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19

Major Accidents and Disasters

19 Major Accidents and Disasters

19.1 Introduction

This chapter of the EIAR assesses the impacts of a proposed anaerobic digestion facility on Major Accidents and Disasters. This chapter of the EIAR should be read in conjunction with the architectural and engineering drawings submitted as part of this planning application. The assessment of impacts has been undertaken in the context of current relevant standards and guidance, and identifies any requirements or possibilities for mitigation. A full description of the development can be found in **Chapter 6 Description of Proposed Development**.

This assessment is a review of major accident hazards and disasters based on the engineering design, drawings and documentation.

This chapter of the Environmental Impact Assessment Report has been prepared by Matthew Michie a Senior Environmental Consultant at AWN Consulting Limited. Matthew holds an MChem and a MSc (Physical Chemistry). Matthew has 5 years' experience in environmental consulting and process safety, and has been involved in numerous EIARs for a range of projects including commercial, residential, industrial, pharmaceutical and data centre developments.

19.2 Methodology

Alongside the legislation, policy, and guidance outlined in Chapters 2 and 4, the following relevant legislation, policy, and guidance has informed the preparation of this chapter:

- EPA 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022),
- EPA 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2018),
- Health and Safety Authority Guidance on Technical Land-Use Planning Advice, for planning authorities and COMAH establishment operators (2023)
- Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015
- HSA Guide to the COMAH Regulations 2015 (S.I. No. 209 of 2015)
- Building Regulations (Part A Amendment) Regulations 2012 (as amended) (SI No. 138 of 2012)
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended) (hereafter referred to as the Safety, Health and Welfare (Construction) Regulations) (S.I. No. 291 of 2013)
- A Framework for Major Emergency Management. Guidance Document 10 (DECLG 2015)

The EPA Guidelines, 2022, state that:

"To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and /or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk). This may be supported by general risk assessment methods or by systematic risk assessments required under other legislation e.g. a COMAH (Control of Major Accident Hazards involving Dangerous Substances) assessment.

The potential for a project to cause risks to human health, cultural heritage or the environment due to its vulnerability to external accidents or disasters is considered where such risks are significant, e.g. the potential effects of floods on sites with sensitive facilities. Where such risks are significant then the specific assessment of those risks in the form of a Seveso Assessment (where relevant) or Flood Risk Assessment may be required."

19.2.1 Major Accidents

For the purpose of this assessment, the definition of a 'Major Accident' is taken from the guidelines on Major Accidents and Disasters within EIA published by Institute of Environmental Management and Assessment (IEMA, 2020).

"A major accident is 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". Major accidents can be caused by disasters resulting from both man-made and natural hazards. A disaster is a man-made / external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident. In general, major accidents and / or disasters should be considered as part of an assessment where the development has the potential to cause the loss of life, permanent injury and/or temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration."

For the purpose of this assessment, the definition of a 'Disaster' is as follows (IEMA, 2020):

"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."

For the purposes of this assessment, the definition of 'Vulnerability' is as follows (IEMA, 2020):

"Vulnerability – describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to 'exposure and resilience' of the proposed development to the risk of a major accident and / or disaster. Vulnerability is influenced by

sensitivity, adaptive capacity, and magnitude of impact; and Significant environmental effect (in relation to a major accident and / or disaster assessment) – includes 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."

19.2.2 Background to Control of Major Accident Hazards Involving Dangerous Substances (COMAH) Regulations

The Seveso III Directive (2012/18/EU) requires Member States to apply land-use or other relevant policies to ensure that appropriate distances are maintained between residential areas, areas of substantial public use and the environment, including areas of particular natural interest and sensitivity and hazardous establishments. For existing establishments, Member States are required to implement, if necessary, additional technical measures so that the risk to persons or the environment is maintained at an acceptable level.

The purpose of the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations (S.I. 209 of 2015) (COMAH Regulations)is to transpose the Seveso Directive into Irish law and lay down rules for the prevention of major accidents involving dangerous substances, and to seek to limit as far as possible the consequences for human health and the environment of such accidents, with the overall objective of providing a high level of protection in a consistent and effective manner.

The COMAH Regulations will apply to the proposed development as the proposed development will store significant quantities of hazardous materials which are in excess of the defined COMAH thresholds set out in Schedule 1 of the COMAH Regulations.

The HSA is the Competent Authority in Ireland as defined by Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015, (COMAH Regulations 2015) which implement the Seveso III Directive in Ireland. The HSA is responsible for ensuring that the impacts of facilities which fall within the remit of this legislation are taken into account with respect to land use planning. This is achieved through the provision of technical advice to planning authorities.

A Land Use Planning assessment has been carried out, by AWN Consulting Ltd., as part of this planning application in accordance with the Guidance on Technical Land Use Planning Advice (HSA, 2023). This assessment provides detailed analysis of the major accident scenarios at the proposed development.

The land use planning assessment has been carried out in accordance with the HSA's Guidance on technical land-use planning advice (HSA, 2023). This approach involves delineating three zones for land use planning guidance purposes, based on the potential risk of fatality from major accident scenarios resulting in damaging levels of thermal radiation (e.g. from pool fires), overpressure (e.g. from vapour cloud explosions) and toxic gas concentrations (e.g. from an uncontrolled toxic gas release).

