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INTRODUCTION

Background

15.1 SLR Consulting Ireland (SLR) undertook an assessment of the potential for major accidents and disasters as a result of a proposed renewable plant at the Medite MDF production facility in Clonmel, Co Tipperary.

15.2 Chapter 2: Project Description sets out full details of the proposed development, which in summary is for the replacement of the existing energy systems at the Medite factory with two new biomass-fired energy plants, one for each of Medite's production lines.

15.3 This chapter of the EIAR considers the vulnerability of the application site as well as the potential risks of the proposed project (the "Proposed Development") to result in major accidents and/or natural disasters. Following the assessment of potential risks, mitigation measures that will be implemented through the proposed development are clearly identified.

Existing Development and Site Location

15.4 The Medite factory site is located at Redmondstown, Clonmel, Co. Tipperary, approximately 4 km east of the centre of Clonmel, refer to Figure 2-1. The existing and the Proposed Development site are described in detail in **Chapters 1** and **2** of this EIAR.

15.5 It is surrounded by what can be predominantly characterised as an agricultural area to the north and an industrial area to the south, located approximately 0.9 km north of the N24. The Proposed Development site has an area of 29.7 ha. which is part of the overall Medite landholding of 69 ha.

15.6 The Proposed Development site is located north of the River Suir and is accessed via a local access road off the N24. The existing buildings in the Medite facility are situated approximately 50 m back from this local access road. The application site is composed of the main production plant building and materials storage areas. All areas associated with the facility's operations are located on hardstanding.

15.7 Prior to construction of the Medite facility, the original land surface sloped from 45 mOD in the northwest of the factory site to 20 mOD in the southeast. During the construction in 1982 the topography was regraded to form a level working area. This has resulted in the formation of embankments along the northwest boundary of the factory site.

Proposed Development

15.8 The proposed development is described in Detail in Chapter 2 (Project Description) and will replace all four existing aging thermal energy systems serving both of Medite's two production lines, specifically;

- the two wood biomass fired boilers (18 MW each) and the natural gas-fired Thermal Fluid Heater (TFH) (6 MW) serving Production Line 1; and
- the wood biomass fired Thermal Fluid Heater (19 MW) serving Production Line 2.

15.9 The applicant is proposing the replacement of existing aging biomass boilers, biomass thermal fluid heater and gas fired thermal fluid heater, serving both of Medite's two MDF production lines. The

new renewable energy plants will have a rated thermal capacity of up to 60 MW and 30 MW for Line 1 and Line 2 production lines respectively, at the existing MDF manufacturing plant.

15.10 The proposed development will be located within the confines of the existing Medite factory site and within three primary development areas as outlined in Chapter 2 of this EIAR.

Scope of Work / EIA Scoping

15.11 Major accidents or natural disasters are hazards which have the potential to effect or occur at the Proposed Development and consequently have potential impacts on the environment. These include accidents during construction, operation or decommissioning caused by operational failure and/or natural hazards. The assessment of the risk of major accidents and/or disaster considers all factors defined in the EIA Directive that have been considered in this EIAR, i.e., population and human health, biodiversity, land, water, air and climate and material assets, cultural heritage and the landscape.

15.12 The scope of this chapter has been developed in accordance with the EPA (2022) EIA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Based on the information set out in the Guidelines in relation to major accidents, disasters and unplanned events, the scope includes:

- The relevant major accidents and/or natural disasters, if any, that the Proposed Development could be vulnerable to or cause, including flooding, fire, dangerous substances, catastrophic events and landslides;
- The potential for these major accidents and/or natural disasters to result in likely significant adverse environmental effect(s); and
- The measures that are in place, or need to be in place, to prevent or mitigate the likely significant adverse effects of such events on the environment.

Consultations / Consultees

15.13 Consultations regarding the proposed development have been undertaken with statutory bodies as set out in Chapter 1 of this EIAR. In relation to this chapter consultation specific consultation was undertaken with Gas Networks Ireland, Health and Safety Authority, and the Health Service Executive Environmental Health Department.

15.14 A number of queries were raised during the consultations in relation to the proposed development and the existing infrastructure at the factory site. The consultation responses are set out in Chapter 1 of this EIAR.

