17.0 MAJOR ACCIDENTS AND NATURAL DISASTERS

17.1 INTRODUCTION

This chapter assesses the potential significant adverse impacts of the proposed project on the environment deriving from its vulnerability to Major Accidents and/or Natural Disasters, as well as the potential of the proposed project itself to cause potential Major Accidents and/or Natural Disasters during the construction, operation and decommissioning phases.

The assessment is carried out in compliance with the European Union (EU) Directive 2011/92/EU (as amended by Directive 2014/52/EU)(the EIA Directive), 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 and proposed response to such emergencies."*

This chapter has also been carried out in compliance with Schedule 6 paragraph 2(h) of the Planning and Development Regulations 2001 (as amended) which requires:

> *"a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment 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, emergencies arising from such events."*

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, 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 (in relation to a major accident and/or natural disasters assessment) 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.'*

Any permutations within the proposed range of turbine dimensions (See Chapter 2, Description of the Proposed Project) have been considered within this assessment and will not affect the potential risks discussed below and subsequent significance of the predicted impacts.

17.1.1 Statement of Authority

This chapter was prepared by Oonagh Fleming and Dr. John Staunton of TOBIN Consulting Engineers. Oonagh Fleming is a Graduate Environmental Scientist in TOBIN. Oonagh holds a B.A. in Geography and Sociology. She has approximately two years of experience as an environmental consultant. John Staunton is a Senior Project Manager and Environmental Scientist in TOBIN more than fourteen years' postgraduate experience in both research and environmental consultancy. John holds a BSc and PhD in Environmental Science and has considerable experience in project managing wind energy developments and carrying out associated impact assessments including in preparing assessments in relation to population and human health (human beings).

This chapter has been reviewed by Orla Fitzpatrick, Technical Director in TOBIN's Environment and Planning Division. Orla is a chartered environmentalist with 22 years of experience and holds a BSc in Geophysical Science and a M.Sc. in Environmental Consultancy. Orla has considerable experience as technical approver of environmental deliverables for major infrastructure projects, including Major Accident and Natural Disaster chapters.

17.1.2 Consultation

Consultation with statutory and non-statutory organisations is a key part of the EIA process. The consultation process and responses are described in depth in Chapter 1, Section 1.8 and Chapter 11, Section 11.3.

For the purposes of this assessment, relevant consultation responses are included below.

The IAA (Irish Aviation Authority) requested (02/02/23), that in the event of permission being granted, they be notified to agree an aeronautical warning light scheme, provided a copy of the as-constructed turbine coordinates and that they be given 30 days notice before any crane operations commence. The proposed project, if granted, will fulfil the requests.

The IAA also recommended that the Applicant engage with DAA Cork Airport and the Air Navigation Services Provider (ANSP). Cork Airport were consulted as well as AirNav Ireland, the ANSP for Ireland since April 2023. AirNav Ireland provided a response to confirm that they had no observations to make. Cork Airport responded to ask for additional information on the proposed project which was provided on (10/10/2023), and they provided no further response (several reminders were sent requesting feedback on the proposed project) (see Section 11.2.2 and 11.3.1 of Chapter 11).

Telecommunications consultation is described in Section 11.2.2 and 11.3.2 of Chapter 11. Following receipt of consultation responses, the design of the proposed project was reviewed and revised, as necessary, to minimise any potential for effects on telecommunication networks.

This was carried out by inputting all the constraint data that was received into GIS mapping software and ensuring that the proposed turbine locations would not be located within the appropriate buffers (which were confirmed by the telecom companies). These constraints, along with others gathered as part of the EIAR (such as ecological, hydrological and proximity to sensitive receptors, etc.) were used when refining the proposed wind farm site layout.

17.1.3 Legislation, Policy and Guidance

The legislation, policy and guidance that was used to inform the assessment of the potential effects on the environment deriving from major accidents and natural disasters is listed below.

Legislation

- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) (as amended);
- No. 10 of 2005 – Safety, Health and Welfare at Work Act 2005;
- No. 46 of 2015 - Climate Action and Low Carbon Development Act 2015 (as amended);
- S.I. No. 209 of 2015 - Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (the "COMAH Regulations"),

Policy

- Waterford City & County Development Plan 2022 – 2028;
- Tipperary County Development Plan 2022- 2028;
- HSE South East (Area 5) Emergency Plan (Covering Geographical Areas of Counties Carlow, Kilkenny, South Tipperary, Waterford and Wexford), November 2019,

Guidance

- European Commission (2017) Environmental Impact Assessment of Projects – Guidance on the preparation of Environmental Impact Assessment Reports;
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;
- IEMA 2020 – Major Accidents and Disasters in EIA: A Primer;
- Department of Environment, Heritage and Local Government (2010) A Guide to Risk Assessment in Major Emergency Management;
- Department of Defence (2020) A National Risk Assessment for Ireland; and
- Department of Environment, Community and Local Government (DECLG), (August 2018); Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment).

17.1.3.1 EIA Directive

The EIA Directive identified key considerations in relation to major accidents and natural disaster risks and identified that EIARs should address issues such as:

- What can go wrong with a Project?
- What adverse consequences might occur to human health and to the environment?
- What is the range of magnitude of adverse consequences?
- How likely are these consequences?
- What is the Project's state of preparedness in case of an accident/disaster?
- Is there a plan for an emergency situation?

This chapter has considered each of the above points within this chapter as highlighted in Table 17-1 below.