19.2.3 Baseline Scenario / Likely Future Receiving Environment Analysis Methodology

The EPA Guidelines on the Preparation of an EIAR (EPA, 2022) state that:

> *"It is important to demonstrate that correct methodologies and experts have been used. It is also important that the methodology used in establishing the baseline scenario is documented to permit replicable future monitoring so that the later results can be properly compared (where required). Standard recognised methods should be applied where available and appropriate."*

The baseline/future receiving environment analysis for this Chapter has been undertaken in accordance with the EPA Guidelines on the Preparation of an EIAR (EPA, 2022) and all other documents outlined above.

A desktop study has been completed to establish the baseline environment for which the risks of the proposed development can be assessed.

19.2.4 Impact Assessment Methodology

The analysis of the predicted impacts of the proposed development on human health and the environment during construction and operation are presented in this Chapter. The risk assessment identifies and quantifies risks focusing on potentially significant adverse effects of the development on the environment, deriving from its vulnerability to risks of relevant major accidents and/or disasters. The approach to identifying and quantifying risks associated with the proposed development by means of a sites specific risk assessment is derived from the EPA Guidelines on the Preparation of an EIAR (EPA, 2022) and all other documents outlined above.

Assessment methods quantify and predict the magnitude and significance of impacts.

The methods employed for assessment and evaluation of the environmental topics for this Chapter have been:

1. Schedule 6 of the Planning and Development Regulations, 2001, as amended:
   "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".

2. Geospatial Analysis (cumulative impacts only – used to identify planning permissions/applications and Seveso Establishments within a 10 km radius).

3. Land Use Planning Assessment following the Health and Safety Authority Guidance on Technical Land-Use Planning Advice (2023), for planning authorities and COMAH establishment operators, report reference 247501.0417RR01.

4. Site Specific Flood Risk Assessment, Donnachadh O'Brien (2024)

19.2.5 Site Specific Risk Assessment Methodology

The risk assessment identifies and quantifies risks focusing on potentially significant adverse effects of the development on the environment, deriving from its vulnerability to risks of relevant major accidents and/or disasters. The approach to identifying and quantifying risks associated with the proposed development by means of a sites specific risk assessment is derived from the EPA Guidelines on information to be contained in EIAR (EPA, 2022).

The criterion for categorising impact is derived from the EPAs Guidance on Assessing and Costing Environmental Liabilities (2014). In this guidance, the risk assessment methodology commences with the establishment of risk classification criteria followed by risk analysis based on these criteria. Risk classification tables are required in order to evaluate and rank the risks compared with each other. They form the basis for rating the likelihood of an event occurring and the consequence of impact if the event occurs. The approach used in this assessment is summarised as follows and has been derived from relevant guidance as described above:

- Identification of hazardous substances which could be present over the lifecycle of the Proposed Development, including flammable substances, materials harmful to the environment and materials harmful to human health.
- Consideration of the quantities and storage arrangements associated with these substances and the prospective operations at the Proposed Development involving these materials.
- Identification of potential MA&D Risk Events associated with these materials and operations. Assessment of the vulnerability of the Proposed Development to disasters as a result of, for example, location, infrastructure, climatic conditions and geological events.
- Where credible MA&Ds Risk Events and Disasters are identified, the reasonable worst-case consequence of a of each Risk Event is assessed in qualitative terms, based on factors including receptors which could be affected, and mitigation measures already in place (see Table 19.-1)
- The likelihood and consequence ratings are combined to form a risk score for risk evaluation (see Table 19.-2)

Table 19.-1 Risk Classification - Consequence

Rating	Category	Description
1	Trivial	Small number of people affected, no fatalities No contamination to environment
2	Minor	Single fatality: limited number of people affected; a few serious injuries Localised contamination effects of short duration
3	Moderate	Significant number of people in affected area impacted with multiple fatalities Contamination effects widespread or of extended duration
4	Major	5 to 50 fatalities, up to 100 serious injuries Heavy contamination, localised effects, or extended duration
5	Massive	Large numbers of people impacted with a significant number of fatalities (>50), injuries in the hundreds Very heavy contamination, widespread effects of extended duration

Table 19.-2 Risk Classification – Likelihood

Rating	Category	Description
1	Very low	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring
3	Medium	Medium chance of hazard occurring
4	High	High chance of hazard occurring
5	Very high	Very high chance of hazard occurring

The risks are then ranked according to their own risk score (1-5) in a colour coded matrix table which allows risks to be easily displayed and prioritised. The colour codes are as follows and indicated in Table 19-3 below:

- Red – high level risks requiring priority action (overall risk scores of 15-25);

- Yellow – medium-level risks requiring action, but not as critical as red-coded risks (overall risk scores of 8-12); and
- Green (light and dark) – low-level risks requiring continuing awareness and monitoring on a regular basis (overall risk scores of 1-6).

Table 19.-3 Example Risk Matrix

		Consequence →				
		Trivial	**Minor**	**Moderate**	**Major**	**Massive**
Likelihood ↑	**Very High**	**Low**	**Medium**	**High**	**High**	**High**
	High	**Low**	**Medium**	**Medium**	**High**	**High**
	Medium	**Low**	**Low**	**Medium**	**Medium**	**High**
	Low	**Low**	**Low**	**Low**	**Medium**	**Medium**
	Very Low	**Low**	**Low**	**Low**	**Low**	**Low**

19.3 Baseline Scenario/Future Receiving Environment Analysis

19.3.1 Current State of the Environment (Baseline Scenario)

The EIA Directive requires the following to be described relating to the baseline scenario:

> *"A description of the relevant aspects of the current state of the environment (baseline scenario)".*

A detailed description of the physical characteristics and context of the application site and the surrounding/wider area is provided at Chapter 3 of this EIAR.

