18 RISK OF MAJOR ACCIDENTS & DISASTERS

18.1 Introduction

This chapter of the EIAR describes the expected significant effects on the environment arising from the vulnerability of the Proposed Development to risks of major accidents and/or natural disasters which are relevant the project.

In light of the nature of the activities that will take place during the construction and operation of the Proposed Scheme, and the nature of the surrounding environment, the most significant risks of major accidents and disasters are associated with the construction of the flood defences and the flood risk associated with the Burnfoot and Skeoge Rivers.

18.2 Assessment Methodology

The scope and methodology presented in the following sections is based on the provisions of the EIA Directive, the draft EPA Guidelines, Departmental guidance (A Framework for Major Emergency Management (DEHLG, 2010)).

It is further based on the understanding of the existing environment, the design, the existing flood risk and the nature of the Proposed Scheme. Where a risk is identified, it is considered in the context of the baseline environment. As noted throughout this EIAR, this baseline is considered but the established and operational nature of the sites is also acknowledged. The assessment of the risk considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., Air Quality & Climate, Water Quality, Flood Risk and Waste.

18.2.1 Study Area

Burnfoot lies at the base of the Inishowen Peninsula east of the confluence of two small catchments, the Burnfoot River and Skeoge River. The Burnfoot River flows from east to west draining a narrow valley before flowing under the R238 and through the village. It meets the Skeoge River to the west of the village before both drain out to Lough Swilly via a tidal lagoon behind Inch Island. The Skeoge River drains an area including the outskirts of City of Derry/Londonderry and then flows in a north westerly direction, through Bridgend and past the south west of Burnfoot Village to meet the Burnfoot River. The Burnfoot River is subject to flash flooding with the village at risk of fluvial flooding and the flat, reclaimed agricultural lands downstream subject to combined coastal and river flooding.

Following hydrological and hydraulic analysis undertaken as part of the Proposed Scheme it has been established that the main source of flood risk to Burnfoot emanates from fluvial driven water levels in the Burnfoot River.

18.2.2 Baseline

The baseline has been established through a desk top assessment and through consideration of the hydrological and hydraulic modelling that has been undertaken as part of the development of the preferred option for the Proposed Scheme. The occurrence of a major emission, fire or explosion resulting from a SEVESO / COMAH site as defined by Directive 2012/18/EU, relating to the control of major-accident hazards involving dangerous substances, has also been considered given the potential to give rise to a major accident or disaster, immediate or delayed, inside or outside any such establishments, and involving one or more dangerous substances.

18.2.3 Guidelines for Environmental Impact Assessment

18.2.3.1 European Commission

Section 1.3.3 of the European Commission's *Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report* (2017) identifies two key considerations arising from Annex IV of Directive 2014/52/EU:

- the Project's potential to cause accidents and / or disasters, and
- the vulnerability of the project to potential disaster / accident.

The guidance notes that relevant information on these topics may be available from risk assessments pursuant to other EU legislation, such as the COMAH legislation on the control of major accident hazards involving dangerous substances or the Floods Directive.

18.2.3.2 Department of Housing, Planning and Local Government

Parts 4.28 to 4.30 of the Department of Housing, Planning and Local Government's *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (DHLGH, 2018) requires that an EIAR include:

> *…the expected effects arising from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project. Where appropriate, the description of expected significant effects should include details of the preparedness for and proposed response to such emergencies*

The guidelines note that there are two key considerations, namely:

The potential of the project to cause accidents and / or disasters, including implications for human health, cultural heritage, and the environment.

The vulnerability of the project to potential disasters / accidents, including the risk to the project of both natural disasters (e.g., flooding) and man-made disasters (e.g., technological disasters).

The guidelines also note that these considerations are separate to any assessment of the project required under the COMAH Directive (and corresponding Irish legislation), which is likely to include a detailed risk assessment.

18.2.3.3 Environmental Protection Agency

The Environmental Protection Agency (EPA) has also produced *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022). In the context of major accidents and disasters, Section 3.7 describes the requirements for the impact assessment, noting that the EIAR should contain:

A description of the likely significant effects of the project on the environment resulting from, inter alia:

> *d) the risks to human health, cultural heritage, or the environment (for example due to accidents or disasters);*

18.2.3.4 Department of Housing, Local Government and Heritage

The Department of Housing, Local Government and Heritage (DHLGH) published, "A Guide to Risk Assessment in Major Emergency Management (DHLGH, 2010) which is intended to support their Framework for Major Emergency Management and provide additional guidance on the risk assessment process. To prepare effectively for dealing with potential emergencies it is necessary to have regard to the specific risks faced by a community. Including formal Risk Assessment as part of emergency planning is increasingly recognised as best practice nationally and internationally. In the framework, the risk assessment process is used as a basis for the decision-making associated with the other elements of the emergency management cycle.