Table 17-1 Key Considerations as Described in EIA Directive

Key Considerations	Location Within this Chapter
What can go wrong with a Project?	Risk assessment of all potential major accidents and natural disasters is carried out in Section 17.4. Risks that are described and assessed elsewhere in the EIAR are discussed in Section 17.3.
What adverse consequences might occur to human health and to the environment?	Potential adverse consequences discussed in Table 17-5.
What is the range of magnitude of adverse consequences?	Section 17.4.2 classifies and assesses each of the risks considered within this chapter. In Table 17-6 a consequence rating is assigned to each potential risk which describes the magnitude of adverse consequences. Where risks have been assessed elsewhere in the EIAR and are summarised within Section 17.3, the key findings and magnitude of adverse consequences of these risks are discussed within this section and in the relevant EIAR chapter.
How likely are these consequences?	Section 17.4.2 and Table 17-6 assigns a likelihood rating to each potential risk. Where risks have been assessed elsewhere in the EIAR and are summarised within Section 17.3, the likelihood of these risks are discussed within this section and in the relevant EIAR chapter.
What is the Project's state of preparedness in case of an accident/disaster?	Mitigation measures are discussed within Table 17-6 to describe the proposed project's state of preparedness.
Is there a plan for an emergency situation?	An Emergency Response Plan (ERP) has been developed as part of this EIAR and is included in the Construction Environmental Management Plan (CEMP). The ERP is described in Table 17-6.

17.2 ASSESSMENT METHODOLOGY

The impact assessment methodology is risk based and identifies potential unplanned risk events that the proposed project may be vulnerable to or that may occur due to the proposed project. There are three stages involved in determining such events adopted from A Guide to Risk Assessment in Major Emergency Management (DoEHLG 2010) and the Major Accidents and Disasters in EIA: A Primer guidance (IEMA, September 2020):

Stage 1: Screening/Identification – identifying potential unplanned risk events that the proposed project may be vulnerable to or that may occur as a result of the proposed project.

Stage 2: Classification – Following the initial identification and screening process, major accidents and/or natural disasters were evaluated with regard to the likelihood of occurrence and the potential impact; and

Stage 3: Assessment - This stage provides a greater understanding of the likelihood and consequence of events that have been carried forward into the EIA and defines a post mitigation risk score.

17.2.1 Stage 1: Screening

The screening stage of the assessment is a high-level exercise listing all risk events (unplanned) that the proposed project may be vulnerable to or that may be caused by the proposed project. In accordance with the EC (2017) document; EIA of Projects – Guidance on the preparation of the EIAR guidance, risks are identified in respect of the proposed projects

- potential to cause accidents and/or natural disasters,
- and vulnerability to potential natural disasters/accidents.

The list of risks has been developed through the identification of reasonably foreseeable risks in consultation with relevant contributors to this EIAR. The identification of risks has focused on non-standard but plausible incidents that could occur at or as a result of the proposed project during the construction, operation and maintenance and decommissioning phases.

The list of identified risks was subject to a screening exercise to determine if the risks meet the criteria of a major accident or natural disaster as defined by the IEMA 2020 guidelines as described below.

The IEMA (2020) provide the following definitions for a major accident and disaster.

> Major Accidents are *"Events that threaten the immediate or delayed serious environmental affects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g., train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events."*
>
> A Disaster *"May be a natural hazard (e.g., earthquake) or a man-made/external hazard (e.g., act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident."*

Where appropriate, risks were also screened out of the assessment according to the following criteria in line with the Major Accidents and Natural Disasters in EIA: A Primer guidance (IEMA, September 2020):

- The risk event is not applicable to a particular geographic location (e.g. volcanic or earthquake activity in Ireland); and
- Risks that have already been assessed in other areas of this EIAR, for example flood risk.

17.2.2 Stage 2: Classification

Following the screening stage any remaining major accident and/or natural disaster events were evaluated with regard to the likelihood of occurrence and the potential impact. The classification and rating of both the likelihood and impact are provided in Table 17-2 and 17-3 below. These classifications and ratings are taken from DoHELG (2010) A Guide to Risk Assessment in Major Emergency Management. The EPA Guidelines (EPA 2022) state that the risk assessment must be based on a 'worst case' approach. Therefore, the consequent rating assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or natural disaster.

Table 17-2 Classification of Likelihood (adapted from DoEHLG 2010 guidance).

Rating	Classification	Likelihood
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 communications; 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 organisations 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.

Table 17-3 Classification of Consequence (adapted from DoEHLG (2010) guidance).

Rating	Classification	Impact	Description
1	Minor	Life, Health, Welfare Environment, Infrastructure, Social	• Small number of people affected; no fatalities and small number of minor injuries with first-aid treatment. • No contamination, localised effects. • <0.5M Euros. • Minor localised disruption to community services or infrastructure (<6 hours).
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 Euros. • 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 Euros. • 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 Euros. • 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 2,000 evacuated. • Very heavy contamination, widespread effects of extended duration. • >25M Euros. • Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.

17.2.3 Stage 3: Assessment

In accordance with the DoEHLG's (2010) guidelines, the evaluated major accidents and/or natural disasters from Stage 2 were subject to a risk-based assessment to determine the level of significance of each risk for each scenario. The risk matrix, described in DoEHLG's (2010)

guidelines indicates the critical nature of each risk. Each risk from. The risk matrix is described below and presented visually Table 17-4.