The subject site is ca 5.5 ha at lands located at the former Lisheen Mine Site, Killoran, Moyne, Thurles, Co. Tipperary. The existing facility is a non-COMAH site and the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015) does not apply.

The surrounding area includes a mix of agricultural, residential, and industrial features. The Bruckana and Lisheen Mine wind farms are large-scale renewable energy projects situated on former industrial and boglands in County Tipperary, featuring a combined 42 wind turbines. The site is surrounded by extensive farmland, with low-density residential properties along nearby roads. The nearest residence is located approximately 750 metres to the west.

19.3.2 Nearby Residential Establishments

The site is surrounded by extensive farmland, with low-density residential properties along nearby roads. The nearest residence is located approximately 300 metres to the west.

19.3.3 Nearby Industrial Establishments

A number of buildings exist in proximity to the application site, including the former Lisheen Mine maintenance depot (which has planning permission (TCC Reg. Ref. 211171) for redevelopment as the Irish Bioeconomy Foundation Research and Development Unit. A former office and laboratory building from the mine's operational period lies vacant near the site's western boundary, while AQS Environmental Solutions operates to the southeast of the site. Additionally, Revive Environmental's facility(permitted under TCC Reg. Ref. 21709) is currently under construction near the main entrance to the former Lisheen Mine site on the L5612 road.

19.3.4 Nearby Approved Establishments

Table 19-4 details approved projects in the vicinity of the proposed development.

Table 19.-4 Projects in the Vicinity of the Proposed Development

Project Number	Project Name	Planning Reference	Project Description
1	Acorn Recycling Workshop and Truck Washout	Tipperary Co. Co. Reg. Ref. 2360281	Permission for development consisting of Workshop Building (1242 sq m), Truck Washout Building (64 sq m), commercial yard area, new boundary fence and entrance gates, an on-site Wastewater Treatment System and associated polishing filter bed percolation area, attenuation tank, bored well & water storage tank, rainwater harvesting tank, emergency storage tank, solar panels to roof of existing building and all associated siteworks.
2	Irish Bioeconomy Foundation Research and Development Unit	Tipperary Co. Co. Reg. Ref. 211171	Permission for the Change of use of the former Lisheen Mine maintenance depot to an agri-food sector Research and Development Unit for light industrial use with ancillary office space. The permitted development includes demolition of the existing loading bay canopy, Extension of the existing first floor accommodation by 169 sqm, Construction of an external stair to the rear, additional windows to the front and rear elevations with an external perforated printed mesh screen fixed to the front and south gable elevation, canopy over the front entrance door and an array of PV Panels fixed to the roof, Landscape works including a waste water treatment plant and car parking with 4 no. electric vehicle chargers.
3	Glanbia Biorefinery (1)	Tipperary Co. Co. Reg. Ref. 18601296	A 10-year planning permission for a biorefinery facility comprising of a process building with processing areas, plant rooms, stores, personnel & administrative areas; external bunded process & storage areas; vessels and tanks; CHP plant; an effluent & water treatment plant which includes bunded tanks & a building; sewage treatment plant; water storage tanks & site development works including demolition of an existing electrical building, roads, paved areas, parking areas, drains and services, bore well, lighting, fire water retention tank, attenuation pond, site fencing, alterations to the discharge pipeline from the sewage treatment plant, weighbridges & weighbridge office, connection to an existing outfall pipeline and landscaping works. The application is accompanied by an Environmental Impact Assessment Report. This application relates to development which comprises or is for the purpose of an activity requiring an Integrated Pollution Prevention and Control Licence.
4	Glanbia Biorefinery (2)	Tipperary Co. Co. Reg. Ref. 20129	A 10-year planning permission for modifications to Condition No. 1 of previously granted planning permission Ref. No. 18/601296. The modifications comprise an outfall drain and

Project Number	Project Name	Planning Reference	Project Description
	(Modifications to Biorefinery permitted under Application Reg. Ref. 18601296)		associated pumping station and monitoring chambers to discharge surface water and treated wastewater from the Biorefinery site through the townlands of Cooleeny and Derryfadda to the Drish River; a water supply pumphouse and associated site works including access road and security fencing in the townland of Derryville and a water supply pipeline from the pumphouse to the Biorefinery facility site. A Natura Impact Statement (NIS) will accompany the application. This application relates to development which comprises or is for the purpose of an activity requiring an Industrial Emissions Licence.
5	Soleirtricity Solar PV Farm	Tipperary Co. Co. Reg. Ref. 211128	Permission for a Solar PV development with a maximum export capacity (MEC) of up to 122MW comprising of ca. 214,800 no. photovoltaic panels laid out in arrays, the construction of a 38kV substation, (ca.57.31m2 x 4.45m tall) along with associated ancillary development including 30 no. Transformer Stations (ca. 7.27m2 x 2.6m) with an integrated bund, 716 string Inverters, 1 no. DNO Substation Building (16.28m2 x 5.42m), 1 No. Storage and maintenance building (ca. 57.31m2 x 4.45m tall), 38 no. CCTV cameras mounted on ca. 3.8m high poles, perimeter security fencing and all ancillary works, the total development area will be ca. 77ha.
6	Revive Environmental	Tipperary Co. Co. Reg. Ref. 21709	Permission for a light industrial building consisting of a mechanical assembly workshop including an administration block and all associated site works at Cooleeny, Moyne, Thurles, Co. Tipperary. Permission includes for a building (3657 sq m) with a car park and access road, commercial yard area and access road, truck prep building (110 sq m), 2 m high boundary architectural fence, signage, public lighting, solar panels to the building roof, an on-site waste water treatment system and associated polishing filter bed percolation area, rainwater harvesting tank, emergency storage tank, attenuation tank, bored well and all associated site works - application is accompanied by a Natura Impact Statement (NIS)