Protocol 10: Multi-Agency Response to Flood Emergencies (DHLGH, 2024)

The purpose of this Protocol is to support the Framework for Major Emergency management in the context of flood risk and provide support to the coordination of a response to Flood Emergencies. The key objectives are to:

- Work with a Multi-agency approach in accordance with the guiding principles of this protocol to manage significant flood incidents;
- Ensure that its provisions will apply to the management of the response to all significant flood events, as provided for in Appendix F612 of the Framework document;
- Enable all agencies to incorporate the provisions of this Protocol into their planning for flood emergencies, including risk assessment, Major Emergency Plans (MEPs),
- Flood Emergency Plans (FEPs) or other agency specific plans as appropriate, and into other relevant national emergency plans, internal orders, code instructions, standard operating procedures, aide memoirs etc.;
- Undertake the roles specified in this protocol and, in particular, to prepare its own internal procedures, consistent with the provisions of this protocol, for undertaking the roles (both general and specific) assigned to it;
- Promulgate this protocol and its own internal procedures within the agency, and undertake appropriate training for relevant staff based on the information contained in this protocol;
- Participate in inter-agency planning, exercises and workshops to enhance preparedness.

18.2.4 Assessment Criteria and Assignment of Significance

The DHLGH guide to risk assessment in major emergency management has been used to assess significance of the impact, using the stepwise approach outlined in the Guide and reproduced below.

18.2.4.1 Step 1 - Risk identification

Risk Identification identifies and quantifies risks focusing on unplanned, but possible and plausible events occurring during any stage of the Proposed Development. In accordance with the relevant guidance, risks are identified in respect of the project's potential vulnerability to disaster risks; and potential to cause accidents and/or disasters. The risk identification exercise has been completed to identify the most likely risks associated with major accidents and/or natural disasters. For the purposes of that analysis, major accidents or natural disasters are hazards that have the potential to affect the Proposed Scheme. These include accidents that occur both during construction and operational phases. Risk identification regards the following:

- The risk assessment analysis of the environmental aspects of the Proposed Scheme undertaken as part of the EIAR.
- Flood Risk assessment undertaken for the Proposed Scheme (Chapter 8 EIAR).

18.2.4.2 Step 2 – Assign Likelihood of Risk

A reasonable approach has been taken to risk assessment whereby any risk from or to the Proposed Scheme that is considered in terms of extremely unlikely to very likely. The likelihood ratings that have been applied are as set out in Table 18.1.

Table 18.1: Risk Classification Table - Likelihood (Source: A Framework for Major Emergency Management Guidance, Document 1: A Guide to Risk Assessment in Major Emergency Management, January 2010)

Ranking	Likelihood	Description
1	Extremely Unlikely	May occur only in exceptional circumstances; once every 500 or more years.
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities, or communities; and / or little opportunity, reason or means to occur; may occur once every 100-500 years.
3	Unlikely	May occur at some time; and /or few, infrequent, random recorded incidents, or little anecdotal evidence; some incidents in associated or comparable 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.

18.2.4.3 Step 3 Risk Classification - Severity

Risk Classification is an assessment of that risk based on standardised classification of likelihood. This assessment is carried out having regard to the operational procedures in place, including the safety procedures and environmental controls that are in place. The consequence rating assigned to each risk has assumed that all proposed mitigation measures and/or safety procedures have failed to prevent the major accident and/or disaster. The consequence ratings that have been applied are as set out below, see Table 18.2.

Table 18.2: Risk Classification Severity Table – Consequence

Rank	Consequence	Impact	Description
1	Minor	Life, Health, Welfare	Small number of people affected; no fatalities and small number of minor injuries with first aid treatment.
		Environment	No contamination, localised effects
		Infrastructure	<€0.5M Euros
		Social	Minor localised disruption to community services or infrastructure. (<6 hours).
2	Limited	Life, Health, Welfare	Single fatality; limited number of people affected, potential for serious injury with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6-24 hours. Support through local arrangements.
		Environment	Simple contamination, localised effects of short duration.
		Infrastructure	€0.5-3M
		Social	Normal community functioning with some inconvenience.
3	Serious	Life, Health, Welfare	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation. Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated. External resources required for personal support.
		Environment	Simple contamination, widespread effects, or extended duration
		Infrastructure	€3-10M
		Social	Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated
		Environment	Heavy contamination, localised effects, or extended duration
		Infrastructure	€10-25M Community functioning
		Social	Community functioning poorly, minimal services available
5	Catastrophic	Life, Health, Welfare	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated.
		Environment	Very heavy contamination, widespread effects of extended duration.
		Infrastructure	>€25M
		Social	Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.

**Source: A Framework for Major Emergency Management Guidance, Document 1: A Guide to Risk Assessment in Major Emergency Management, January 2010)*

18.2.4.4 Step 4 – Assign Risk Significance

Based on the assessment of likelihood and severity, the risk matrix is developed in Table 18.3. This allows for the evaluation of the risk.

Table 18.3: Risk Matrix

Likelihood	5	Very likely					
	4	Likely					
	3	Unlikely					
	2	Very unlikely					
	1	Extremely unlikely					
Severity			1	2	3	4	5
			Minor	Limited	Serious	Very Serious	Catastrophic

18.3 Baseline Conditions

The baseline conditions have been established through a desk top review but also consideration of the detailed hydrological and hydraulic modelling that has been undertaken to determine the flood risk to Burnfoot given that the Proposed Scheme is required for properties and infrastructure at risk in Burnfoot.

