, and the existing land use, comprising forestry, peatland, and agricultural activity, would continue. In this case, no construction or operational activities associated with the Proposed Development would take place, and therefore, the potential for major accidents or disasters arising from the Proposed Development would not materialise. Baseline environmental conditions, including hydrology, traffic, and site stability, would remain unchanged.

18.4.2 CONSTRUCTION PHASE IMPACTS

The potentially relevant risks identified during the construction phase of the Proposed Development are summarized in Table 18-4.

Table 18-4: Risk Register – Construction Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
A	Severe Weather Risk to construction on site	Extreme weather - periods of heavy rainfall, taking into account climate change and strong winds.
B	Flooding High levels of surface water on site	Extreme weather - periods of heavy rainfall, taking into account climate change and strong winds.
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		
D	Traffic Incident Collisions onsite and offsite with vehicles involved in construction of Proposed Development.	Driver negligence or failure of vehicular operations on site roads. Traffic Management plan not implemented.
E	Industrial Accidents	Fire/Explosion Equipment/infrastructure failure
F	Loss of critical Infrastructure Risk of construction activity along the Grid Connection underground electrical cabling route	Construction activity along the grid and road network impacting on local services and utilities.
G	Contamination	Fuel spillage during delivery to site.

Risk ID	Potential Risk	Possible Cause
	Discharge or spillage of fuel, chemical solvents into watercourse or percolated to groundwater. Discharge due to horizontal directional drilling (HDD) frack out on Grid Connection works area.	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 Proposed Development cable trench resulting in entrainment of sediment from the excavations during construction. Erosion of sediment from emplaced site drainage channels; and Frack Out associated with horizontal directional drilling (HDD) along Grid Connection underground electrical cabling route which may result in sediment release to surface water.
G	Fire/Explosion	Controlled blasting at Borrow Pits. Equipment or infrastructure failure. Electrical problems; and Human error.

18.4.3 OPERATIONAL PHASE IMPACTS

Risks specific to the operation of the Proposed Development have been identified and are presented in Table 18-5.

Table 18-5: Risks Register - Operational Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
H	**Severe Weather** Risk to operational activity on site, blade or turbine damage	Extreme weather - periods of heavy rainfall, taking into account climate change and strong winds.
I	**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.
Potential to cause accidents and/or disasters		
J	**Fire/Explosions**	Equipment or infrastructure failure; Electrical problems; and Human error.

Risk ID	Potential Risk	Possible Cause
K	**Collapse/damage to structures**	Earthquakes; and Vehicular collisions due to driver negligence on public roads.
L	**Traffic Incident** Collisions onsite and offsite with vehicles involved in operation of Proposed Development	Driver negligence or failure of vehicular operations on site roads. Traffic Management not implemented.
M	**Loss of Critical Infrastructure**	Electrical fault at substation bay.

18.4.4 DECOMMISSIONING PHASE IMPACTS

Risks specific to the decommissioning phase of the Proposed Development have been identified and are present in Table 18-6.

Table 18-6: Risk Register - Decommissioning Phase

Risk ID	Potential Risk	Possible Cause
Potential vulnerability to disaster risks		
N	**Severe Weather** Risk to decommissioning activity on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
O	**Flooding of the site** Risk of flooding in areas surrounding the Site impacting the decommissioning	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
Potential to cause accidents and/or disasters		
P	**Traffic Incident** Collisions onsite and offsite with vehicles involved in decommissioning of the Proposed Development	Driver negligence or failure of vehicular operations on site roads. Traffic Management not implemented
Q	**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. Erosion of sediment from emplaced site drainage channels.
R	**Fire/Gas explosion**	Petrochemical Fires causing personal injury, structural damage and forest fires.
S	**Loss of Critical Infrastructure**	Electrical fault at substation bay.

The risk register presented above outlines a range of credible major accident and disaster scenarios associated with each phase of the Proposed Development. These risks have been assessed using a structured methodology that considers the likelihood of occurrence and the severity of potential consequences, in accordance with the classifications system detailed section18.2.1. The consequence ratings applied assume a conservative approach whereby mitigation measures and safety protocols are considered to have failed.