The risk matrix consists of three zones;

- The red zone represents '**high risk** scenarios'; having an evaluated score of 15 to 25.
- The amber zone represents '**medium risk** scenarios'; having an evaluated score of 8 to 12.
- The green zone represents '**low risk** scenarios.' having an evaluated score of 1 to 6.

Table 17-4 Impact Assessment Matrix (adapted from DoEHLG (2010) guidance)

Likelihood Rating	5 – Very Likely	5	10	15	20	25
	4 – Likely	4	8	12	16	20
	3 – Unlikely	3	6	9	12	15
	2 - Very Unlikely	2	4	6	8	10
	1 – Extremely Unlikely	1	2	3	4	5
		1 – Minor	2 – Limited	3 – Serious	4 – Very Serious	5 - Catastrophic
		Consequence Rating				

The IEMA 2020 guidelines recommends that the major accidents and/or natural disasters assessment focuses on low likelihood but potentially high consequence events. Therefore, for the purposes of this assessment and to also bring this in line with DoEHLG's (2010) guidance, it has been assumed that the Red Zone is high likelihood/high consequence, and the Amber Zone is medium likelihood/high consequence.

All major accidents and/or natural disasters that fall within the Amber or Red Zones ('Medium' or 'High' risk scenarios) were considered to present a risk of significant effects following EPA Guidelines (EPA 2022).

17.2.4 Study Area

The study area for the Major Accidents and Natural Disasters assessment is the proposed project boundary, as shown in Figure 1-1 of Chapter 1 (Introduction). This incorporates the proposed wind farm site, the proposed grid connection route (GCR) and turbine delivery route (TDR) works areas. The proposed wind farm site covers an area of approximately 981.4 hectares (ha). See Section 2.1.1 of Chapter 2, Description of the Proposed Project for further details.

17.3 BASELINE ENVIRONMENT

A summary of the baseline environment focusing on aspects relevant to the risk of major accidents and natural disasters is provided below. This section summarises relevant details from assessments carried out within the EIAR. Refer to Section 2.2 of Chapter 2 Description of the Proposed Project for further detail regarding the site of the proposed project.

17.3.1 Meteorological

Ireland has a temperate, oceanic climate that results in typically mild winters and summers. Compared to other countries at similar latitudes Ireland does not experience the same extremes of temperature, largely due to the influence of the Atlantic Ocean on Irelands climate. The hills and mountains of Ireland provide shelter from strong winds and the oceanic influence [1].

Ireland's geographical location means it is less vulnerable to extreme natural hazards and disasters such as tsunamis or earthquakes. In recent years however, the occurrence of severe weather events has increased. Such weather events may include extreme heat or cold, heavy rainfall, snow, extreme winds which have the potential to disrupt project activity.

The nearest representative weather monitoring station collating detailed weather records is Cork Airport meteorological station, County Cork, which is located approximately 59km north-east of the site. Meteorological data from the Cork Airport station is available in 30-year averages[2]. The most recent 30-year average (1991-2020) provides an overview of the typical conditions experienced. December is the coldest month of the year, with an average temperate of 6.2 degrees Celsius. August is the warmest month with an average temperature of 15 degrees Celsius. December has the highest average monthly rainfall at 136.6mm per month on average, compared to the lowest month May with an average of 80.8mm of rainfall per month.

Latest Research from the EPA and Met Éireann regarding New Climate Projections (2020)[3] for Ireland indicate the predicted changes in Ireland's climate (mid-century projections 2040-2061), including:

- *"Temperatures are projected to increase by 1–1.6°C compared with the reference period (1981–2000), with an east-west gradient and with the largest increases in the east;*
- *Warming will be enhanced at the extremes, with summer daytime and winter night-time temperatures projected to increase by 1–2.4°C;*
- *The number of frost and ice days will decrease by approximately 50 %;*
- *Summer heatwave events are expected to occur more frequently;*
- *Precipitation is expected to become more variable, with substantial projected increases in the occurrence of both dry periods and heavy precipitation events;*
- *Snowfall is projected to decrease substantially across the country;*
- *Specific humidity is projected to increase substantially, while relative humidity is projected to increase slightly for all seasons except summer;*
- *Mean 10-m wind speeds are projected to decrease for all seasons;*
- *An overall reduction of ~10 % in the numbers of storms affecting Ireland, with an eastward extension of the more severe wind storms over Ireland and the UK".*

[1] Climate of Ireland - Met Éireann - The Irish Meteorological Service accessed 03/05/24
[2] 30 Year Averages - Met Éireann - The Irish Meteorological Service accessed 03/05/24
[3] https://www.met.ie/epa-climate-projections-2020 accessed 03/05/24

17.3.1.1 Climate Change Risk Assessment

Chapter 14 Air Quality and Climate of this EIAR considers the potential impacts of future climate change in sections section 14.4.2.2 (construction phase), 14.4.3.3 (operational phase) and 14.4.4.2 (decommissioning phase). A Climate Change Risk Assessment (CCRA) has been carried out with respect to the operational phase of the project.

Potential impacts of climate change on the proposed project include:

- Flood risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow;
- Geotechnical impacts; and
- Major storm damage – including wind damage.

The risk assessment assesses the likelihood and consequence of potential impacts occurring and then provides an evaluation of the significance of the impact and considers the implementation of mitigation measures. All risks discussed within the CCRA are considered to have a low potential for risk to the proposed project.