18.3.1 Natural Disasters

There are risks that may affect the Proposed Scheme, including natural events (such as earthquakes, lightning strikes, extreme weather events, etc.) and other external events (such as aircraft impacts) that may cause or exacerbate a major accident, which could impact on the Proposed Scheme in the future. These events are outlined in the following subsections.

18.3.2 Earthquakes

The School of Cosmic Physics (part of the Dublin Institute for Advanced Studies – DIAS) operates the Irish National Seismic Network (INSN), which comprises a series of monitoring stations around the country. Figure 18.1 shows the location and magnitude of historic and recorded seismic events in Ireland since 1980. This shows that while there have been several recorded seismic events, they are all of low or very low magnitude (typically less than magnitude 3.0).

The Seismic Hazard Harmonization in Europe (SHARE) project, comprising eighteen European partner institutions, has compiled two European Earthquake Catalogues, one for the period 1000 to 1899, and one for the period 1900 to 2006, which show the locations of seismic events across Europe. The map for the period 1900 to 2006 is shown in Figure 18.2. It indicates that there is relatively little seismic activity in Ireland.

The SHARE project has also developed a European Seismic Hazard Map, shown in Figure 18.3. This shows the peak horizontal ground acceleration (measured in g – gravitational acceleration) predicted to be reached or exceeded with a 10% probability in 50 years. This corresponds to the average recurrence of such ground motions every 475 years, as prescribed by the national building codes in Europe for standard buildings. Low hazard areas (PGA ≤ 0.1 g) are coloured in blue-green, moderate hazard areas in yellow-orange and high hazard areas (PGA > 0.25 g) in red. As can be seen from Figure 18.3, Ireland is a low hazard area.