A summary of the resulting risk analysis, including identified causes, effects, and risk scores, is provided in the section 18.4.5: Assessment of Effects Summary.

18.4.5 ASSESSMENT OF EFFECTS SUMMARY

Table 18-7: Assessment of Effects Summary

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	Injury or loss of life; Sedimentation of nearby watercourse Potential impacts to aquatic habitats and species;	3	The CCRA in Chapter 12 concluded that the Proposed Development has at most low vulnerability to severe weather and all other assessed climate hazards. No significant risks were identified during the construction phase. The CCRA also confirmed that the Proposed Development is resilient under both moderate and high-	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to	3

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					emissions climate scenarios (RCP4.5 and RCP8.5), and that the likelihood of major accidents or disasters arising from severe weather events is low, with robust mitigation and design measures in place.		community services or infrastructure (<6 hours)	
B	Flooding	Extreme rainfall events causing fluvial or pluvial flooding during operation	Injury or loss of life; Sedimentation of nearby watercourses; Potential impacts to aquatic habitats and species;	2	The FRA detailed in Chapter 10 and its Technical Appendix, confirmed that the Proposed Development is at low risk of flooding from fluvial, pluvial, coastal, or groundwater sources. Infrastructure is	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment.	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					sited on elevated ground, away from mapped flood zones, with appropriately sized culverts to manage extreme rainfall events. No residual flood risk was identified for the construction phase, and the FRA concluded that flooding does not represent a credible major accident or disaster pathway for the Proposed Development.		No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours)	
C	Peat Stability	Mismanagement of excavated material on site Extreme weather conditions	Peat movement; Slope instability; Sedimentation of nearby	1	A PSRA detailed in Chapter 9 and its associated Technical Appendix confirmed that	2	A Limited consequence is predicted, in that there would be:	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
			watercourse; Potential impacts to habitats and species;		the Proposed Development site is geotechnically suitable, with negligible to low risk of peat instability. Deterministic factor of safety calculations at each infrastructure location demonstrated acceptable stability levels, provided good peat management and site-specific construction controls are implemented. Safety buffer zones and peat stockpile restrictions were also identified to		Limited number of people affected Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					further mitigate risk. The GSI mapping confirmed no history of landslides within or near the site. Overall, the risk of a major accident arising from peat failure is considered very low.			
D	Traffic Incident	Human error or failure of vehicular operations on site roads. Inadequate adherence to operational traffic management protocols.	Injury or loss of life.	3	Chapter 19 confirms that construction traffic associated with the Proposed Development will be managed through a Construction Traffic Management Plan (CTMP), which includes delivery	1	A minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination,	3

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					scheduling, designated haul routes, public notification, and mitigation at sensitive locations. Pre- and post-construction road condition surveys will also be undertaken. While construction will generate increased heavy vehicle movements, including abnormal loads, the CTMP is designed to minimise disruption and ensure safe operation. With these measures in place, the risk		localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours)	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					of a major accident or disaster arising from traffic incidents during the construction phase is considered unlikely.			
E	Industrial Accidents	Fire/Explosion Equipment/infrastructure failure	Injury or loss of life; Disruption to services	N/A	A review of the Health and Safety Authority (HSA) SEVESO site database confirms that there are no upper- or lower-tier establishments regulated under the Control of Major Accident Hazards (COMAH) Regulations 2015 within the defined consultation	N/A	N/A	N/A