19.3.5 Nearby Seveso Establishments

Seveso establishments have a “consultation distance” which is defined as “a distance or area relating to an establishment, within which there are potentially significant consequences for human health or the environment from a major accident at the establishment” (COMAH Regulations).

There are no Seveso Establishments within a 10km radius of the proposed development and the proposed development is not within the consultation distance of a Seveso Establishment. Therefore, there are no constraints to the proposed development at this location from nearby Seveso establishments.

19.3.6 Industrial Licensed Sites

There are no existing industrial sites within 500 m of the proposed development, which operate under Directive 2010/75/EU (the industrial emissions directive) licences from the Environmental Protection Agency. The Glanbia Biorefinery project (Planning Reg. Ref. 18601296 and 20129) will be subject to an Industrial License following development.

19.3.7 Seismic Activity

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics, Dublin Institute for Advanced Studies, has been recording seismic events in Ireland since 1978 (www.dias.ie). This network consists of several seismometers that are located throughout Ireland. Figure 19.1 illustrates historical and recorded seismic events since 1980.

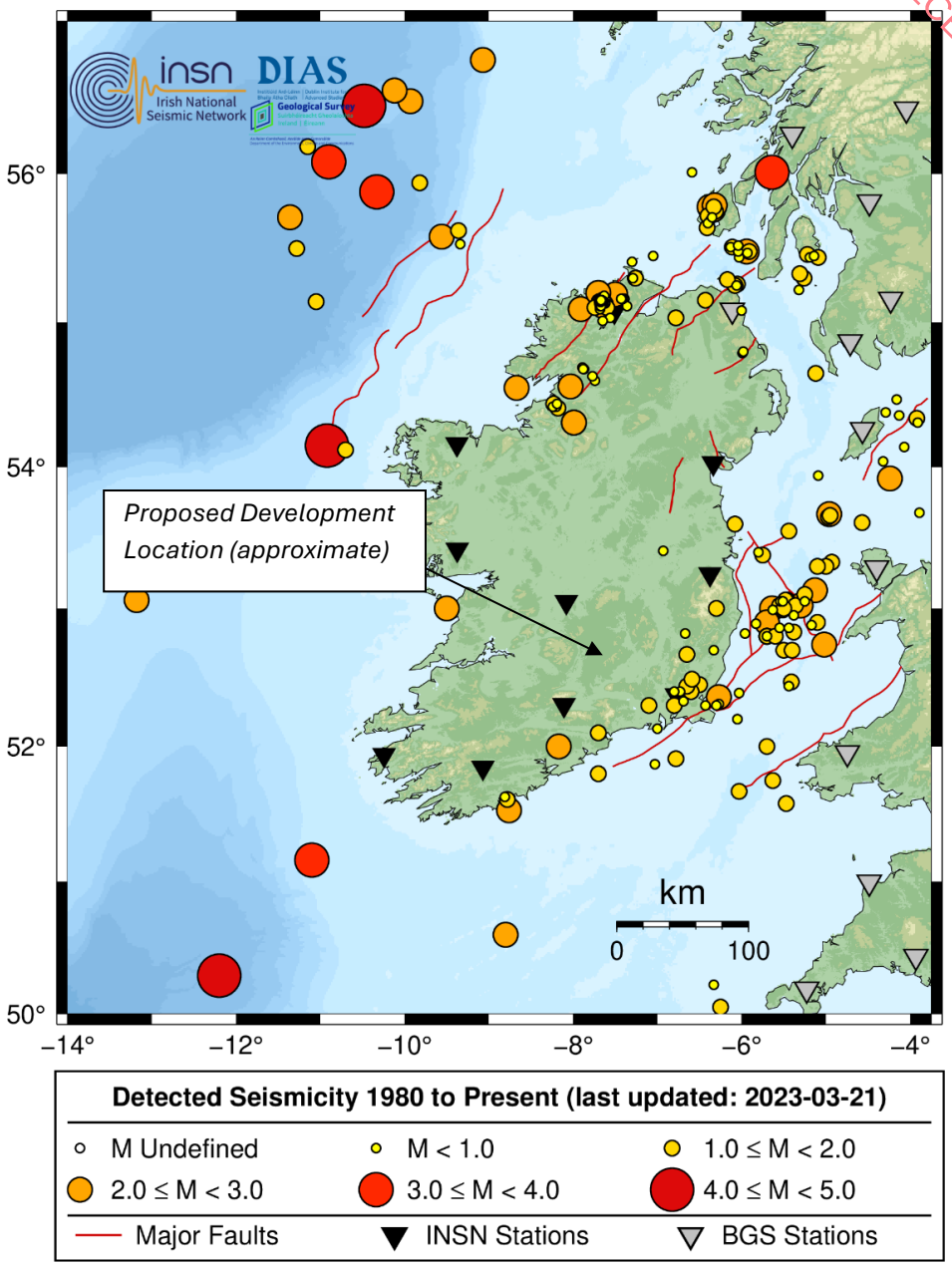

Figure 19.1 Ireland Seismic Activity Map

Seismic activity and earthquake risk in Ireland are generally considered to be low. This is because Ireland is located on the western edge of the Eurasian Plate, which is a tectonic plate that is not known for its seismic activity. However, earthquakes can still occur in Ireland, although they are typically small and have little impact. It can be seen in Figure 19.1 that there is no significant seismic activity recorded in the vicinity of the proposed development. Therefore, the likelihood of seismic activity impacting the proposed development are negligible; therefore, not significant.