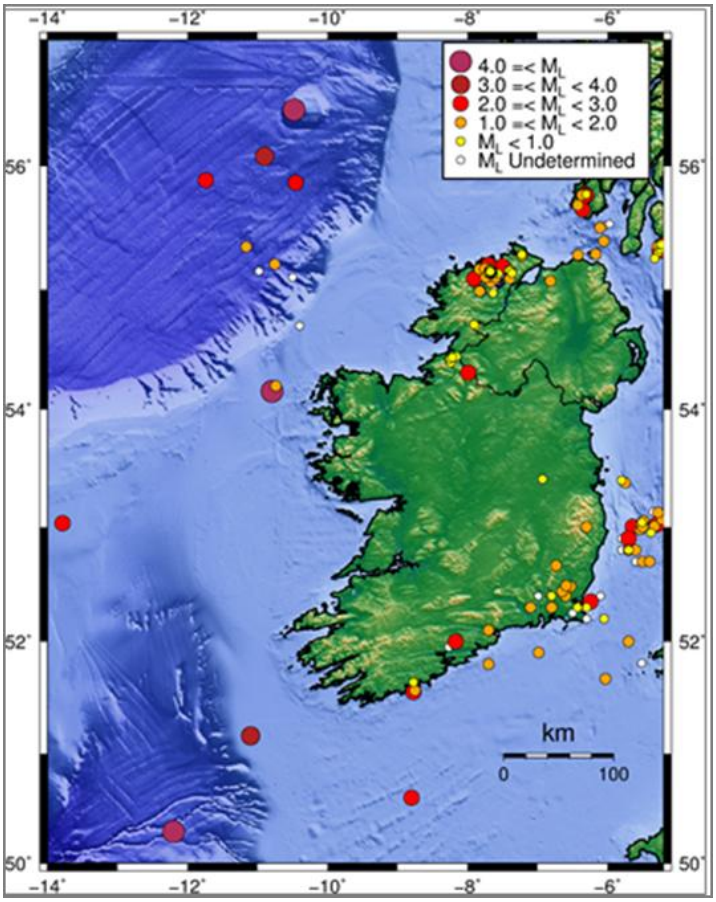

Figure 18.1: Historical & Recorded Seismic Events since 1980

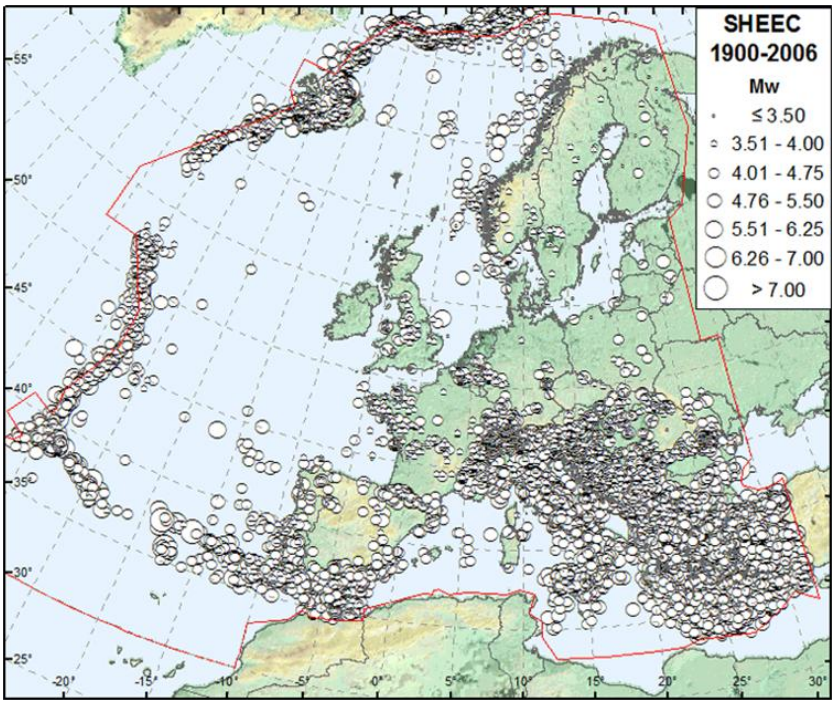

Figure 18.2: SHARE European Earthquake Catalogue (1900 to 2006)

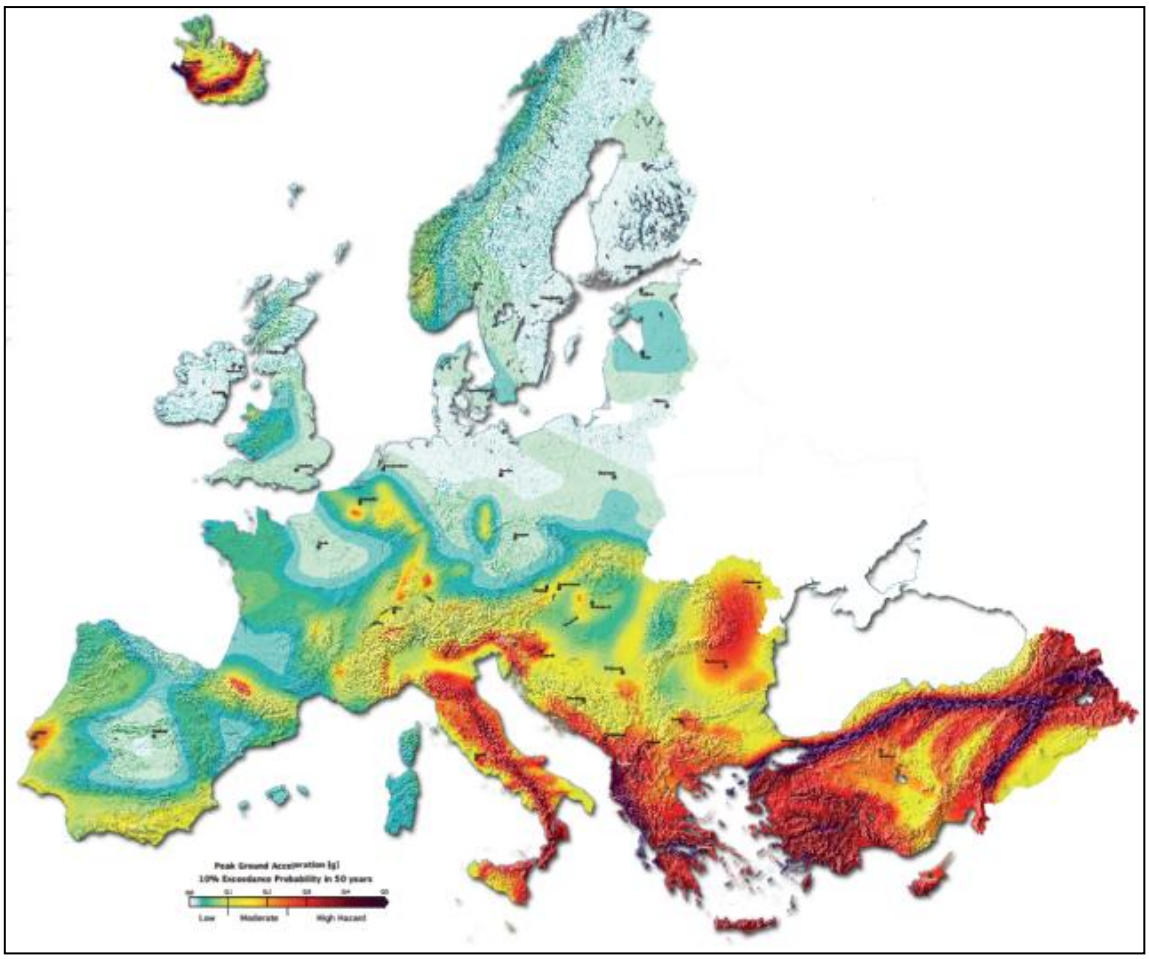

Figure 18.3: European Seismic Hazard Map

18.3.3 Lightning Strikes

The UK Met Office has operated a lightning location network since 1987 (in its current form known as ATDnet), which allows for the detection of lightning activity across Europe and in turn the development of maps showing the density of lightning strikes. A 2014 research paper[1] analysed the data from the network and produced the lightning flash density map shown in Figure 18.4. This shows that, in general, Ireland is an area of relatively low lightning activity, with the paper noting that:

> *Over the UK, Ireland, and Scandinavia the densities are generally lower than the rest of Europe. Some of the lowest densities are observed over the Atlantic, North Sea and Baltic Sea.*

[1]Anderson and Klugman (2014): https://nhess.copernicus.org/articles/14/815/2014/nhess-14-815-2014.pdf

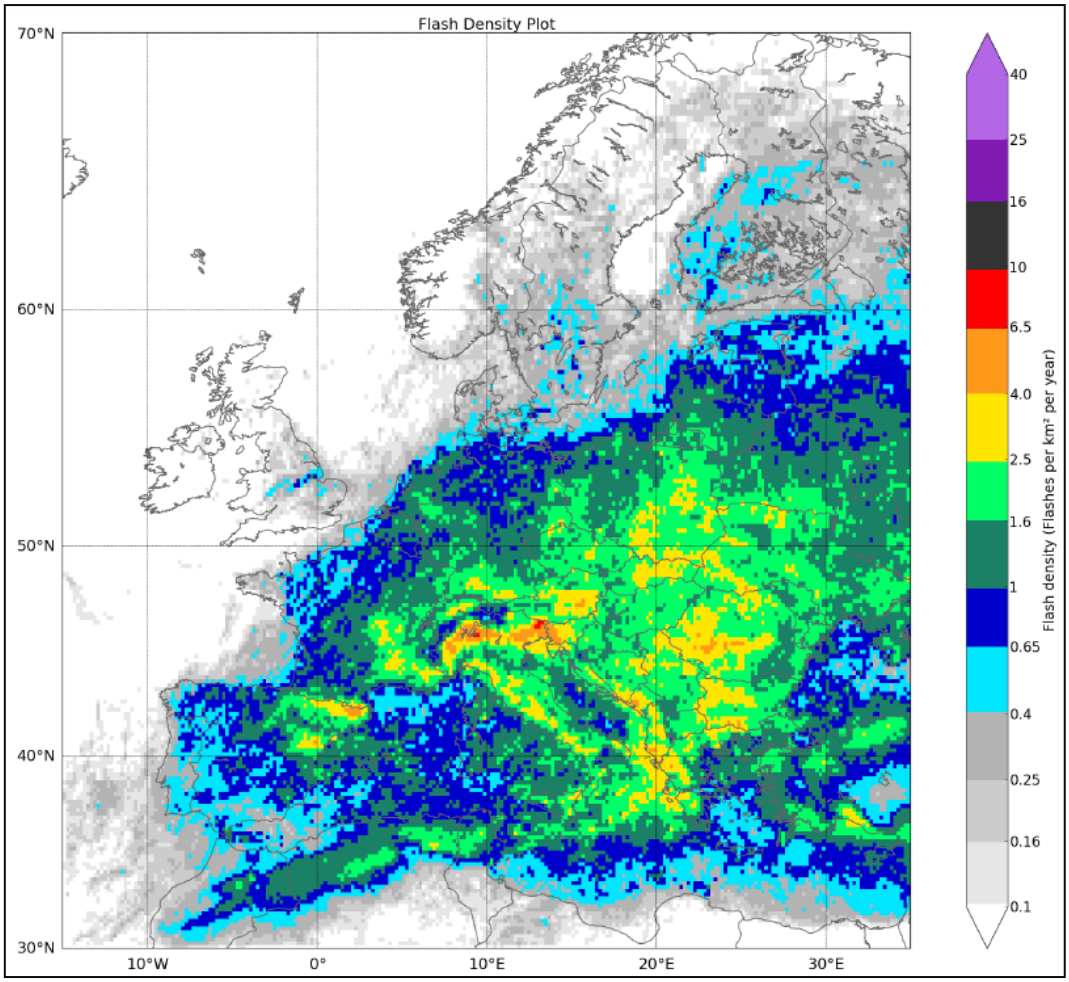

Figure 18.4: Annual Detected Lightning Flash Density (2008 to 2012)

A separate, volunteer organisation also operates a series of lightning monitoring stations across Europe (Blitzortung), with the data that is collected also used to generate lightning density maps[2]. The lightning density map for Ireland and the UK for 2018 (the most recent complete year of data) is shown in Figure 18.5. This also shows that Ireland is, in general, an area of low lightning activity.

[2] Available at www.lightningmaps.org.