17.3.2 Flood Risk

A Flood Risk Assessment (FRA) has been carried out as part of the EIAR, see Appendix 9-4. A summary of the key findings of the FRA are included here.

In relation to fluvial flooding on the proposed wind farm site the FRA noted that the mountainous terrain and natural topography of the proposed wind farm site creates a dense stream network, providing a natural overland flow path to convey water away from the essential infrastructure and discourage flood storage at the subject site. The natural topography of the site is such that flood waters would flow away from the site towards lands further downstream that are at lower elevations. The risk of fluvial flooding to sensitive elements of the proposed wind farm is estimated to be low due to the river's location between two mountain peaks. This section of the Glenshelane River (the wind farm site) is situated in a steep valley, making it increasingly difficult for floodwaters to extend laterally. The FRA found that, given the topography of the site, the nature of the hydraulic features, extensive drainage network, and proposed site design, fluvial flood risk is considered minimal.

Based on the indicative pluvial flood mapping presented in the OPW Preliminary Flood Risk Assessment, it is estimated that several small areas of the proposed wind farm site have been identified to be potentially at risk of pluvial flooding in the southern portion of the subject site, corresponding to small, localised depressions. Any localized depressions or areas where ponding may occur will be raised to facilitate construction in areas where development is proposed. It is predicted that the storm water management system proposed as part of the project will limit runoff from the site to greenfield runoff rates, therefore mitigating against an increase in flood risk elsewhere. On this basis, it is estimated that the proposed wind farm site is not at risk of pluvial flooding, and that there will be no cumulative effects on flood risk elsewhere.

There is no evidence to suggest groundwater as a potential source of flood risk to the proposed project.

Proposed GCR

While the proposed GCR passes through areas of fluvial flooding resilience of underground cables, advanced construction techniques, and targeted flood mitigation measures ensure that the grid connection remains secure and functional, even in the face of potential flood events.

The proposed GCR is not expected to face pluvial flooding risks.

Proposed TDR

By planning the delivery of turbines during times when river levels are typically lower, the likelihood of encountering floodwaters can be significantly reduced. This strategic timing, combined with thorough planning and coordination, will help ensure that the delivery proceeds safely and efficiently, minimising any potential disruptions or hazards associated with fluvial flooding.

The proposed TDR is not expected to face pluvial flooding risks.

17.3.3 Peat Stability

A planning stage peat stability risk assessment (PSRA) was carried out to determine the stability of peat slopes and to identify areas that are suitable for development (see Appendix 8-2). The findings of the peat assessment showed that the proposed wind farm site has an acceptable margin of safety and is suitable for the proposed wind farm.

The findings of the assessment discriminate between areas of stable and unstable peat, and areas of marginal stability where restrictions may apply. Shallow peat/peaty topsoil is located to the north of the proposed wind farm site in the vicinity of T1 to T7. The peat in this area is not extensive as peat on the proposed wind farm site has been drained and harvested previously. Mineral soils (areas around T8 to 15) will be either reprofiled (i.e., placed within/adjacent to works locations) or else used for borrow pit reinstatement (this may include temporary placement within the footprint of an unused borrow pit). Where peat is encountered during any excavations, this will be removed and used to backfill the borrow pit without any temporary placement elsewhere.

No evidence of historic peat failure was identified during the site walkover. No peat slides were recorded in the study area. The assessment process described above was applied to discrete areas of the site, with common topography and ground conditions, and is summarised in Table 6 of Appendix 8.2 PSRA. This assessment is based on information from geological maps from GSI, the available aerial and satellite mapping, walkovers, and the site-specific ground investigation undertaken. The Peat Stability Risk Register that this summary table is derived from is presented in Appendix 8.2 PSRA, where detailed risk registers for each assessment area are provided. During the geotechnical investigation by trial pits, eighteen of the twenty trial pit side walls were noted as being stable, with just two spalling or collapsing. This suggests stable soil conditions. Pre-mitigation, two areas are rated as medium risk, T3 and T6. This is due to the slope and shallow depths of peat encountered during ground investigations (0.2 to 0.4m). The remaining areas were classified as low (6 no.) or negligible (8 no.) risk.

The findings of the peat stability assessment showed that the proposed wind farm site has an acceptable overdesign factors (ODF) (3.2 or greater), is suitable for the proposed project and is considered to be at low risk of peat failure.

No peat or karst is identified on the proposed GCR or at the TDR. The sensitivity is considered negligible and magnitude is negligible. As such no potential risk is considered in this regard.

17.3.4 COMAH (Seveso) establishments

The Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (the "COMAH Regulations"), implement the Seveso III Directive (2012/18/EU). The purpose of the COMAH Regulations is to lay down rules for the prevention of major accidents involving dangerous substances. Seveso sites are defined as Industrial sites that, because of the presence of dangerous substances in sufficient quantities, are regulated under the Seveso III Directive.

COMAH (Control of Major Accidents and Hazards) (Seveso) establishments are designated as such as they pose an identified risk to public and environmental health and safety and are regulated by the Health and Safety Authority (HSA). COMAH establishments are categorised in two tiers – Upper Tier and Lower Tier depending on their activity.

The proposed project will not come under the Control of Major Accident Hazards (COMAH) Regulations.

Additionally, there are no Upper or Lower Tier COMAH establishments located in proximity of the proposed wind farm site, the closest Upper Tier COMAH establishment in Co. Waterford, is Trans-Stock Warehouse and Cold Storage Ltd. located over 70 km from the proposed wind farm site and the closest Lower Tier COMAH establishment, Stafford Wholesale Ltd., is located over 75km from the proposed wind farm site.