19.3.8 Landslides

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating the slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a are a natural hazard that can occur. These can cause damage to property, infrastructure, and the natural environment, and can also pose a risk to human life.

In general, risk of landslides in Ireland is generally considered to be low, as the country is not located in a region with high seismic activity or large mountain ranges. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities.

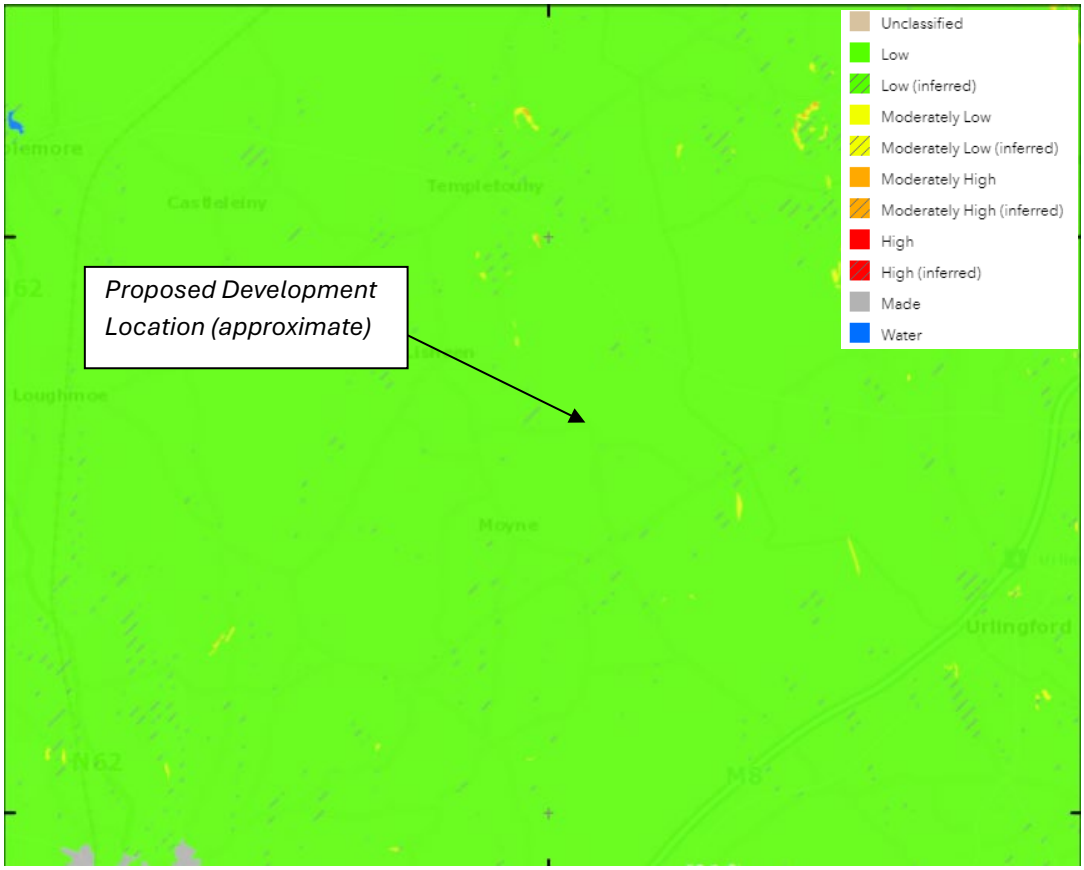

Figure 19.2 Landslide Susceptibility Map (GSI Ireland)

The landslide susceptibility map identifies areas which are subject to landslides and is measured from low to high. The landslide susceptibility map considers the location of landslides and what causes them (slope, soil type and the impact of the flow of water). It can be seen in Figure 19.2 that the area surrounding the proposed development has a low susceptibility of landslides. Therefore, the likelihood of a landslide impacting the proposed development is negligible; therefore, **not significant**.

19.3.9 Flood Risk

According to the site-specific Flood Risk Assessment carried out by Donnachadh O'Brien (2024), the developed site is shown not to be at a significant risk from flooding and to not create a significant risk to adjoining areas or downstream.

The site is located within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000 years ; therefore, probability of fluvial flooding is low.

