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 came into force on 16 May 2017. This 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."*

This chapter has been prepared by Eleanor MacPartlin, EIAR Manager, with assistance from Conor Owens, EIAR Co-ordinator and Ryan Cowan, EIAR Assistant, at Stephen Little & Associates.

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 19.5 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 that none of these considerations arise given the nature of the proposed development at this location, the assessment of major accidents and disasters for the Proposed Development has been carried out for completeness.

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.

- Environmental Protection Agency Guidelines (2022).
- National Risk Assessment 2021/2022; Overview of Strategic Risks.
- European Commission – Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment Report (2017).
- 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).
- A Guide to Risk Assessment in Major Emergency Management (2010).

18.3 Receiving Environment

Kellystown is located approximately 2km south west of Blanchardstown town centre. It is approximately 10km north west of Dublin city centre (O'Connell Bridge). Luttrellstown Gate Phase 2 (Plot 1) has been traditionally been in agricultural use and is a greenfield site whilst St Mochta's LRD (Plot 2) is currently in use as football pitches and associated faciltiies by St Mochta's Football Club.

Luttrellstown Castle Resort and associated golf course are located south of the existing Luttrellstown Road. However, the Kellystown lands form a logical, sequential western extension of established urban development at Porterstown/Diswellstown/Carpenterstown, to the south of Clonsilla.

The sites forms part of a wider area subject of the Kellystown Local Area Plan objective of the County Development Plan, for a planned new residential neighbourhood. The Kellystown LAP 2021 was adopted in January 2021. The proposed developments lie within the 'Eastern Development Area' (DA1) for early phase development within the Kellystown LAP lands.

The application sites are generally bounded by Diswellstown Road/ Dr. Troy Bridge to the east, the Royal Canal and the Dublin-Maynooth Railway Line to the north, development consented under An Bord Pleanála Reg. Ref. ABP-312318-21 as amended by Reg. Ref. LRD0034-S3 to the south and residential zoned lands within the Eastern Development Area (DA1) of the Kellystown Local Area Plan to the west.

East of Diswellstown Road Overpass is the built up housing area of Porterstown / Diswellstown. Building height at Porterstown / Diswellstown to the east ranges from 2-3 storey houses and 4-5 storey apartment buildings.

The Royal Canal and Dublin- Maynooth(-Sligo) rail line lies to the north of the application site. The site is located within approximately 1.5km of both Coolmine and Clonsilla commuter rail stations, to the east and west respectively. The NTA and Iarnród Eireann are seeking to upgrade this rail line, which includes the electrification of the line to allow for DART trains and more frequent and higher capacity services as part of the DART+ West Programme. The preferred option includes the closure of the level crossing and construction of a pedestrian and cyclist bridge over the rail line at Porterstown Road, to the north of the application site. No provision is made for a new train station at Porterstown.

To the north of the rail line are Clonsilla and Blanchardstown. Clonsilla village, which includes a range of neighbourhood scale shops, is located approximately 500m to the north. Blanchardstown major town centre is approximately 2km to the north.

Scoil Choilm National School, Luttrellstown Community College and Porterstown Scout Den are located in a campus style layout to the south-east of the application site, at lands provided by Castlethorn Construction. This campus is bounded by the Diswellstown Road Overpass to the east and Luttrelstown Road to the south. Castlethorn Construction has also provided lands for the associated roads, the burial grounds and the Beechpark public park, which will serve the new residential community at Kellystown.

A short spur road (i.e. the initial section of the 'Kellystown Link Road') has been extended west from the junction of Diswellstown Road to serve the school campus, the cemetery access road and to connect with the existing Porterstown Road.

The application sites are located in the townlands of Kellystown and Porterstown, in the suburb of Clonsilla, Dublin 15. It lies within the administrative boundaries of Fingal County Council.

Luttrellstown Gate Phase 2 consists of greenfield lands whilst the St. Mochta's LRD site is currently occupied by St. Mochta's FC. The residential development area of the site is zoned for residential use in the Fingal County Development Plan. That part of the site to the south of the existing and permitted 'Kellystown Link Road' is zoned 'open space', where alterations to the permitted attenuation pond within the larger public park is proposed.

We refer the Planning Authority to the Architect's Design Statement prepared by O'Mahony Pike Architects, that provides an illustrative description of the site and its surrounding context.

18.4 Characteristics of the Proposed Development

Summary of Proposed Development - Luttrellstown Gate Phase 2 (Plot 1)

Castlethorn Developments Luttrellstown Limited intends to apply for Permission for a development at a site (c. 3.72ha) at lands in the Townland of Kellystown.