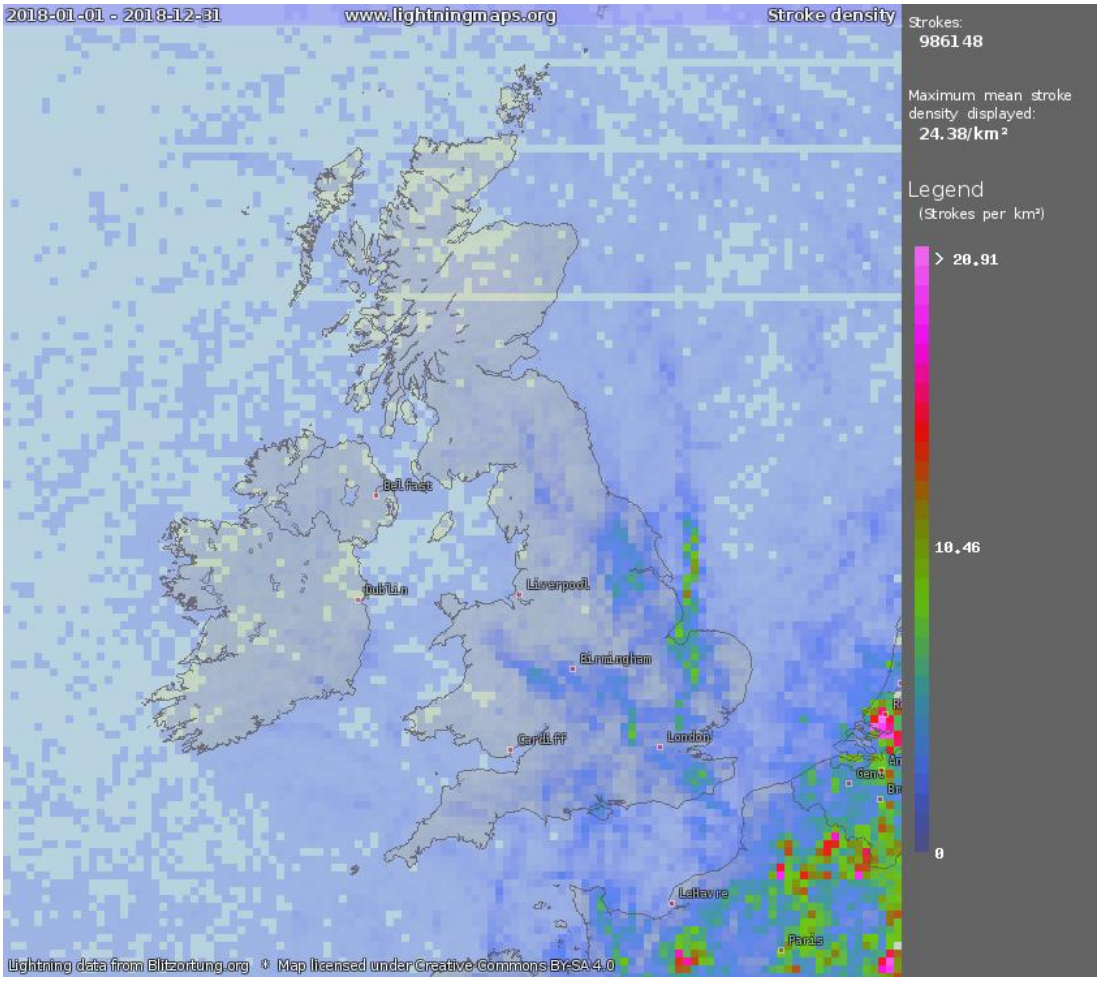

Figure 18.5: Lightning Mean Stroke Density (strokes / km^2) for 2018

18.3.4 Flooding

Burnfoot was identified as an AFA (Area for Further Assessment) within the NW-NB CFRAM Study (2012 – 2017). The study modelled the flood risk to Burnfoot and developed options to provide a 1% Annual Exceedance Probability (AEP) Standard of Protection (SoP). The options appraisal identified a flood wall and embankment solution as the preferred option. This option while providing the required SoP was economically unviable and was not progressed to full project level assessment.

In August 2017, an extreme flood event occurred causing flooding to many residential and commercial properties. Up to 30 homes were flooded mostly in Líos Na Greíne and Páirc an Grianán and at least seven local businesses were affected. Roads in the area were damaged and a local Waste Water Treatment Plant suffered considerable damage.

The flooding was due to a high intensity rainfall event which focussed on the north west of the country and in particular Inishowen. A total of 73mm of rainfall was recorded in an 8-hour period at the Malin Head hourly rainfall gauge which is estimated to be greater than a 1 in 100-year return period rainfall event. The Burnfoot River exceeded its banks, particularly on the lower, south bank of the river upstream of the R238 (Main Street) bridge. The R238 is an important regional road. The R238 bridge was impassable during the event leading to

long diversions for emergency services and the local community trying to access the other side of the village and the rest of the Inishowen Peninsula.

Following this flood event, a review of the CFRAM Study was conducted in 2018 to determine if an economically viable option, providing a 1% AEP SoP, may exist to justify progression to full project-level assessment. As part of the Burnfoot Cost Review Report, the hydrological inputs and hydraulic model were updated. This included using the 2017 flood data for model calibration.

A decision was taken by the Project Steering Group to increase the Target Standard of Protection (SoP) for the Scheme to ensure Burnfoot would be protected against an event of the magnitude of August 2017. The Target SoP for Burnfoot is therefore a 0.5% AEP fluvial event.

Support for enhanced flood protection is encouraged under the National Planning Framework, regional and local objectives, and further supported under European Union Policy for flood risk assessment and management.

