

18 RISK MANAGEMENT (MAJOR ACCIDENTS & DISASTERS)

18.1 Introduction

This chapter describes the Proposed Development in respect of its potential vulnerability to major accidents / disasters, and its potential to give rise to the same.

The assessment is carried out in compliance with the EIA Directive on the assessment of the effects of certain public and private projects on the environment that entered into force on 16 May 2017 which states the need to assess: -

“the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned”

The underlying objective of this assessment is to ensure that appropriate precautionary actions are taken for those projects which *“because of their vulnerability to major accidents and/or natural disasters, are likely to have significant adverse effects on the environment.”*

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18.2 Assessment Methodology

The scope and methodology of this assessment is centred on the understanding that the Proposed Development will be designed, built and operated in line with best international current practice. As such, major accidents resulting from the Proposed Development would be very unlikely.

The scope and methodology presented in the following sections are based on the provisions of the EIA Directive, the EPA Guidelines, EU Commission guidance, as well as professional judgement.

A risk analysis-based methodology that covers the identification, likelihood and consequence of major accidents and / or disasters has been used for this assessment (Refer to Section 18.5 for further detail on this approach).

The assessment of the risk of major accidents and/or disasters considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e. population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and the landscape.

18.2.1 Guidance and Legislation

18.2.1.1 Legislative Requirements

The following paragraphs set out the requirements of the EIA Directive in relation to major accidents and / or disasters. Recital 15 of the EIA Directive states that: -

“In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such 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. In order to avoid duplications, it should be possible to use any relevant information available and obtained through risk assessments carried out pursuant to Union legislation, such as Directive 2012/18/EU of the European Parliament and the Council and Council Directive 2009/71/Euratom, or through relevant assessments carried out pursuant to national legislation provided that the requirements of this Directive are met.”

It is clear from the EIA Directive that a major accident and / or disaster assessment is most readily applied to ‘Control of Major Accident Hazards involving Dangerous Substances’ (COMAH) sites or major industrial / energy installations. Notwithstanding, the assessment of major accidents and

disasters for the Proposed Development has been carried out for completeness given the nature and extent of the Proposed Development.

Article 3 of the EIA Directive requires that the EIAR shall identify, describe and assess in the appropriate manner, the direct and indirect significant effects on population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and landscape deriving from (amongst other things) the “*vulnerability of the project to risks of major accidents and / or disasters that are relevant to the project concerned*”.

The information relevant to major accidents and/or disasters to be included in the EIAR is set out in Section 8 of Annex IV of the EIA Directive as follows: -

“(8) A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.”

18.2.1.2 Guidance Documents

A number of guidance documents and published plans have been reviewed and considered in order to inform this assessment, as described in the following sections.

- European Commission – Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- Environmental Protection Agency Guidelines (2022).
- Guidance on Assessing and Costing Environmental Liabilities (2014).
- A Framework for Major Emergency Management Guidance Document 1-A Guide to Risk Assessment in Major Emergency Management (2010).
- National Risk Assessment 2024; Overview of Strategic Risks.
- A Guide to Risk Assessment in Major Emergency Management (2010).

18.3 Receiving Environment

The planning application site is located on the lands at Mount Avenue, Castletown, Dundalk. The site is currently greenfield agricultural land of c. 38.89 hectares. Located approximately 0.5km east of the M1 Motorway, it is bound by Castletown Road to the north, Mount Avenue at the east, further greenfield to the south, and Greyacre Road to the west of the site.

Figure 2.1 below shows the site boundary in red. The site features the Townland hedgerow Newtownbalregan and three Trees and Woodlands of Special Amenity Value (ref. no. 30, 32, 54) located in the northwestern corner, at the Castletown Motte, and within the southern portion of the zoned open space around the Motte, all of which contribute to the sense of place and character of the area.