Therefore, the likelihood of a flood impacting a major accident at the proposed development is negligible; therefore, **not significant.**

19.3.10 Metrological

The climatic conditions were assessed using data obtained from the Met Eireann Meteorological database and the Casement Aerodrome Synoptic Station between 2008 - 2024 (Gurteen being the closest Meteorological Station).

Precipitation

- The greatest monthly total was 242.9mm and the greatest daily total was 45.8mm

Wind

- The maximum annual gust over the period was 46 knots.

Temperature

- The maximum temperature was 30.1°C and the minimum temperature was -13.4°C.

The proposed development structures are not considered to be at risk during storms or during extreme heat or cold event. Therefore, the likelihood of extreme weather impacting the proposed development is negligible; therefore, **not significant.**

19.3.11 Hazardous Materials

Biogas

There is the potential for a loss of containment of biogas from pipework due to mechanical failure of pipework, connections or fittings, such as corrosion or fatigue, or as a consequence of accidental damage to equipment and pipework such as a dropped object, an impact with vehicles or machinery. If released and ignited, the potential consequences of a release of biogas include a jet fire or fireball (if ignited immediately), flash fire or a vapour cloud explosion (VCE) (if delayed ignition).

The potential impacts of a fire and / or explosion as a result of a release of biogas include:

1. A major fire which could escalate to other areas.
2. Thermal radiation generated by a major fire and / or explosion overpressures could cause significant harm to persons including up to the potential for fatal injuries.
3. Harm to persons due to smoke inhalation.
4. Damage to property within the establishment.

The Land Use Planning assessment, attached as an Appendix to this EIAR, assesses the consequences of a release of biogas from the proposed development.

Flammable Gas Cylinders

Construction and maintenance activities may require welding which can be carried out using compressed gases such as acetylene. There is the potential for a release of flammable gas, including an explosive depressurisation event, for example due to accidental damage to a gas cylinder, pressure regulator, or associated pipework. The released gas could be ignited, resulting in a fire or explosion. The potential impacts of which could include harm to persons due to thermal radiation and damage to property.

Fuel Storage

Diesel will be present on-site during the construction of the proposed development for use in construction vehicles. Diesel has flammable and environmental hazards.

Diesel is classified as an ignition category 3 substance, following the criteria in the Guidance on Technical Land Use Planning (HSA, 2023); therefore, it has an ignition probability of 0. Therefore, flammable hazards associated with diesel are not credible and will not be considered further in this assessment.

Due to the small quantities of diesel involved, it is not considered credible that a spill of diesel would meet the criteria for a Major Accident and it will not be considered further in this assessment.

Concrete

There is the potential for an accidental release of concrete into the soil, or surface water during the construction proposed development. Concrete is not classified hazardous in accordance with the Chemical, Label and Packaging (CLP) Regulations (EC No. 1272/2008); however, concrete paste is alkaline (pH 10-14); therefore the potential impacts if concrete enters the environment via a release to water, include:

- Raising the pH causing harm to aquatic ecosystems
- Cause sedimentation on aquatic beds, which could harm flora and fauna.

Containment systems to intercept any material released will be developed within a Construction Phase Environmental Management Plan (CEMP). Therefore, it is not considered credible that a release of concrete could lead to a consequence that meets the criteria of a Major Accident and will not be considered further in this assessment.

19.3.12 Major Accident Hazards

The major accident hazards identified in the Land Use Planning assessment (included with the planning documentation), for the proposed development, are presented in Table 19-5.

Table 19.-5 Major Accident Hazards at Proposed Development

Installation	Loss Of Containment scenario	Consequence/Event
Bay Gated Trailers	Instantaneous Release	Vapour Cloud Explosion
	Release through hole	Vapour Cloud Explosion
Energy Centre	Release from Process Vessel	Vapour Cloud Explosion
Biogas Compressors	Release from Process Vessel	Vapour Cloud Explosion
Anaerobic Digester Tanks	Instantaneous Failure	Fireball
		Vapour Cloud Explosion
		Flash Fire
	Continuous Leak over 10 Minutes	Jet Fire
		Vapour Cloud Explosion
		Flash Fire

The Land Use Planning assessment (AWN, 2024) concluded that the level of risk to persons off-site is acceptable and there is no risk of a major accident to the environment. Therefore, it is concluded that the risk from a major accident, at the proposed development, to human health and environment in the surrounding area, will be **not significant.**

19.3.13 Likely Future Receiving Environment ('Do Nothing' Scenario)

The EIA Directive requires the following to be described relating to the future receiving environment (the 'Do Nothing' scenario):

> *"an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".*

Under a 'do-nothing' scenario If the proposed development does not proceed, there will be no change to the risk of a major accident and/or disaster at the site.

19.4 Likely Impacts of the Project

The main potential impacts on population and human health from the proposed development are potential for spills/leaks, air emissions, noise, visual, and traffic impacts. The baseline environment, pollution pathways, relevant mitigation measures and residual impacts have been assessed in greater detail within the corresponding specialist chapters; Chapter 7 – Population and Human Health, and Chapter 9 - Land and Soils.

19.4.1 Construction Phase

A site-specific Construction Environmental Management Plan (CEMP) and a Health and Safety Plan produced by the Engineering and Construction Contractor, covering the construction and commissioning of the Proposed Development, will be prepared to ensure compliance with relevant health and safety legislation including the Safety, Health and Welfare at Work Act.