There are no COMAH establishments located in proximity to the proposed GCR. The closest COMAH establishment is Stafford Wholesale Ltd, Co. Waterford which is located approximately 40km from the nearest point on the proposed GCR route (Dungarvan 110kV substation).

Works along the proposed TDR route will be short-term and temporary in nature and as such no interactions with COMAH sites are anticipated.

17.3.5 Major Infrastructure and Built Services

A detailed assessment of major infrastructure, built services and waste services in relation to the proposed project has been carried out in Chapter 11, Material Assets.

17.3.5.1 Aviation

The nearest significant airport to the proposed project is Waterford Airport, located approximately 48 kilometres east of the proposed wind farm site, while Cork Airport is located approximately 58 kilometres to the west.

The nearest airfield / airport related sites are Fethard Airstrip, Co. Tipperary a small private grass airstrip located approximately 28km northeast of the proposed wind farm, with a runway pointing in a general east-west direction (i.e. not towards the proposed wind farm) and Killenaule Airfield, Co. Tipperary located over 35 km north of the proposed wind farm which is no longer in operation[4].

[4] Killenaule Airport Killenaule, live arrivals and departures online (aviatable.com))accessed 24th November 2023)

The proposed TDR and GCR will not have the potential to impact aviation.

17.3.5.2 Telecommunications

There were four telecommunication mast sites identified using the ComReg Siteviewer[5] within 10km of the proposed wind farm site.

- A loSite WD_2554 (Meteor)[6] – located in Cappoquin (situated c. 4 km south west);
- Site WT0038 (Three) and Site WD_2156 (Meteor) – located at Eaglehill (Knockarana) (situated c. 4.5 km east);
- Site WT0042 (Three), Site WD_1915 (Meteor), and Site WD030 (Vodafone) – located at Deerpark Mountain (situated c. 7.2 km north east);
- Site TY074 (Vodafone) – located at Middlequarter (County Tipperary) (situated c. 3.7 km north).

Telecommunication links are considered in the assessment of risk in Chapter 17 in relation to strategic infrastructure.

The proposed GCR will not have the potential to impact telecom links above. There is the potential that there may be some localised underground telecoms cables within the road, however none were pointed out during the consultation process.

The proposed GCR will not have the potential to impact telecom links above. Works along the proposed TDR will occur on already disturbed ground and as such no localised underground telecoms cables are anticipated to be encountered.

17.3.5.3 Major Infrastructure and Built Services

All strategic infrastructure (overhead electricity lines, underground water pipes and gas network pipes) has been mapped in relation to the proposed project and considered within the assessment (see Chapter 11 Material Assets).

There are some overhead electricity lines within the proposed project area (Figure 1-1, Chapter 1) which have been considered in the design.

No underground water pipes have been identified to be within the proposed project site.

There were no gas network pipes found to be in the area surrounding the proposed wind farm site or proposed GCR. There was a gas pipe found to be located adjacent to one of the proposed temporary works areas on the Carrick Road Roundabout on the N25, near Waterford city to accommodate the delivery of the turbine components (See Figure 11-1, Chapter 11).

While all strategic infrastructure has been mapped and considered within the EIAR there is a possibility of some infrastructure, particularly underground infrastructure, being discovered during the proposed works, particularly near public roads and houses or farmyards. As such, the potential risk of a major accidents and/or natural disaster in relation to strategic infrastructure is considered within the assessment in this chapter.

[5] https://siteviewer.comreg.ie/#explore accessed 25/10/2023.
[6] ComReg SiteViewer notes operator as Meteor, this operator is now known as Eir Mobile.

17.4 POTENTIAL EFFECTS

17.4.1 Stage 1: Screening

The list of risk events considered to meet the criteria of a potential major accident and/or natural disaster and therefore require further assessment are listed in Table 17-5 below.

Potential hazards listed in the HSE Emergency Management: Area 5 Emergency Plan with relevance to the proposed project have been considered within this assessment.

Risks were screened at this stage using the criteria from Section 17.2 above and either screened in for further assessment or screened out from the process.

Table 17-5: Major Accidents and Natural Disasters – Stage 1 Risk Register

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	For further assessment (Y/N)	Justification
A	Construction	Striking strategic infrastructure resulting in damage, disruption to services and / or fatalities / injuries	Interaction with unknown strategic underground services (such as power, water & telecommunications); faulty equipment or procedures; contractor error.	Y	During the construction phase there is risk of encountering strategic infrastructure which could result in significant prolonged disruptions. There is also a risk of fatality or injuries if gas or electrical infrastructure is encountered. This risk has been screened in for further consideration.
B	Construction	Contamination of ground or surface water. This is associated with construction works.	Heavy rain during construction activities; Mobilisation of contamination during construction activities such as excavation, fuel spillage, seepage, stockpiled material providing a point source of exposed sediment, erosion.	Y	There is potential for contamination during the construction phase. This risk has been screened through for further consideration.
C	Construction	Major traffic accidents resulting from construction phase traffic or temporary construction traffic management measures	Heavy vehicles (HVs) navigating through narrow roads. Driver error - not abiding by potential re-routing or management measures.	Y	Potential for major accident due to increase in traffic and HVs using construction routes and site access points. This risk has been screened in for further consideration.