15.15 A number of sources of information were consulted in the undertaking of this assessment. The sources of information consulted are referenced where mentioned in this chapter.

Authors

15.16 This chapter of the EIAR was prepared by SLR. The project team consists of:

- Aislinn O'Brien MCD, MSc, MIPI, MRTPI; and
- Lynn Hassett BSc (Hons), MSc, PIEMA

15.17 Aislinn is a chartered planner and has 15 years' experience in project management, EIA coordination, planning for large scale infrastructure and renewable energy projects and preparing environmental impact assessment chapters and reports for renewable energy and tourism projects.

15.18 Lynn Hassett (PIEMA, MIEnvSc) is an EIA co-ordinator with a BSc in Applied Ecology (2000) and a MSc in Environmental Impact Assessment (2001). She has 15 years of experience of in EIA across the not-for-profit, public and private sectors in the UK and Ireland. She has worked on both the review of EIA on behalf of planning authorities assessing applications and in the production of them to support planning applications being lodged. She is a Practitioner member of the Institute of Environmental Management and Assessment, which she is a member of since 2001. She is also a Full Member of the Institution of Environmental Sciences, which she joined in 2023.

15.19 Lynn has acted as a project manager of the EIA process on a number of urban development, wind and quarry projects with responsibility for the co-ordination between project designers and the entire multi-disciplinary environmental team. As a generalist, she has also written the introductory chapters of a large number of EIARs, including the Introduction, Project Description, Alternatives, Population and Human Health, Material Assets, and Major Accidents and Disasters, co-ordinating with the wider EIA team for input.

Limitations / Difficulties Encountered

15.20 The assessment undertaken here should be viewed as a largely qualitative assessment of major accidents and disasters and not a complete risk assessment of all potential hazards.

15.21 This limitation has not prevented the assessment of reasoned conclusions as to the significance of the potential risks to/from the proposed development as required under the EIA Directive.

REGULATORY BACKGROUND

EU Directive

15.22 The requirement for this assessment arises from the European Union Directive in relation to Environmental Impact Assessment of Projects (Directive 2011/92/EU, as amended by 2014/52/EU).

15.23 The information relevant to major accidents and/or disasters to be included in the EIAR is set out in paragraph 8 of Annex IV of the EIA Directive (as amended) is 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".*

15.24 An assessment of the following key elements was undertaken in accordance with the EIA Directive as amended:

- The vulnerability of the Proposed Development to potential accidents and disasters; and
- The Proposed Development potential to cause major accidents or disasters which pose a risk to the environment.

Guidelines

15.25 The preparation of this section has been carried out in accordance with the following guidance documents:

- European Commission. (2017). Environmental Impact Assessment of Projects – Guidance on the preparation of Environmental Impact Assessment Reports;
- Department of Environment, Heritage and Local Government (2010) A Guide to Risk Assessment in Major Emergency Management[1];
- Environmental Protect Agency (2014) Guidance on Assessing and Costing Environmental Liabilities;
- Department of Defence (2020) A National Risk Assessment for Ireland;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (Environmental Protection Agency, August 2022);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, August 2018);
- Notified Seveso Establishments on the HSA website[2]; and
- Seveso Site Locations, an ArcGIS library of mapped Seveso locations in the Republic of Ireland[3].

[1] The Department of Environment, Heritage and Local Government (2010) 'Guide to Risk Assessment in Major Emergency Management' provides guidance to state's emergency response agencies in the risk assessment process to provide a sound basis for their mitigation and preparedness response

[2] https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/comah/list_of_establishments/ Date Accessed 13/5/2023

[3] https://www.arcgis.com/home/item.html?id=a01b5a0a6ff24f10adff30beaa3b6fd0 Date Accessed 13/10/2023

RECEIVING ENVIRONMENT

Sources of Information

15.26 The following sources of information and literature pertinent to the area were used in the preparation of this Chapter:

- European Directive (2012/18/EU) – the "Seveso – III Directive"[4];
- HSE Framework for Emergency Management services;
- S.I. No. 209 of 2015 Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 "COMAH"[5];
- ArcGIS Seveso site location map viewer[6];
- the National Planning Framework 2040;
- the Regional Spatial and Economic Strategy for the Eastern and Midland Region;
- Tipperary County Development Plan 2022 – 2028;
- Tipperary County Council Website; and
- Central Statistics Office (CSO).