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					distances of the Proposed Development. The nearest SEVESO sites, Moneypoint Power Station, Enva Ireland Ltd., and Shannon Airport, are all located over 30 km from the site and therefore do not present a credible risk of off-site industrial accidents.			
F	Loss of Critical Infrastructure	Construction activity along road network during grid connection installation impacting local services and utilities	Injury or loss of life; Disruption to services	2	The Proposed Development is not co-located with critical utility or communication infrastructure whose disruption would pose a	1	A Minor consequence is predicted, in that: Small number of people affected; 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)
					national or regional risk. Confirmatory surveys will be carried out to ensure that the grid connection is designed to take into consideration any services and utilities with the road network.		injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours).	
G	Contamination	Fuel spills during delivery or from machinery and vehicles; Runoff or seepage from excavations; Sediment-laden runoff from stockpiles; Sediment release from turbine bases, trenches or substations; Erosion of	Release of suspended solids to watercourses; Increased turbidity; Reduced water quality; Potential impacts on aquatic	2	During construction, the risk of contamination is mitigated through measures set out in the CEMP, including bunded fuel storage in designated areas,	2	A Limited consequence is predicted, in that there would be: Limited number of people affected Simple contamination,	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		temporary drainage channels during rainfall	habitats and species		controlled refuelling using drip trays and automatic shut-off systems, use of silt fences and settlement features to manage sediment runoff, designated buffer zones from watercourses and a site-specific Emergency Response Plan (ERP). These measures significantly reduce the potential for fuel, sediment, or chemical releases to the environment. As a result, the		localized effects of short duration. Normal community functioning with some inconvenience.	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					likelihood of a contamination event occurring is considered unlikely.			
H	Fire/explosion	Equipment failure; Fuel spillage; Controlled blasting; Electrical fault; and Human error	Injury or loss of life; Damage to infrastructure; Potential impacts to habitats and species; Potential contamination of watercourses; Temporary reduction in air quality.	2	As outlined in the CEMP, fuel will be stored on-site during construction in bunded and secure areas, and any blasting activity (if required) will be subject to a detailed Blasting Management Plan. Fire safety risks will be controlled via adherence to the Safety, Health and Welfare at Work Act 2005 (the 2005 Act) and a Fire Safety Risk Assessment.	2	A Limited consequence is predicted, in that there would be: Limited number of people affected Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience.	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
Operational Phase								
I	Severe Weather	Extreme weather - periods of heavy rainfall, taking into account climate change and strong winds	Structural damage; Turbine shutdowns; Transport disruption; Injury or loss of life; Sedimentation of nearby watercourse Potential impacts to aquatic habitats and species;	2	The CCRA presented in Chapter 12 confirms low vulnerability to severe weather for the operational phase, with robust climate-resilient design. While risks exist, they are considered unlikely due to project resilience measures.	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours).	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
J	Flooding	Extreme rainfall events causing fluvial or pluvial flooding during operation	Damage to site infrastructure; access disruption; sedimentation of nearby watercourses; Potential impacts to aquatic habitats and species.	1	The FRA detailed in Chapter 10 and its Technical Appendix, confirmed that the Proposed Development is at low risk of flooding from fluvial, pluvial, coastal, or groundwater sources. Infrastructure is sited on elevated ground, away from mapped flood zones, with appropriately sized culverts to manage extreme rainfall events. No residual flood risk was identified for the operational phase, and the FRA concluded	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours).	1

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					that flooding does not represent a credible major accident or disaster pathway for the Proposed Development.			
K	Peat Stability	Long-term degradation of peat, drought followed by intense rainfall, or inadequate maintenance of drainage	Peat movement; Slope instability; Sedimentation of nearby watercourses; Damage to foundations or access tracks; Potential impacts to habitats and species	1	The PSRA detailed in Chapter 9 and its associated Technical Appendix confirms all infrastructure has acceptable factors of safety and peat risk is negligible to low. Maintenance of drainage and buffers will ensure stability during operation.	2	A Limited consequence is predicted, in that there would be: Limited number of people affected Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience.	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
L	Traffic Incident	Human error or failure of vehicular operations on site roads. Inadequate adherence to operational traffic management protocols	Injury or loss of life.	2	During the operational phase, site access will be limited to periodic maintenance vehicles and staff, with no abnormal loads or significant traffic volumes anticipated. Movements will be infrequent and controlled under operational health and safety procedures, including designated access routes and speed limits. Given the low traffic intensity, the likelihood of a major accident	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours).	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					is considered unlikely			
M	Loss of Critical Infrastructure	Equipment or infrastructure failure; Electrical problems; Human error; Landslide/ Earthquake; Extreme weather conditions such as flooding and storms.	Collapse of turbine or ancillary infrastructure; Injury or loss of life	1	All major structural elements are designed to withstand site-specific geotechnical and climatic conditions. Other hazard pathways (e.g. peat or flood) are already controlled through design.	2	A Limited consequence is predicted, in that there would be: Limited number of people affected Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience.	2
N	Contamination	Fuel or lubricant leak during routine maintenance activities; Accidental discharge of wastewater or sewage	Localised contamination of surface water or groundwater; temporary	1	During the operational phase, hazardous substances will be limited to maintenance-	1	Any potential release would be highly localised and of short duration.	1