Within the Louth County Development Plan 2021 – 2027, the site is zoned A2 – ‘New Residential Phase 1’, H1 – ‘Open Space’, and G1 – ‘Community Facilities’. Similarly, within the Dundalk Local Area Plan 2025 – 2031, the site is zoned A2 and H1, with Spot Objective F stating requirements for community and neighbourhood facilities. Both the Development Plan and the Dundalk Local Area Plan note a requirement for the development of a Link Street on the lands, connecting from Castletown Road to Mount Avenue.

18.4 Characteristics of the Proposed Development

18.4.1 The Proposed Development

The proposed development comprises 1,058no. dwellings (765no. houses, 150no. duplex units, and 143no. apartments) including 2no. duplexes with an option to accommodate a childcare facility at ground floor level; a local centre comprising ground floor retail units, a medical unit, and mobility hub; provision of a c.194 place childcare facility; all in buildings ranging in height from 1 to 6 storeys. All associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works, including public, communal and private open space; public lighting; surface car parking spaces; bicycle parking; ESB substations; bin stores; provision of a foul sewage pumping station; laying a foul rising main along Castletown Road from the proposed new access to the development eastward to the Castletown Road and Bellewsbridge Road Junction. The proposed development will be accessed from two new combined vehicular, cyclist and pedestrian junction at Castletown and at Mount Avenue. A separate pedestrian and cyclist access is also provided at Mount Avenue. A Heritage Park (c. 5.44Ha), a playing pitch (c. 1.2Ha) and a site reserved for a future educational/school facility (c. 1.35Ha) are also being provided.

The proposed development is located at lands in the Townlands of Newtownbalregan, Castletown and Farrandreg, at Mount Avenue, Castletown, Dundalk, Co. Louth.

A full project description is provided in Chapter 3: Description of Proposed Development.

18.5 Potential Impact of the Proposed Development

18.5.1 Proposed Development

As discussed above, the scope and methodology of this assessment is centred on the understanding that the Proposed Development would be designed, built and operated in line with best international current practice and, as such, the vulnerability of the Proposed Development to risks of major accidents and / or disasters is considered low.

Current EIA practice already includes an assessment of some potential accidents and disaster scenarios such as pollution incidents to ground and watercourses as well as assessment of flooding events. These are described in detail in the relevant EIAR assessment Chapters (refer to Chapter 8: Water and Chapter 7: Land, Soil and Geology for further detail).

18.5.1.1 Site Specific Risk Assessment

A site-specific risk assessment identifies and quantifies risks focusing on: unplanned, but possible and plausible events occurring during the construction and operation of the Proposed Development. The approach to identifying and quantifying risks associated with the Proposed Development by means of a site-specific risk assessment is derived from the EPA guidance.

The criteria for categorising impact is derived from the DoEHLG guidance (Refer to below tables). The following steps were undertaken as part of the site-specific risk assessment: -

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

Risk Identification

The identification of plausible risks has been carried out in consultation with relevant specialists. A Risk Register which was prepared during the design of the Proposed Development was also reviewed in order to inform the identification of risks for this assessment. The identification of risks has focused on non-standard but plausible incidents that could occur at the Proposed Development during the Construction and Operation.

In accordance with the European Commission Guidance risks are identified in respect of the developments: -

- 1) Potential vulnerability to disaster risks.
- 2) Potential to cause accidents and / or disasters.

Risk Classification

Having identified the potential risks, the likelihood of occurrence of each risk has been assessed. An analysis of safety procedures and proposed environmental controls was considered when estimating likelihood of identified potential risks occurring. Table 18.1 defines the likelihood ratings that have been applied.

The approach adopted has assumed a 'risk likelihood' where one or more aspects of the likelihood description are met, i.e. any risk to the Proposed Development less than extremely unlikely to occur has been excluded from the assessment. The likelihood rating assigned to each risk has assumed that all proposed mitigation measures and/or safety procedures are in place and have succeeded in reducing or preventing the major accident and/or disaster occurring.

Rating	Classification	Effect 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.

Table 18.1: Risk Classification Table – Likelihood.