The need for the Proposed Scheme has been demonstrated at a strategic level through the NW-NB CFRAM study, the subsequent review after the 2017 flood event in Burnfoot through the Burnfoot Cost Review Report and the option development and Multi Criteria Analysis (MCA) undertaken during the development of the Proposed Scheme under this project (see chapter 4).

The key objective of the project is to assess, develop and design an appropriate viable, cost-effective, and sustainable flood relief scheme which aims to minimise risk to human beings, the existing community, social amenity, environment, and landscape character. This objective is consistent with national, regional, and local policy and will ensure a sustainable Proposed Scheme can be achieved. The Proposed Scheme will therefore represent a positive impact on the risk of major accidents and disasters from flooding sources.

18.3.5 Extreme Weather Events

18.3.5.1 Temperature

The maximum daily air temperature at the Malin Head weather station over the period 2009 to 2018 (the latest 10-year period) was 25.7°C (occurring on 23rd July 2019), with a minimum daily air temperature of -4.3°C (on 21st December 2010). The largest daily temperature range over the period was 14.6°C, varying from a low of 10.5°C to a high of 25.1°C (on 25th May 2017).

Met Éireann defines a heatwave as five consecutive days or more with a maximum temperature over 25°C. No heatwaves have been recorded at Malin Head in the last 30-years. There is no equivalent definition for a prolonged cold period (‘cold spell’); over the period 2009 to 2018 there have been multiple periods of low minimum temperatures (less than 0°C) on consecutive days, the longest of which was over 10 days between 16th and 25th December 2010 and coincided with a period of prolonged snowfall / snow accumulation.

18.3.5.2 Wind

Wind speed data from the Malin Head weather station shows that the mean wind speed over the period 2009 - 2018 was 14.6 knots (7.5 m/s).

Data from Met Éireann shows that the typical maximum gust speeds for a 50-year return period are in the range up to 50 m/s (180 km/h) depending on the location of the site in Ireland. For the Burnfoot, the estimated speed for this return period is 48 m/s (173 km/h). The historic meteorological data from the Malin Head weather station shows that the highest 10-minute mean wind speed over the period 2009 to 2018 was 68 knots (approximately 126 km/h), with a maximum gust of 91 knots (approximately 167 km/h).

18.3.5.3 Rainfall

The total rainfall amounts at Malin Head over the last three years was 1110 mm (2018), 1148 mm (in 2017) and 1070 mm (in 2016), with a 30-year annual average (1981 to 2010) of 1076 mm. The highest total daily rainfall over the last 10 years was 81 mm, recorded on 5th December 2015.

18.3.6 Summary

Ireland is an area of relatively low seismic activity and low lightning activity, and in general is not subject to extreme weather events other than flooding. In light of this and the potential major accident scenarios, it is considered that these natural events will not significantly increase the likelihood of a major accident arising at and on the area of the Project. With the exception of flooding the likelihood of these natural events happening is assessed as unlikely and the severity is considered to be limited from these types of events. Therefore based on the risk matrix in Table 18.3, there is an acceptable level of risk based on the protocols already in place for major emergency management.

18.3.7 COMAH Events

The occurrence of a major emission, fire or explosion resulting from a SEVESO / COMAH site as defined by Directive 2012/18/EU and the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (the COMAH Regulations), relating to the control of major-accident hazards involving dangerous substances, has the potential to give rise to a major accident or disaster, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.

For COMAH-related risks, the HSA's policy, and approach to conducting land use planning assessments is to adopt a conservative and consistent approach. The HSA notes that its proposed risk-based approach is not intended to be as detailed as that required for a full quantified risk assessment (QRA), but rather is based on the consideration of a smaller number of representative events which are the most significant in terms of off-site land use planning.

In assessing the risk, the HSA examines both the individual risk and the societal risk. In both cases, the risk is estimated based on the HSA's guidance and is compared against the HSA's assessment criteria.

There are no COMAH establishments in Donegal, therefore the consideration of a major accident or hazard from a COMAH establishment is not relevant to the Proposed Scheme and has been scoped out of the assessment.

18.4 Description of Likely Significant Effects

18.4.1 Assessment of Construction Effects

The potential for construction phase impacts is considered to be low in terms of sensitivity, magnitude, and significance particularly as there is an absence of an establishment that falls within the Scope of the Control of Major Accident Hazard Regulations 2015 (the COMAH Regulations).

There is potential to impact upon the natural environment, local land use, settlement, and human population, as a result of accidental discharge of dangerous substations (oils, fuels, cement, and other construction materials) or the release of contaminants exposed through excavation works, during the construction phase. The surrounding area of the Burnfoot River is particularly sensitive given the downstream SAC and SPA designation.

The presence, movement, and navigation of construction vehicles during the construction phase, has the potential to result in accidents; collision with other vehicles or with natural and / or manmade features, which may result in damage to the environment through accidental discharge of substances such as fuels and construction materials.