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.	reduction in water quality; potential impacts to aquatic species or sensitive habitats		related lubricants and fuels in small quantities. The OEMP require bunded containment, regular maintenance, and adherence to environmental protocols. No bulk fuel or chemical storage is planned post-construction.		Mitigation and containment measures significantly reduce exposure, with no off-site effects expected. Community functioning remains unaffected. Therefore, a Minor consequence is predicted, in that there would be: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment.	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or infrastructure (<6 hours).	
O	Fire/explosion	Equipment or infrastructure failure; Electrical fault; Lightning strike	Injury or loss of life; damage to infrastructure; temporary reduction in air quality; potential impacts to habitats or species.	1	Turbines are designed in accordance with IEC 61400 standards, including lightning protection (IEC 61400-24). No flammable materials are stored on-site during operation. Fire safety	1	Any fire-related incident would be isolated and contained. Impacts would be limited to localised damage and inconvenience, with negligible impact on human health or the wider	1

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					measures are incorporated in the design.		environment. Therefore, a Minor consequence is predicted, in that there would be: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							infrastructure (<6 hours).	
Decommissioning Phase								
P	Severe Weather	Extreme weather periods of heavy rainfall, taking into account climate change and strong winds	Injury or loss of life; Sedimentation of nearby watercourses; Potential impacts to aquatic habitats and species.	2	The CCRA presented in Chapter 12 confirms that the Proposed Development is at low vulnerability to climate hazards, including severe weather. The CCRA determined no significant risk from extreme events, with robust climate-resilient design and mitigation measures in place.	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							services or infrastructure (<6 hours).	
Q	Flooding	Extreme rainfall events causing fluvial or pluvial flooding during decommissioning.	Injury or loss of life; Sedimentation of nearby watercourses; Potential impacts to aquatic habitats and species.	2	The FRA detailed in Chapter 10 and its Technical Appendix, confirmed that the Proposed Development is at low risk of flooding from fluvial, pluvial, coastal, or groundwater sources. Infrastructure is sited on elevated ground, away from mapped flood zones, with appropriately sized culverts to manage extreme rainfall events. No residual flood risk was identified for the	1	A Minor consequence is predicted, in that: Small number of people affected; no fatalities and small number of minor injuries with first aid treatment. No contamination, localized effects. <0.5 M€ in infrastructure damage. Minor localised disruption to community services or	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, and the FRA concluded that flooding does not represent a credible major accident or disaster pathway for the Proposed Development.		infrastructure (<6 hours).	
R	Peat Stability	Excavation or disturbance of peat during dismantling of infrastructure; compounded by prolonged rainfall or drought cycles	Peat movement; Slope instability; Sedimentation of nearby watercourses; Potential impacts to habitats and species	1	A PSRA detailed in Chapter 9 and its associated Technical Appendix confirmed that the Proposed Development site is geotechnically suitable, with negligible to low risk of peat instability, with design and mitigation (e.g. safety buffers, stockpile	2	A Limited consequence is predicted, in that there would be: Limited number of people affected Simple contamination, localized effects of short duration. Normal community functioning	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					restrictions) in place. The GSI mapping confirmed no history of landslides within or near the site. Overall, the risk of a major accident arising from peat failure is considered very low.		with some inconvenience.	
S	Traffic Incident	Human error or failure of vehicular operations on site roads. Inadequate adherence to operational traffic management protocols.	Injury or loss of life.	3	Chapter 19 confirms that traffic associated with the decommissioning of the Proposed Development will be managed through an extension of the Construction Traffic Management Plan (CTMP), which will	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,	3