Classification of Consequence

The consequence rating assigned to each risk has assumed that all proposed mitigation measures and / or safety procedures have failed to prevent the major accident and / or disaster occurring. The consequence of the impact if the event occurs has been assigned as described in Table 18.2.

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

Ranking	Consequence	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. Minor localised disruption to community services or infrastructure (<6 hours).

Ranking	Consequence	Impact	Description
2	Limited	Life, Health, Welfare Environment Infrastructure Social	Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required. Localised displacement of a small number of people for 6-24 hours. Personal support satisfied through local arrangements. Simple contamination, localised effects of short duration €0.5-3M Normal community functioning with some inconvenience.
3	Serious	Life, Health, Welfare Environment Infrastructure Social	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation. Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated. External resources required for personal support. Simple contamination, widespread effects or extended duration. €3-10M. Community only partially functioning, some services available.
4	Very Serious	Life, Health, Welfare Environment Infrastructure Social	5 to 50 fatalities, up to 100 serious injuries, up to 2000 evacuated. Heavy contamination, localised effects or extended duration €10-25M. Community functioning poorly, minimal services available.
5	Catastrophic	Life, Health, Welfare Environment Infrastructure Social	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2000 evacuated. Very heavy contamination, widespread effects of extended duration >€25M. Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.

Table 18.2: Risk Classification Table – Likelihood.

Risk Evaluation

In accordance with the DoEHLG 2010 Guidelines, the evaluated major accidents and natural disasters (MANDs) will be subject to a risk matrix to determine the level of significance of each risk for each scenario. These have been grouped according to 3 categories: -

- **High Risk**
Scenarios that have an evaluation score of 12 – 25, as indicated by the Red Zones in Table 17.3.
- **Medium Risk**
Scenarios that have an evaluation score of 8 – 11 as indicated by the Amber Zone in Table 17.3.
- **Low Risk**
Scenarios that have an evaluation score 1 – 7, of as indicated by the Green Zones in Table 17.3.

Likelihood	5 – V. Likely					
	4 – Likely					
	3 – Unlikely					
	2 – V. Unlikely					
	Ext. Unlikely					
		1 Minor	2 – Limited	3 Serious	4 – V. Serious	5 – Catastrophic
Consequence of Impact						

Table 20.3: Levels of Significance.

Significant effects resulting from MANDs are adverse effects that are described as ‘Significant’, ‘Very Significant’ or ‘Profound’ under the EPA Guidelines (2022) and Volume 2, Section 2: The EIA Process of this report. Consequently, MANDs that fall within Amber or Red Zones (‘Medium’ or ‘High’ Risk Scenarios) are brought forward for further consideration and assessment for further mitigation.

18.5.1.2 Construction Phase

Risk ID	Potential Risk	Possible Cause	Requirement for Further Assessment?
Potential Vulnerability to Accidents and / or Disasters			
A	Flooding of site.	Extreme weather – periods of heavy rainfall, taking into account climate change, strong winds and tidal events.	No. The site is not at risk of flooding. The majority of the lands subject of this EIAR are located within Flood Zone “C”. Flood Zone “C” lands are suitable for all land use types including residential development which are classified as “highly vulnerable” in the Flood Risk Guidelines. A small portion of the lands are located in Flood Zone A/B however it is noted that these lands are all within open space areas which we note are compatible with these flood zones.
Potential to Cause Major Accidents and / or Disasters			
B	Fire / Explosion.	- Damage to unmapped services / utilities during earth works. - Vehicle and vehicle collision.	No. The Construction Phase of the Proposed Development will be carried out in accordance with all relevant health and safety guidance and legislation, as well as the provisions of the Construction Environmental Management Plan (CEMP), prepared by DBFL Consulting engineers.
C	Unplanned outages / disruption to services.	Damage to unmapped services / utilities during earth works.	No. Disruption to services not considered to constitute a ‘major accident or disaster’ for the purposes of this assessment.
D	Road traffic accidents resulting from construction phase traffic or temporary construction traffic management measures.	- Driver error. - Object on road. - Failure of vehicle control systems. - Public confusion.	No. The Construction Phase of the Proposed Development will be carried out in accordance with all relevant health and safety guidance and legislation, as well as the provisions of the Construction