However given the mitigation included in in other chapters of the EIAR, e.g. biodiversity, water quality, population and human health, soils, geology and hydrogeology and the fact that Ireland is an area of relatively low seismic activity and low lightning activity, and in general is not subject to extreme weather events other than flooding, the likelihood of the impacts is assessed as very unlikely based on the criteria in Table 18.1. The severity or magnitude of the impact is considered to be minor based on the criteria in Table 18.2 and therefore the significance of the impact in the context of major accidents and hazards is considered to be minor and, based on the risk matrix in the DHLGH guidance, normal emergency procedures are considered adequate during the construction phase.

In addition, the construction will be carried out in compliance with a range of key legislation to ensure the construction works are undertaken safely including:

- Safety, Health, and Welfare at Work (Construction) Regulations 2013
- Safety, Health, and Welfare at Work Act 2005
- Safety, Health, and Welfare at Work (General Application) Regulations 2007

18.4.2 Assessment of Operational Effects

As identified in Section 18.3, Ireland is an area of low seismic activity and low lightning activity, and in general is not subject to extreme weather events other than flooding. In terms of operational effects, flooding is the main risk and addressing this risk is a key objective of the Proposed Scheme.

As can be seen in Table 18.4, there are 41 residential properties, 8 commercial properties, 2 utility assets and 2 roads in Burnfoot at risk from fluvial flooding during the 0.5% AEP flood event.

A damage assessment was conducted to determine the monetary risk of flooding in Burnfoot. The monetary damage avoided should a 0.5% AEP flood event Standard of Protection be provided was calculated to be €10,564,849.

Therefore the hazard identification outlined in Table 18.4 would classify the severity of the risk to be considered as serious, based on the criteria in Table 18.2 with the likelihood of occurrence of flooding (although not necessarily to the standard of protection offered by the Proposed Scheme (0.5% AEP) considered to be likely. The significance of effect without the Proposed Scheme in place is therefore considered to be significant and one which requires mitigation and planning and preparedness to address the risk of major accidents and hazards.

The Proposed Scheme has been designed to mitigate this risk and therefore will reduce the likelihood of flooding in Burnfoot to very unlikely and therefore the operation of the Proposed Scheme will have a significant beneficial impact and not further mitigation will be required in the context of Major Accidents and hazards.

Table 18.4: Current Scenario Flood Risk Analysis Burnfoot River (0.5% AEP flood event)

Receptor/Asset affected	Number of receptors/assets at risk	Impact of flooding
Residential properties	41	Monetary damage – direct and indirect
Commercial properties	8	Monetary damage – direct and indirect
Utility assets	2	Electricity sub-station and wastewater treatment plant
Roads	2	Regional road and minor road at risk which may result in delays.

18.5 Inter-relationships

The interrelationships with major accidents and Disasters relate predominantly to the flood risk associated with mainly fluvial sources in Burnfoot. Chapter 9 provides details of the flood risk and the primary objective of the Proposed Scheme is to reduce flood risk to the properties, infrastructure, and individuals at risk of the flooding hazard, therefore there is a strong interaction with the reduction in the risk of major accidents and disasters and the reduction in flood risk which presents a significant positive impact. There is also interactions with the risk present during construction and the potential for major accidents or disasters through . biodiversity, water quality, population and human health, soils, geology, and hydrogeology, however the mitigation measures recommended in each of these disciplines and the fact that the project will be constructed in accordance with the Safety, Health and Welfare at Work legislation will ensure that the potential for major accidents during construction is not significant.

18.6 Mitigation and Monitoring

18.6.1 Mitigation

There is not requirement for specific mitigation for Major Accidents or Hazards during the construction or operational stages of the Proposed Scheme given that the only significant impacts are considered to be positive.

18.6.2 Monitoring

Monitoring of construction activities through the health and safety plan and construction environmental management plan will ensure major accidents and disasters are avoided during construction. After completion of construction the Proposed Scheme will be monitored and maintained by Donegal County Council to ensure it continues to achieve its objectives.

18.7 Potential Cumulative Effects

Given that the significant impacts in relation to Major Accidents and Disasters relate to flood risk any cumulative effects would come from developments that impact the floodplains that affect the site. This is likely to be a development that takes place within the floodplain in the vicinity of the proposed works. In order to gain planning permission, all new developments must show that they do not increase flood risk elsewhere in compliance with The Planning System and Flood Risk Management Guidelines. There will be no cumulative impacts on flood risk as a result of neighbouring developments and therefore no cumulative effects on Major Accidents and Disasters.

18.8 Residual Impacts

There will a residual flood risk as the flood defences may be exceeded by a flood that is greater than that which they were designed to resist. However, the defences have been designed to a high standard of protection and include allowances for climate change and freeboard. The residual risk can therefore be considered to be low particularly with a regular monitoring and maintenance regime put in place.

18.9 Summary of Effects

Given the nature of the works and the low risk associated with the area in terms of natural disasters and COMAH establishments the impacts of the Proposed Scheme on major accidents and disasters is not considered to be significant, indeed the implementation of the scheme will result in a positive impact in the reduction of flood risk and the associated reduction in the risk of a major accident or disaster.

18.10 Limitations of Assessment

There were no limitations that would affect the robustness of the assessment for EIAR purposes.