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					include scheduling, designated haul routes, public notification, and mitigation at sensitive locations. Pre- and post-decommissioning road condition surveys will also be undertaken. While decommissioning will generate increased heavy vehicle movements, including abnormal loads, the CTMP is designed to minimise disruption and ensure safe operation. With these measures		with 'no fatalities and small number of minor injuries with first aid treatment.'	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					in place, the risk of a major accident or disaster arising from traffic incidents during the decommissioning phase is considered unlikely.			
T	Loss of Critical Infrastructure	Equipment or electrical failure during grid disconnection or cable removal; Accidental damage to network	Injury or loss of life; Service disruption; Temporary loss of grid connectivity	1	Decommissioning works will be scheduled in advance with EirGrid. The grid connection will be taken offline through managed procedures, minimising disruption risk	2	Localised and short-term disruption only, with no public safety risk or significant service interruption. National grid resilience and redundancy prevent cascade effects. Therefore, a Limited	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							consequence is predicted, in that there would be: Limited number of people affected Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience.	
U	Contamination	Fuel spills during delivery or from machinery and vehicles; Runoff or seepage from excavations; Sediment-laden runoff from stockpiles; Sediment release from turbine bases, trenches or substations; Erosion of	Release of suspended solids to watercourses; Increased turbidity; Temporary reduction in water quality; Potential	2	During the decommissioning phase, a dedicated Decommissioning Environmental Management Plan (DEMP) will be prepared to manage and	2	A Limited consequence is predicted, in that there would be: Limited number of people affected	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		temporary drainage channels during rainfall	impacts on aquatic habitats and species		mitigate potential risks of contamination. This plan will include a suite of best practice environmental controls, building on the measures implemented during construction. The DEMP will provide for secure bunded storage of fuel and chemicals, location of storage areas away from watercourses, strict protocols for refuelling and maintenance, spill response procedures, and training of site personnel in		Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience.	

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					pollution prevention. As a result, the likelihood of a contamination event occurring is considered unlikely.			
V	Fire/explosion	Equipment or infrastructure failure; Fuel spillage; Controlled blasting; Electrical fault; and Human error	Injury or loss of life; Potential impacts to habitats and species, Potential contamination of watercourses, Temporary reduction in air quality	2	Fuel will be stored on-site during decommissioning in bunded and secure areas, and any blasting activity (if required) will be subject to a detailed Blasting Management Plan. Fire safety risks will be controlled via adherence to the Safety, Health and Welfare at Work Act 2005 (the 2005 Act)	2	Any fire is expected to be localised and rapidly contained, with only short-term disruption or inconvenience to local communities. Therefore, a Limited consequence is predicted, in that there would be: Limited number of	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					and a Fire Safety Risk Assessment.		people affected Simple contamination, localized effects of short duration. Normal community functioning with some inconvenience.	

Table 18-8: Risk Scores

Risk ID	Potential Risk	Likelihood Rating	Consequence Rating	Risk Score
Construction Phase				
A	Severe Weather	2	1	2
B	Flooding	2	1	2
C	Peat Stability	1	2	2
D	Traffic incident	3	1	3
E	Industrial Accidents	N/A	N/A	N/A
F	Loss of Critical Infrastructure	2	1	2
G	Contamination	2	2	4
H	Fire/ explosion	2	2	4
Operational Phase				
I	Severe Weather	2	1	2
J	Flooding	1	1	1
K	Peat Stability	1	2	2
L	Traffic incident	2	1	2
M	Loss of Critical Infrastructure	1	2	2
N	Contamination	1	1	1
O	Fire/ explosion	1	1	1
Decommissioning Phase				
P	Severe Weather	2	1	2
Q	Flooding	2	1	2
R	Peat Stability	1	2	1
S	Traffic Incident	3	1	3
T	Loss of critical infrastructure	1	2	2
U	Contamination	2	2	4

Risk ID	Potential Risk	Likelihood Rating	Consequence Rating	Risk Score
V	Fire/ explosion	2	2	4

Table 18-9: 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, S				
	2. Very Unlikely	A, B, F, I, L, P, Q	G, H, U, V			
	1. Extremely Unlikely	J, N, O	C, K, M, R, T			

18.4.6 CUMULATIVE EFFECTS AND OTHER INTERACTIONS

In line with EIA best practice and the EPA (2022) Guidelines on the Information to be Contained in EIARs, the assessment of major accidents and disasters has considered not only the potential effects of the Proposed Development in isolation, but also in combination with other past, present and reasonably foreseeable developments in the surrounding area.