			Environmental Management Plan, prepared by DBFL Consulting Engineers.
E	Contamination of the groundwater / surface water.	Construction phase spills or leakages.	No. The Construction Phase of the Proposed Development will be carried out in accordance with construction best-practise and provisions of the Construction Environmental Management Plan, prepared by DBFL Consulting Engineers.
F	Falling debris from construction vehicles / cranes or cranes striking rail overhead cables or poles.	- Inadequate securing. - Overloading of vehicles.	No. The Construction Phase of the Proposed Development will be carried out in accordance with construction best-practise and provisions of the Construction Environmental Management Plan, prepared by DBFL Consulting Engineers. In that regard, no oversailing of the adjoining rail line by cranes involved in the construction of the proposed apartment buildings is proposed.
G	Release of asbestos fibres to atmosphere or surface water.	- Inadequate handling and removal of Asbestos Containing Materials (ACMs). - Removal of un-surveyed ACM.	No. No demolition of structures containing asbestos is proposed as part of this development. The Construction Phase of the Proposed Development will be carried out in accordance with construction best-practise and provisions of the Construction Environmental Management Plan, prepared by DBFL Consulting Engineers.

Table 18.4: Risk Register – Construction Phase.

None of the potential Construction Phase risks considered have been identified as requiring further assessment.

18.5.1.3 Operational Phase

Risk ID	Potential Risk	Possible Cause	Requirement for Further Assessment?
Potential Vulnerability to Disaster Risks			
H	Flooding of site.	Extreme weather – periods of heavy rainfall, taking into account climate change, strong winds and tidal events.	No. The site is not at risk of flooding. The majority of the lands subject of this EIAR are located within Flood Zone “C”. Flood Zone “C” lands are suitable for all land use types including residential development which are classified as “highly vulnerable” in the Flood Risk Guidelines. A small portion of the lands are located in Flood Zone A/B however it is noted that these lands are all within open space areas which we note are compatible with these flood zones.
I	Incident at nearby SEVESO	Fire / Explosion.	No.

Risk ID	Potential Risk	Possible Cause	Requirement for Further Assessment?
	site resulting in off-site environmental impact.	Equipment / Infrastructure failure.	A “consultation distance” is very broadly defined under Regulation 2 of the COMAH Regulations 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. The consultation distance for some types of COMAH facility ranges from 300m for establishments where the risk is from flammable non-pressurised materials, to 1 km for establishments where chemical processing involving flammable or toxic substances takes place, to 2km for establishments with bulk storage of pressurised or toxic substances, triggering an obligation on the Planning Authority to notify the HSA.” The consultation distance is included in <i>italics</i> after each listed SEVESO site. Nearest Upper Tier Sites: - Drogheda Marine Terminal, Marsh Road, Drogheda, Co. Louth – c. 33.7km Nearest Lower Tier Sites:- BAK Bulk Services, Red Barns, Crumcar Road, Dunleer, Co. Louth- c. 17.62km Cooley Distillery, Riverstown, Cooley, Co. Louth- c. 13.63km Richardstown Maturation Facility, Richardstown, Dunleer, Co. Louth– c. 17.12km As can be seen from the list above, the closest COMAH well outside the minimum distances required.
Potential to Cause Accidents and / or Disasters			
J	Fire / Explosion.	- Equipment or infrastructure failure. - Act of terrorism. - Electrical problems.	No. The Proposed Development will be designed, built and operated in line with best international current practice, and will be compliant with all relevant Health and Safety and Fire regulation and guidance.
K	Collision of Aircraft.	- Failure of air traffic control systems. - Act of terrorism.	No. The Proposed Development does not include buildings in excess of 6 storeys. Dublin Airport is located approximately 76.2km south of the site. The application site is situated outside the flight path/outer public safety zone of Dublin Airport.
M	Vehicle collisions on site.	- Public negligence. - Failure of vehicular operations.	No. The internal road network and car parking areas have been subject to a Road Safety Audit and have been designed in accordance with the Design Manual for Urban Roads and Streets (2013). Private car use is also minimised by a reduced car parking provision and ready access to high quality public transport. Further, individual accidents / incidents are not considered to constitute a ‘major accident / disaster’ for the purposes of this assessment.