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	For further assessment (Y/N)	Justification
D	Construction / Operational / Decommissioning	Movement of peat within the site during construction / Landslide	Mismanagement of excavated material on site. Severe weather conditions- storm, flooding	N	This has been considered within Chapter 9 and the PRSA, as described above in Section 173.3. The findings of the peat stability assessment showed that the proposed project has an acceptable factor of safety and is considered to be at low risk of peat failure. Therefore, this risk is not considered further within this assessment.
E	Construction / Operational / Decommissioning	Flooding of site during construction, operational and decommissioning stage.	Periods of heavy prolonged rainfall. Climate change.	N	The potential for flooding risk has been considered within the Flood Risk Assessment and Chapter 9 Hydrology and Hydrogeology, as described in 17.3.2. The assessment concluded that the key infrastructure including the substation site is not at risk from extreme flooding, will not contribute to extreme flooding and that the proposed infrastructure will not be significantly affected by climate change. Therefore, this risk is not considered further within this assessment.
F	Construction/ Operational	Collision risk resulting in damage to infrastructure and/or injuries	Low flying planes	N	Aviation has been considered within Chapter 13 Material Assets, as discussed in Section 17.3.5.1 and effects on aviation are not anticipated. As such, this risk is not considered further within this chapter.
G	Construction/ Operational	Incident at nearby Seveso site involving release of dangerous substances.	Fire / explosion or an infrastructure failure at a Seveso site	N	As discussed above in section 17.3.4 the proposed project is not a COMAH or nuclear installation and no interaction is anticipated between a COMAH site and the proposed project. As such, this risk is not considered further within this chapter.
H	Operational	Collapse / damage of structures/infrastructure.	Earthquake	N	The cause of this risk (earthquake) is not considered applicable to this geographic location as discussed above in Section 17.3.1. As such, this risk is not considered further within this chapter.
I	Construction / Operational / Decommissioning	Risks related to climate change such as increased frequency and strength of storms, heightened flood	Climate change	N	The potential for climate change associated risks has been considered within Chapter 14 (Air Quality and Climate) as described in 17.3.1.1. The assessment concluded that the risks

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	For further assessment (Y/N)	Justification
		risk, risk of extreme temperatures.			considered within the CCRA were deemed to have a low potential for risk.
J	Operational	Collapse / damage of turbine structures / infrastructure at substation	HVs collision;	Y	There is potential for a major accident with a building / structure collapse including the potential for injuries. This risk has been screened in for further consideration.
K	Operational	Fire at wind turbines during construction / operation phase resulting in damage to infrastructure and/or injuries	Lightning strike; Equipment failure.	Y	There is potential for lightning strike resulting in damage to infrastructure and/or injuries. This risk has been screened in for further consideration.
L	Operational	Ice falling from wind turbine blades	Injury from flying ice from wind turbine blades	Y	Potential for injury, damage to infrastructure. This risk has been screened in for further consideration.

Risks D, E, F, G, H and I were not brought forward for further consideration as discussed in Table 17-5.

Risks A, B, C, J, K and L were considered to meet the potential of a major accident and/or natural disaster and require further assessment relative to the proposed project.

17.4.2 Stage 2: Classification and Assessment

Table 17-6 below considers risks A, B, C, J, K and L that were brought forward for further consideration.

The design of the proposed project incorporates mitigation measures. Following consideration of these measures the risks were assigned a consequence and likelihood rating to determine their risk score.

Table 17-6 Major Accidents and Disasters – Risk Classification Considering Mitigation

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	Overview of Mitigation	Likelihood Rating	Consequence Rating	Risk Score
A	Construction	Striking strategic infrastructure resulting in damage, disruption to services and / or fatalities / injuries	Interaction with unknown unknown strategic underground services (such as power, water & telecommunications); faulty equipment or procedures; contractor error.	The design of the proposed project was reviewed and revised, as necessary, following scoping and a review of the ComReg Siteviewer, to minimise any potential for effects on telecommunication networks (see Section 17.4.6 and Chapter 11). The proposed project will follow guidance from Gas Networks Ireland (GNI) when undertaking excavations works and will adhere to measures set out by Gas Networks Ireland 'Safety advice for working in the vicinity of natural gas pipelines'. All proposed works being carried out on overhead or underground electricity cables will be done in consultation with ESBN/EirGrid, as required, and will comply with their guidance and best practice (ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines, 2019, and EirGrid Site Investigations, Planning and Environment, Health and Safety webpage and Consultation Portal). A confirmatory survey of all existing services will be carried out prior to construction to verify the assumptions in this report and identify the precise locations of any services. The applicant will liaise with the service provider where such services are identified. Digging around existing services, if present, will be carried out by hand to minimise the potential for accidental damage. Prior to undertaking excavation works, the Dial Before You Dig services provided by the various utilities will be availed of to obtain information on the location of underground pipes and cables in and around any proposed excavations. The area will then	2	3	6

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	Overview of Mitigation	Likelihood Rating	Consequence Rating	Risk Score

				be scanned using a Cable Avoidance Tool (CAT) to confirm the positions of services and infrastructure.
				
				Prior to any excavation works, the construction areas will be marked out and fenced appropriately. Works will be carried out in accordance with the Health and Safety Authority (HSA) Code of Practice for Avoiding Danger from Underground Services (HSA 2010, updated 2016).
				