Cumulative effects may arise when individually minor or non-significant risks interact spatially or temporally with similar risks from other projects or activities, leading to a combined effect that is greater than the sum of its parts. These effects can occur across local or regional scales and at different project phases (construction, operation and decommissioning). For the purposes of this assessment, particular attention was given to shared infrastructure, traffic impacts, utility corridors, and risks to shared environmental receptors such as water bodies and drainage catchments.

Where potential exists for cumulative interaction with other developments, particularly other wind energy or grid infrastructure projects within a 5 km radius, such interactions are primarily limited to the construction phase. These include temporary increases in traffic volumes on local and regional roads, overlapping demand on emergency services, and concurrent construction near sensitive environmental receptors such as watercourses or peatland areas. However, the implementation of project-specific Construction Traffic Management Plans (CTMPs), Emergency Response Procedures, and mitigation outlined in the CEMP and Chapter 19: Traffic and Transport ensures that risks from the Proposed Development are effectively contained.

No SEVESO or COMAH establishments are located within the consultation distance of the Proposed Development, and no cumulative industrial accident risk is identified. Similarly, the Peat Stability Risk Assessment (Chapter 9), the Flood Risk Assessment (Chapter 10) and the Climate Change Risk Assessment (Chapter 12) confirmed that the Proposed Development presents low vulnerability to climate-related hazards and that there is no potential for cumulative effects related to extreme weather, peat instability or fluvial/pluvial flooding when considered alongside other projects.

In summary, the cumulative risk of major accidents or disasters arising from the Proposed Development in combination with other relevant plans or projects is considered low, and no significant cumulative effects are anticipated.

18.5 MITIGATION MEASURES FOR MAJOR ACCIDENTS AND DISASTERS

No specific or standalone mitigation measures have been proposed solely in relation to major accidents and disasters, as the risk assessment concluded that the likelihood and consequence of such events occurring as a result of the Proposed Development is, at most, low across all phases. However, a wide range of design features and mitigation measures have been incorporated throughout the Proposed Development to address potential hazards and to reduce residual risks to an acceptable level.

These include:

- Drainage design and surface water management measures as outlined in Chapter 10: Hydrology, Water Quality and Flood Risk and detailed in the FRA, to prevent off-site discharge, minimise the risk of pluvial and fluvial flooding, and mitigate erosion or sediment mobilisation during construction and operation.
- Peat stability risk mitigation, including the avoidance of infrastructure in high-risk areas, enforcement of safety buffer zones, and restrictions on peat stockpiling in sensitive zones, as set out in the PSRA and Chapter 9: Land, Soils, Geology and Hydrogeology.
- Climate resilience design features in line with TII Guidance PE-ENV-01104, including structural and operational resilience of turbines, access roads and substations to projected future increases in wind speed, rainfall intensity and temperature extremes, as detailed in Chapter 12: Climate.
- Pollution prevention and spill response controls, including bunded fuel storage, designated refuelling areas, and adherence to industry-standard practices for the handling of hydrocarbons, as described in the CEMP and referenced in Chapters 9, 10 and 11.
- Controlled blasting procedures at the borrow pits (if required), implemented under a Blasting Management Plan to prevent structural damage or safety hazards during excavation works.
- Fire safety and emergency response protocols, to be implemented under the Health and Safety Plan and Fire Safety Risk Assessment as required under the Safety, Health and Welfare at Work Act 2005, and as referenced in the CEMP and Chapter 17: Material Assets.
- Traffic management and road safety controls, including a Construction Traffic Management Plan (CTMP), pre- and post-construction condition surveys, and haulage restrictions for abnormal loads, as described in Chapter 19: Traffic and Transport.
- Decommissioning phase controls, to be implemented under a future Decommissioning Environmental Management Plan (DEMP), which will mirror the approach and controls set out in the CEMP to manage risks associated with dismantling and site restoration activities.