Risk ID	Potential Risk	Possible Cause	Requirement for Further Assessment?
N	Incident at Dundalk Railway Station.	- Act of terrorism. - Explosion / Fire.	No. Dundalk Railway Station is located c. 1.5km south east of the Proposed Development. It is not anticipated that an incident at the Railway Station would impact the proposed development.
O	Collision of Train	Derailment causing impact with buildings	No. Dundalk Railway Station is located c. 1.5km south east of the Proposed Development. It is not anticipated that an incident along the railway line would impact the proposed development. Furthermore, the rail corridor is adequately protected in line with Irish Rail safety requirements. The trains will be travelling slower than usual as they will be entering or exiting the Railway Station.

Table 18.5: Risk Register – Operational Phase.

18.6 Risk Assessment

Having regard to Sections 18.5.1.2 and 18.5.1.3 above, neither the construction phase nor the operational phase have been identified as presenting potential risks that require further assessment. Therefore, a risk assessment is not required.

18.6.1 Do-Nothing Impact

In the event that the Proposed Development does not proceed, the site would remain in its current undeveloped, greenfield state. In absence of an increased number of people residing, working or visiting the site, there would be no increase in the risk of major accidents occurring due to human interaction, should a disaster take place.

18.6.1.1 Construction Stage

None of the potential risks to be noted during the Construction Stage were identified as requiring further assessment.

18.6.1.2 Operational Stage

None of the potential risks to be noted during the Operational Stage were identified as requiring further assessment.

18.6.2 Cumulative

As outlined in sections 18.5.1.2 and 18.5.1.3 above, no likely risks of a major accident / disaster occurring are identified during the Construction Stage. A low risk of major accident / disaster in respect of the Proposed Development during the Operational Phase. No cumulative effects are identified.

18.6.3 Proposed Development

18.6.3.1 Construction Phase

The potential risk during the Construction Stage of the Proposed Development is the same as described under 18.5.1.2

18.6.3.2 Operational Phase

The potential risk during the Operational Stage of the Proposed Development is the same as described under 18.5.1.3.

18.6.3.3 Do-Nothing Impact

The 'do-noting' impact of the Proposed Development will be the same as described under 18.6.1

18.7 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

18.7.1 Rating of Major Accidents and Disasters Without Mitigation

18.7.1.1 Construction Stage

The mitigation measures relevant to each environmental factor outlined in chapters 5 – 17 of the EIAR, as well as the CEMP, will be implemented during the Construction Phase of the development and will collectively mitigate any risk of major accidents and disasters during this time.

The Construction Phase of the Proposed Development will be carried out in accordance with best practice site management measures relating to health and safety and emergency response. These measures are described in the CEMP.

18.7.1.2 Operational Stage

No mitigation or monitoring measures are proposed specific to reducing the risk of major accident / disaster during operation.

18.8 Residual Impact of the Proposed Development

The risk of a major accident and / or disaster during the Construction Stage of the Proposed Development is considered low.

The risk of a major accident and / or disaster during the Operational Stage of the Proposed Development is considered low.

18.9 Monitoring

No monitoring associated with risks of major accidents and / or disaster is proposed during Construction or Operational Stages.

18.10 Reinstatement

No reinstatement measures are necessary during the Construction or Operational Stages of this development.

18.11 Difficulties Encountered

No difficulties were encountered during the assessment process.