				A CEMP has been prepared to present the minimum standard required by the Contractor for the proposed management and administration of site activities for the construction phase of the proposed project, to ensure that all construction activities are undertaken in an environmentally responsible manner. The CEMP will be a live document which will be updated post-consent as it will include method statements and work programmes that provide more detailed phasing of work based on the methodologies described in Chapter 2 (Description of the Proposed Project).
				
				The CEMP also includes an ERP (as described in Section 17.1.3.1) which will be further developed during construction and on operation of the proposed project. The ERP details the following
				• Potential hazards
				• Rols and responsibilities
				• Emergency response procedures
				  ○ Site evacuation and fire drills
				  ○ Spill response and control
				  ○ Other environmental incidents
				  ○ Excessive peat movement
				  ○ Peat slide
				  ○ Incidents/complaints
				• Emergency contact details
				• Emergency communication procedure			

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	Overview of Mitigation	Likelihood Rating	Consequence Rating	Risk Score
				• Personnel tracking procedure • Induction checklist			
B	Construction	Contamination of ground or surface water. This is associated with construction works.	Heavy rain during construction activities; Mobilisation of contamination during construction activities such as excavation, fuel spillage, seepage, stockpiled material providing a point source of exposed sediment, erosion.	The contract documents and works requirements will specify the necessity for the contractor to take all precautions needed to limit sedimentation of water channels. Contractors will be required to specify temporary sediment control measures (i.e. grit traps or similar) to be employed along with water attenuation during construction. Some measures will include: • No refuelling will take place within 50 m of any watercourse. • Location of borrow pits >100m from streams • Locating turbines over 50m from streams; • No instream works, • Use of clear span bridges; and • Use of precast concrete elements. The best management practice objectives for concrete chute washout are to collect and retain all the concrete washout water and solids in leak proof containers or impermeable lined wash out pits, so that the wash material does not reach the soil surface and then migrate to surface waters or into the ground water. The collected concrete washout water and solids will be emptied on a regular basis. A Surface Water Management Plan (SWMP) (Appendix 2-10) has been developed as part of the EIAR. The objective of this SWMP is to ensure all site works are conducted in an environmentally	2	3	6

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	Overview of Mitigation	Likelihood Rating	Consequence Rating	Risk Score
				responsible manner to minimise any adverse impacts on surface water quality that may occur as a result of works associated with the development of the proposed project, incorporating the following specific objectives: • Provide overall surface water management principles and guidelines for the construction phase of the proposed project; • Address erosion, sedimentation and water quality issues; and • Present measures and management practices for the prevention and/or mitigation of potential downstream impacts. The Surface Water Management Plan as designed will ensure that all water within the construction works will be collected and treated before being dispersed overland to the downstream watercourses. The attenuation system will ensure that there will be no increase in flow rates downstream and consequently there will be no increase in flood risk downstream of the site as a result of the proposed project.			
C	Construction	Major traffic accidents resulting from construction phase traffic or temporary construction traffic management measures	HVs navigating through narrow roads. Driver error - not abiding by potential re-routing or management measures.	The risk of major accidents and/or natural disasters resulting from a road traffic accident associated with the proposed project will be reduced by the development and implementation of a construction phase Traffic Management Plan (TMP) (see Appendix 2-4) as described in Chapter 16, Traffic and Transportation. The Traffic Management Plan is a live document (i.e. subject to review and updates pre-construction) and will be developed through the detailed design and construction phase with ongoing consultation with the Local Authority, An Garda Síochána, Emergency Services and other stakeholders.	3	2	6

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	Overview of Mitigation	Likelihood Rating	Consequence Rating	Risk Score
				This TMP has thus far been developed so that the necessary steps are taken throughout the planning proposals to support an efficient, safe transportation operation, with the least possible impact upon vulnerable road users and traffic along the haul roads or close to the proposed project.			
J	Operational	Collapse / damage of turbine structures / infrastructure at substation	HVs collision; Severe weather.	Extensive and detailed ground investigation will be undertaken by the appointed Contractor to inform the detailed design and appropriate construction technologies and plant to be deployed. Contractors with a proven track record in delivering work of the scope required by the works will be appointed. There are no dwellings located within 800m of the proposed turbine locations, therefore the risk to residential receptors from turbine collapse is not considered significant. The proposed tip height of the turbines is between 179.5 - 185m, therefore all residential dwellings are significantly removed from any area of a potential turbine collapse. An outline ERP has been prepared as part of the CEMP as discussed above in relation to Risk A.	2	3	6

Risk ID	Stage	Risk Event and Consequence	Possible Cause(s)	Overview of Mitigation	Likelihood Rating	Consequence Rating	Risk Score
K	Operational	Fire at wind turbines during construction / operation phase resulting in damage to infrastructure and/or injuries	Lightning strike; Equipment failure.	All buildings will be designed and constructed to meet the requirements of Part B (Fire Safety) of the Building Regulations 2012 (S.I. No. 138 of 2012). Neither the draft 2019 Wind Energy Development Guidelines (WEDGs) nor the current 2006 WEDGs refer to the likelihood of fires from turbines and it is considered that the potential risk of a fire is very low. The risk of turbine fire or collapse is very low on the basis of comprehensive turbine base design considerations, safety checks throughout the turbine installation process and turbine suppliers' many years of experience in developing and innovating safety in the wind energy industry. The turbines will be fitted with lightning conductors to minimise the potential risk of lightning induced fires. As mentioned above, an outline ERP has been prepared as part of the CEMP.	2	2	4
L	Operational	Ice falling from wind turbine blades	Injury from flying ice from wind turbine blades	The Draft 2019 WEDGs refer to the very remote possibility of injury to people (or animals) from flying fragments of ice or from a damaged blade but note that most blades are composite structures with no bolts or separate components and that most turbines are fitted with anti-vibration sensors, which will detect any imbalance caused by icing of the blades and prevent start-up. Modern Wind Turbine Generators have incorporated an advanced blade anti-icing solution to their design. The Anti-Icing system uses electro-thermal heating elements embedded in the blade material to prevent ice build-up and allow turbines to function in cold climates.	2	2	4

The results from the evaluation of risk, have been summarised/categorised in Table 17-7 below.