The following scenarios have been identified that could impact the construction phase of the project:

- Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater, or surface waters.
- Compressed Gas Cylinder release
- Storm events resulting in structural damage and/or pollution to groundwater and surface waters.
- Flooding

The impact and likelihood of these scenarios is assessed in Table 19-6. There are no likely impacts on the project or to off-site receptors during the construction phase in relation to major accidents and disasters.

Table 19-6 Assessment of Major Accidents and Disasters for Construction Phase

Risk ID	Natural Disaster	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
C1	Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater or surface waters	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	The proposed development will be constructed, and operated in accordance with all relevant planning, building and environmental licencing codes (Building Regulations, 2012). The engineering design of the facilities will take operation at future climatic conditions into account.	1	All construction activities will be suspended during extreme weather events.	2
C2	Storm events (including lightning) resulting in structural damage and/or pollution to groundwater and surface waters	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	The engineering design of the Proposed Development will incorporate lightning mitigation. This will be assessed in accordance with recognised industry standards such as EN/IEC 62305.	1	All construction activities will be suspended during extreme weather events.	2

C3	Flooding	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	A Flood Risk Assessment was prepared in accordance with 'The Planning System and Flood Risk Management -Guidelines for Planning Authorities' issued by the Department of Environment, Heritage and Local Government in November 2009. It was concluded that the proposed development is within Flood Zone C.	1	The flood risk assessment concluded that there is no flood risk to the site.	2
C4	Flash fire, Explosion or Jet fire following compressed gas cylinder release (e.g. acetylene for welding)	Human Health	3	There is potential for harm to persons on-site in the vicinity of the hazardous gas release. Detailed method statements, plans and assessments will be produced to carry out natural gas activities safely. A Site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident.	1	European Industrial Gases Association standard procedures will be used for the storage and use of gas cylinders. When not in use, cylinders will be stored in external, well-ventilated areas and when in use, appropriately certified equipment will reduce the potential for ignition if a flammable gas is accidentally released.	3

19.4.2 Operational Phase

The major accident hazards, during the operational phase, for the proposed development are presented in Table 19-7. In the scoping phase for this EIAR the potential for impacts to human health and impacts to the environment were assessed.

The following scenarios have been identified that could impact the operational phase of the project:

- Release of Biogas at Bay Trailer
- Release of Biogas at the Anaerobic Digesters, Biogas Compressors and Energy Centre
- Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater, or surface waters.
- Storm events resulting in structural damage and/or pollution to groundwater and surface waters.
- Flooding

The impact and likelihood of these scenarios is assessed in Table 19-7. There are no likely impacts to off-site receptors, as a result of the proposed development, during the operational phase in relation to major accidents and disasters.

The Proposed Development and Overall Project will comply with the requirements of all relevant health, safety and environmental legislation including COMAH, which requires operators to take all measures necessary to prevent major accidents.

Table 19-7 Assessment of Major Accidents and Disasters for Operational Phase

Risk ID	Major Accident Scenario	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
O1	Vapour Cloud Explosion (VCE) following gas release at Bay Gated Trailers	Human Health	4	There is potential for harm to persons on-site in the vicinity of the bay gated trailers. A Site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident.	1	The following standards will be observed for the operation of the cylinders within the trailer: • ISO 11439 • ISO 11119-3 • EN 12245 • 2010/35/EC and ADR Filling/unloading hose is equipped with a safety breakaway device according to ISO 19880-1. The Proposed Development will be operated and managed in accordance with all Regulatory requirements, including COMAH. Detailed method statements, plans and assessments will be produced to carry out gas activities safely.	4
O2	Vapour Cloud Explosion, Jet Fire, Flash Fire and Fireball following release at an Anaerobic Digester, at the Biogas	Human Health	4	There is potential for harm to persons on-site in the vicinity of the bay gated trailers. A Site Emergency Response Plan will be developed prior to the commencement of	1	The design equipment and pipework will be to industry codes and standards to reduce the potential for a loss of containment, including the use of welded connections to avoid potential leak sources. The design will be subject to numerous formal process safety studies to identify and mitigate hazards, such Hazard and Operability (HAZOP) studies. Detailed method statements, plans and assessments will be produced to carry out gas activities safely.	4

Risk ID	Major Accident Scenario	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
	Compressors and at the Energy Centre			operations and will include detailed procedures in the event of a major accident.		The Proposed Development will be operated and managed in accordance with all Regulatory requirements, including COMAH. A Site Emergency Response Plan will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident.	
O3	Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater or surface waters	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	The proposed development will be constructed, and operated in accordance with all relevant planning, building and environmental licencing codes (Building Regulations, 2012). The engineering design of the facilities will take operation at future climatic conditions into account.	1	A Standard Operating Procedure will be implemented for plant operation by personnel during extreme heat and cold.	2

Risk ID	Major Accident Scenario	Impact	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
O4	Storm events (including lightning) resulting in structural damage and/or pollution to groundwater and surface waters	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	The engineering design of the Proposed Development will incorporate lightning mitigation. This will be assessed in accordance with recognised industry standards such as EN/IEC 62305.	1	A Standard Operating Procedure will be implemented for plant operation by personnel during extreme heat and cold.	2
O5	Flooding	Human health, biodiversity, soils and geology, hydrology and hydrogeology	2	A Flood Risk Assessment was prepared in accordance with 'The Planning System and Flood Risk Management - Guidelines for Planning Authorities' issued by the Department of Environment, Heritage and Local Government in November 2009. It was concluded that the proposed development is within Flood Zone C.	1	The flood risk assessment concluded that there is no flood risk to the site.	2

19.4.3 Decommissioning

A Closure, Restoration & Aftercare Management Plan (CRAMP) will be implemented in the event that the site will be decommissioned. The CRAMP will reflect the relevant legislation and guidance available at the time of decommissioning. Mitigation against the risk of major accidents and disasters will be embedded in the CRAMP.