All proposed mitigation and monitoring measures relevant to Major Accidents and Disasters are integrated into the topic-specific chapters of this EIAR and are summarised in Chapter 22: Schedule of Mitigation and Monitoring Measures. These measures collectively ensure that the Proposed Development is designed, constructed, operated and decommissioned in a manner that is resilient to external hazards and that minimises the risk of major accidents and disasters.

18.6 ASSESSMENT OF RESIDUAL EFFECTS

Following the implementation of the embedded design measures and topic-specific mitigation set out in the relevant chapters of this EIAR and summarised in Chapter 22: Schedule of Mitigation and Monitoring Measures, the risk of major accidents and disasters during the construction, operation, and decommissioning phases of the Proposed Development is considered to be low.

All potential major accident or disaster scenarios identified in the risk register were subject to detailed risk assessment. Each scenario was assessed based on likelihood, consequence, and vulnerability, informed by technical appendices including the Flood Risk Assessment, Peat Stability Risk Assessment and Climate Change Risk Assessment.

The risk of residual impacts from flooding, peat instability, contamination, fire/explosion, traffic incidents, and other hazards has been demonstrably reduced to low or very low with the application of the committed mitigation measures. Where applicable, emergency response and management measures will be implemented through the CEMP and, in due course, a DEMP. Standard operational protocols and health and safety procedures will remain in place throughout the operational phase.

As a result, no significant residual effects are expected to arise from major accidents or disasters. The Proposed Development is therefore not considered likely to pose a significant risk to human health, safety, the environment, or critical infrastructure.

18.7 REFERENCES

Clare County Council. (2018). *Major Emergency Plan*. Available from https://www.clarecoco.ie/services/emergency-services/publications/clare-major-emergency-plan-2018-20125.pdf (Accessed in July 2025)

Department of Defence (DD). (2017). *Strategic emergency national structures and frameworks*. Government of Ireland.

Department of the Environment, Heritage, and Local Government (DoEHLG). (2010). *A framework for major emergency management: Guidance document 1 – A guide to risk assessment in major emergency management*.

Department of the Taoiseach (DT). (2023). *Ireland's national risk assessment*.

European Commission (EU). (2017). *Environmental impact assessment of projects – Guidance on the preparation of the environmental impact assessment report*.

Environmental Protection Agency (EPA). (2014). *Guidance on assessing and costing environmental liabilities*.

Environmental Protection Agency (EPA). (2022). *Guidelines on the information to be contained in environmental impact assessment reports*.

Geological Survey Ireland (GSI). (2025). *Landslide events map*. Department of the Environment, Climate and Communications. Available from https://www.gsi.ie/en-ie/data-and-maps/Pages/Landslides.aspx (Accessed in July 2025)

Geological Survey Ireland (GSI). (2025). *Landslide susceptibility mapping*. Department of the Environment, Climate and Communications. Available from https://www.gsi.ie/en-ie/programmes-and-projects/geoenvironment/Pages/Landslide-Susceptibility.aspx (Accessed in July 2025)

Government of Ireland. (2023). *National risk assessment: Overview of strategic risks 2023*.

Health and Safety Authority (HSA). Notified Seveso Establishments database. Available online at: https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/comah/list_of_establishments/ (Accessed in July 2025)

Health and Safety Executive (HSE). (2001). *Reducing risks, protecting people*.

Institute of Environmental Management and Assessment (IEMA). (2020). *IEMA major accidents and disasters in EIA guide*.

International Maritime Organization (IMO). (2018). *FSA criteria guidance (MSC-MEPC.2/Circ.12/Rev.2)*.

Office of Public Works (OPW). *National Flood Information Portal, FloodInfo.ie*. Available online at https://www.floodinfo.ie/ (Accessed in July 2025).

Seveso III Directive (2012/18/EU) on the control of major accident hazards involving dangerous substances. (2012).

Statutory Instrument No. 13/2008 – Chemicals Act 2008.