Table 17-7 Risk Assessment Evaluation

Likelihood Rating	5 – Very Likely					
	4 – Likely					
	3 – Unlikely					
	2 - Very Unlikely			A, B, C, J		
	1 – Extremely Unlikely			K, L		
		1 – Minor	2 – Limited	3 – Serious	4 – Very Serious	5 - Catastrophic
		Consequence Rating				

From assessing the potential risks and mitigation measures presented in Table 17-4, Risks A, B, C, J, K and L all fall within the green zone and were considered low risk scenarios broadly acceptable with mitigation measures as such the proposed project is not at risk from or at risk to cause a major accident and/or natural disaster.

The risk management assessment of major accidents and natural disasters will be continued on an ongoing basis throughout the detailed design, construction phase and operational phase of the Proposed Project.

17.5 RESIDUAL EFFECTS

This chapter has assessed the potential risk of major accidents and natural disasters from the construction, operation and decommissioning phases of the proposed project. In accordance with the DoEHLG guidance the risk of a major accident and/or natural disaster is considered 'Low'.

With implementation of the mitigation measures already detailed in Chapter 6 - 18 in this EIAR (Table 17-5), there will not be significant residual effects associated with the proposed project.

17.6 CUMULATIVE ASSESSMENT

In the assessment of cumulative effects, any other existing, permitted or proposed developments in the surrounding area have been considered where they have the potential to generate in-combination or cumulative effects with the proposed project (see Chapter 4 of this EIAR for a full description of developments considered). This included other wind farms in the region, including the proposed Dyrick Hill Wind Farm located adjacent to the proposed wind

farm site. Dyrick Hill in particular has been considered within this cumulative assessment due to its proximity to the proposed project and considering the potential for the construction phases of both proposed wind farms to overlap. Due to the separation distance and the low level of connectivity of forestry parcels between the proposed project and most other projects considered within the cumulative assessment (see Chapter 4 of this EIAR for a list of developments considered), and the implementation of proposed mitigation measures for the proposed project and the other projects, there is no potential for significant cumulative increase to the risk of a major accident and/or natural disaster occuring in relation to these projects.

The proposed Dyrick Hill Wind Farm (ABP Ref. 317265), the site of which is located directly adjacent to the currently proposed Scart Mountain Wind Farm site, was recently (October 2024) refused planning permission by An Bord Pleanála. As there is still a potential for judicial review at the time of writing this EIAR chapter (November 2024), it has been decided to include the project in the cumulative impact assessments. In the event that the refusal of the Dyrick Hill Wind Farm application is confirmed prior to the determination of the current application, then any discussions around cumulative impacts for this project in this EIAR can be ignored by ABP.

Construction Phase

Drainage management measures will be employed during the construction phase of the proposed project which will ensure that there is no flood risk to the downgradient (downstream) of the proposed wind farm site as described in Section 17.4.3 and Chapter 9 Hydrology and Hydrogeology). As such the proposed project will not contribute to potential cumulative flood risks.

There is a slight, increased chance of cumulative contamination effects in relation to adjacent proposed Dyrick Hill Wind Farm, particularly if the construction phases overlap. However, following the implementation of appropriate mitigation as described in Section 17.7.1, Chapter 9 Hydrology and Hydrogeology and the SWMP (Appendix 2-10) no significant effects are predicted.

There is a slight, increased chance of traffic accidents in relation to adjacent proposed Dyrick Hill Wind Farm, particularly if the construction phases overlap. However, following the implementation of appropriate mitigation as described in Section 17.7.1, Chapter 16 Traffic and Transportation and the TMP (Appendix 2-4) no significant effects are predicted.

Operational Phase

Considering the low likelihood of occurrence and the implementation of appropriate mitigation measures in relation to the risk of turbine collapse, the risk of fire and the risk of falling ice there is no significant cumulative effects predicted in relation to these risks.

The risk of potential traffic accidents is considered to be very low during the operational phase.

There are no potential cumulative effects identified for any part of the proposed project (including the route of the proposed GCR, or along the proposed TDR). This is based upon the low risk of major accidents or natural disasters associated with the proposed project and a review of the projects in the surrounding area.

17.7 CONCLUSION

This chapter has assessed the vulnerability of the proposed project to major accidents and natural disasters, as well as the potential of the proposed project itself to cause potential major accidents and/or natural disasters during the construction, operation and decommissioning phases Where significant effects have been identified, additional mitigation will be implemented in full and has been incorporated into the assessment.

Table 17-7 confirms the significance of any residual effects following the application of mitigation measures. Following the assessment with mitigation measures, the risks fall within the green zone and were considered low risk scenarios. Any permutations within the proposed range of turbine dimensions will not affect the significance of the potential effects.

With all mitigation measures implemented there is no significant residual effects from the proposed project in relation to the risk of major accidents and/or natural disasters.