The proposed development comprises 99no. residential units in a mix of houses and duplex units consisting of 71no. 2 storey houses (66no. 3-bedroom and 5no. 4-bedroom), 16no. 3 storey houses (16no. 4-bedroom), 4no. 1-bedroom duplex units and 8no. 2-bedroom duplex units and all associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works, including public open space; public lighting; surface car parking spaces; bicycle parking spaces/stores for mid-terrace units; bin stores.

The proposed development includes a minor amendment to development permitted under Reg. Ref. ABP-312318-21, as amended by Reg. Ref. LRD0034-S3, with minor adjustment proposed to the permitted surface water attenuation pond. Vehicular access to the proposed development is provided by the road network permitted under Reg. Ref. ABP-312318-21, as amended by Reg. Ref. LRD0034-S3.

Summary of Proposed Development - St Mochta's LRD (Plot 2)

Castlethorn Developments Luttrellstown Limited intends to apply for Permission for a development at a site (c. 4.38ha) at lands in the Townland of Porterstown.

The proposed development comprises 302no. residential units in a mix of houses, duplex and apartment units consisting of 62no. 2 storey, 3-bedroom houses and 35no. 3 storey, 4-bedroom houses; 205no. Duplex / Apartment Units (98no. 1-bed, 88no. 2-bed and 19no. 3-bed) across 4no. blocks comprising: Block D ranging in height from 5-7 storeys accommodating 57no. apartment units; Block E ranging in height from 5-7 storeys accommodating 77no. apartment units; Block F ranging in height from 4-5 storeys accommodating 39no. apartment and duplex units; Duplex Blocks G1, G2, G3 & G4 3 storeys in height accommodating 32no. apartment units; and all associated and ancillary site development and infrastructural works, hard and soft landscaping and boundary treatment works, including public open space; public lighting; surface car parking spaces; bicycle parking spaces/stores for mid-terrace units; bin stores. Vehicular access to the proposed development is provided by the road network permitted under Reg. Ref. ABP-312318-21, as amended by Reg. Ref. LRD0034-S3.

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 19.1 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 communicates; 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 17.2.

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).
2	Limited	Life, Health, Welfare Environment Infrastructure	Single fatality; limited number of people affected; a few serious injuries with hospitalisation and medical treatment required.

Ranking	Consequence	Impact	Description
		Social	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 18.3: 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.	Tidal, fluvial or pluvial	No. The site is not at risk of flooding. Refer to the findings of the Flood Risk Assessment, prepared by Waterman Moylan Consulting Engineers for further detail relating to the Proposed Development.
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 Enviroguide.
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 Enviroguide.
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 Enviroguide.
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 Enviroguide.
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 Enviroguide.

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.	Tidal, fluvial or pluvial	No. The site is not at risk of flooding. Refer to the findings of the Flood Risk Assessment, prepared by Waterman Moylan Consulting Engineers for further detail relating to the Proposed Development.
I	Incident at nearby SEVESO site resulting in off-site environmental impact.	• Fire / Explosion. • Equipment / Infrastructure failure.	No. 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 *italics* after each listed SEVESO site. **Nearest Upper Tier Sites: -** Intel Ireland Limited, Leixlip, County Kildare – 3 km Barclay Chemicals Manufacturing Ltd, Mulhuddart, Dublin 15 – 6.8km Chemoc Limited, Damastown Industrial Estate, Dublin 15 - 7.3km Guerbet Ireland, Mulhuddart, Dublin 15 – 5.8km Rhenus Chemical Logistics Ireland Limited, Mulhuddart, Dublin 15 – 5.8km **Nearest Lower Tier Sites:-** Clarochem Ireland – 5.4km Astellas Ireland – 5.5km As can been seen from the list above, the closest COMAH sites are c. 3km and 5.4km from the application sites of the proposed residential development. The consultation distance in both cases is 1km.
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.

Risk ID	Potential Risk	Possible Cause	Requirement for Further Assessment?
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 18km of the site to the north east. The application site is situated outside the flight path/outer public safety zone for the southern runway at 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 reduced car parking, provision of bicycle and pedestrian facilities and ready access to quality public transport. Further, individual accidents / incidents are not considered to constitute a 'major accident / disaster' for the purposes of this assessment.

Table 18.1: 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 Phase

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

18.6.1.2 Operational Phase

None of the potential risks to be noted during the Operational Phase 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 Phase. 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 Phase 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 Phase of the Proposed Development is the same as described under 18.5.1.3.

18.6.3.3 Do-Nothing Impact

The 'do-nothing' 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 Phase

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 Phase

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 Phase of the Proposed Development is considered low.

The risk of a major accident and / or disaster during the Operational Phase 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 Phases.

18.10 Reinstatement

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

18.11 Difficulties Encountered

No difficulties were encountered during the assessment process.