Statutory Instrument No. 32/2010 – Chemicals (Amendment) Act 2010.

Statutory Instrument No. 102/2011 – Chemicals Act (CLP Regulation) Regulations 2011.

Statutory Instrument No. 138/2012 – Building Regulations (Part A amendment) 2012.

Statutory Instrument No. 209/2015 – The Control of Major Accident Hazards (COMAH) Regulations.

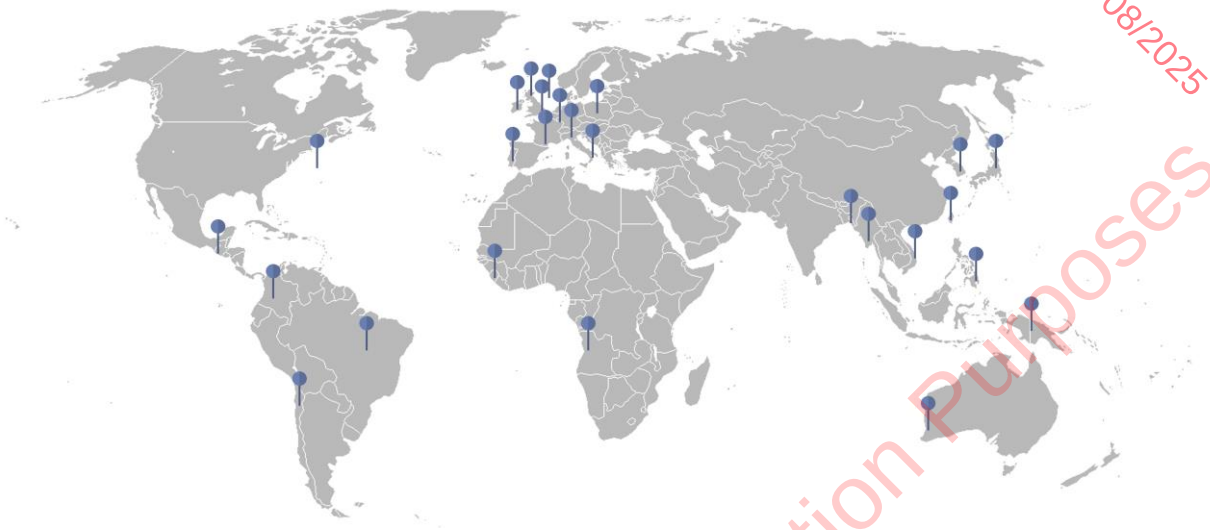
Statutory Instrument No. 208/2015 – Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) (Revocation) Regulations 2015.

Statutory Instrument No. 291/2013 – Safety Health and Welfare at Work (Construction) Regulations.

Statutory Instrument No. 299/2007 – Safety Health and Welfare at Work (General Application) Regulations.

Statutory Instrument No. 10/2005 – Safety Health and Welfare at Work Act.

GLOBAL PROJECT REACH



Offices

Dublin (Head Office)
Gavin & Doherty Geosolutions
Unit A2, Nutgrove Office Park
Rathfarnham
Dublin 14, D14 X627
Phone: +353 1 207 1000

Cork
Gavin & Doherty Geosolutions
First Floor, 12 South Mall
Cork
T12 RD43

London
Gavin & Doherty Geosolutions (UK) Limited
85 Great Portland Street, First Floor
London
W1W 7LT

Utrecht
Gavin & Doherty Geosolutions
WTC Utrecht, Stadsplateau 7
3521 AZ Utrecht
The Netherlands

Belfast
Gavin & Doherty Geosolutions (UK) Limited
Scottish Provident Building
7 Donegall Square West
Belfast
BT1 6JH

Edinburgh
Gavin & Doherty Geosolutions (UK) Limited
22 Northumberland Street SW Lane
Edinburgh
EH3 6JD

Rhode Island
Gavin & Doherty Geosolutions Inc.
225 Dyer St, 2nd Floor
Providence, RI 02903
USA

GDG
GAVIN & DOHERTY
GEOSOLUTIONS

Website: www.gdgeo.com
Email: info@gdgeo.com

A Venterra Group Plc
Member Company