19.5 Mitigation Measures and Proposed Response to such Emergencies

A site Major Accident Prevention Policy, including an Emergency Response Plan, will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident. This plan will follow the framework detailed in Guidance Document 10 of A Framework for Major Emergency Management (DECLG 2015) and will comply with the requirements of the COMAH Regulations.

This plan will contain detailed plans for the response to emergencies such as loss of containment from an Anaerobic Digester, release cylinders of compressed natural gas and severe weather events.

The proposed development has been designed in line with good industry practice, and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design and in accordance with planning and legislative requirements. As no likely significant effects were identified, no additional mitigation measures are proposed.

19.6 Residual Impacts

The residual effects are the final predicted or intended effects which occur after the proposed mitigation measures have been implemented. As no likely significant effects were identified, no additional mitigation measures are proposed. Therefore, residual effects are not relevant for this assessment.

19.7 Interactions

19.7.1 Population and Human Health

The mitigation measures that will be put in place by the proposed development during the construction phase means the interaction between major accidents and disasters and human health are not significant.

There are potential interactions between major accidents and disasters and human health (Chapter 7 - Population & Human Health). The Land Use Planning assessment concluded that the level of individual risk to persons off-site is acceptable. Therefore, the effects of the interactions between major accidents and disasters and human health not significant.

19.7.2 Land, Soils and Geology

Construction phase activities such as land clearing, excavations, stockpiling of materials etc. have the potential for interactions between major accidents and disasters and land and soils in the form of subsidence and landslides. The area surrounding the proposed development has a low susceptibility of landslides. Therefore, the likelihood of a landslide impacting the proposed development is negligible. It is predicted that there will be no significant interactions between major accidents and disasters and land, soils and geology (Chapter 9 - Land, Soils and Geology).

19.8 Indirect or Secondary Impacts

The proposed development will be a COMAH facility as it will store significant quantities of hazardous materials which are in excess of the defined COMAH thresholds set out in Schedule 1 of the COMAH Regulations. The Health and Safety Authority (HSA), which is the central competent authority for regulatory control of COMAH sites, require COMAH sites to have a 'consultation distance'. A consultation distance (CD) is a distance around an establishment, within which there are potentially significant consequences from major accidents to people or to the environment). Future developments within the consultation distance of the proposed development are required to complete a Land Use Planning assessment. Therefore, the proposed development could have indirect impacts on the type of developments that are permitted within its consultation distance.

A proposed consultation distance has been provided in the Land Use Planning assessment, attached as an Appendix to this EIAR, subject to agreement by the HSA. The overall character of the surrounding area is a low density population and rural in nature and can be described as a 'brownfield'. Therefore, the indirect impacts are considered not significant.

19.9 Likely Cumulative and Interaction Impacts of the Project

19.9.1 Cumulative Impacts

Cumulative effects relate to the potential effects of the proposed development in combination of the potential effects of other developments (referred to as 'cumulative developments') within the surrounding area. A review of the planned and permitted projects within the vicinity of the site was undertaken and is described in Chapter 21 Cumulative Impacts, which presents the planned and permitted projects within 500 m of the proposed development. All other developments are outside the 500 m cumulative zone of influence and have been scoped out of cumulative assessment as there no direct or indirect significant negative cumulative effects predicted between these projects and the proposed development on major accidents and disasters.

The impacts of the projects in the vicinity of the proposed development were detailed in Table 19-4 of this chapter. There are no expected impacts from these projects from a major accidents and disasters perspective, as such, there are no significant cumulative effects with the proposed development from a major accidents and disasters perspective.

During the construction phase, since there are no likely negative impacts on the project or to off-site receptors, the cumulative impacts, of major accidents and disasters, are considered imperceptible and neutral to the proposed development and to cumulative developments in the surrounding area.

During the operational phase, since there are no likely negative impacts to off-site receptors, the cumulative impacts, of major accidents and disasters, are considered imperceptible and neutral to the proposed development and to cumulative developments in the surrounding area.

19.10 Difficulties in Compiling the Chapter

No difficulties were encountered in completing this section.

19.11 References

- Health and Safety Authority Guidance on Technical Land-Use Planning Advice, for planning authorities and COMAH establishment operators (2023)
- Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015)
- Institute for Environmental Management and Assessment (IEMA) Major Accidents and Disasters in EIA – A Primer (IEMA, 2020)
- Site Specific Flood Risk Assessment, Donnachadh O'Brien (2024)
- Land Use Planning Risk Assessment, AWN Consulting (2023), report reference 247501.0417RR01
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (2022)
- Guidance on Assessing and Costing Environmental Liabilities, Environmental Protection Agency (2014)