Categorisation of the Baseline Environment

15.27 A desk-study based of the above sources has been completed to establish the baseline environment for which the proposed risk assessment is being carried out. This will influence both the likelihood and the impact of a major accident or natural disaster. Local and regional context has been established prior to undertaking the risk assessment to develop an understanding of the vulnerability and resilience of the area to emergency situations.

15.28 Numerous site visits have been undertaken during preparation of the planning application, during which very little changes to the area have been noted A study area of a c. 2km (as shown on **Figure 4.1** of the EIAR) radius surrounding the red line boundary was selected to ensure that all built service infrastructure and sensitive users (such as hospitals, community facilities, schools) with potential links to the application site were identified. It is considered very unlikely that any impacts from the application site would be experienced further than the 2km boundary. In instances where the study area differs according to the specific feature under consideration this is clearly indicated in the text of the chapter.

[4] European Commission Seveso III https://environment.ec.europa.eu/topics/industrial-emissions-and-safety/industrial-accidents_en date accessed 20/6/2023

[5] Chemicals Act S.I. 209 (Control of major accident hazards Involving dangerous substances)(Revocation) Regulations 2015. https://www.hsa.ie/eng/Your_Industry/Chemicals/Legislation_Enforcement/COMAH/SI_209_of_2015.pdf date accessed 20/6/2023

[6] Seveso (upper and lower tier) map viewer: https://www.arcgis.com/home/item.html?id=a01b5a0a6ff24f10adff30beaa3b6fd0. Date Accessed 20/6/2023

15.29 With regard to the control of major accident hazards involving dangerous substances, on examination of upper and lower tier Seveso Establishments in the surrounding region of the Proposed Development, no Seveso Establishments were identified in immediate proximity to the Proposed Development site. The nearest Seveso Establishment is MSD Ireland, located in Kilsheelan, Co. Tipperary 8 km west of the subject site. MSD Ireland is classified as an Upper Tier Seveso Site. The next nearest Seveso Establishment is Trans-stock Warehousing and Cold Storage in Ferrybank, Co. Waterford and is located 35km southeast from the Proposed Development site. While the Tipperary County Development Plan 2022-2028 does not specifically state the 'reasonable consultation distance' for planning applications close to Seveso sites, the Waterford County Development Plan 2022-2028 stipulates a 700m consultation distance from the Ferrybank site. From experience of other sites this consultation distance is typical of other radii stipulated for comparison sites, therefore it is not considered that the proposed development is within the consultation distance for any Seveso site.

ASSESSMENT METHODOLOGY

Introduction

15.30 Some potential accidents and disaster scenarios such as pollution incidents to ground and watercourses as well as assessment of flooding events) and the vulnerability of soils and subsoils to contamination are addressed specifically in technical assessment chapters (for example, see Chapter 6 Land Soils Geology and Chapter 7 Hydrology and Hydrogeology). These are described in detail in the relevant EIAR assessment chapters.

15.31 The assessment in this chapter focusses on other potential for major accidents not considered elsewhere in the EIAR. It has been undertaken following best practice and guidance outlined in the following:

- EPA (2014) Guidance on assessing and costing environmental liabilities
- European Commission. (2017). Environmental Impact Assessment of Projects – Guidance on the preparation of Environmental Impact Assessment Reports
- DoEHLG "Guide to Risk Assessment in Major Emergency Management"

15.32 The assessment takes into account that the Proposed Development will be designed, built and operated in line with best practice construction and industry practices and will incorporate bunding of fuels and appropriate storage / management of chemicals and oils as outlined in Chapter 7 of this EIAR. It also assumes in-built mitigation such as for fire prevention / control technology as outlined in Chapter 2 of this EIAR.

Site-Specific Risk Assessment Methodology

15.33 The approach to identifying and quantifying risks associated with the Proposed Development by means of a site-specific risk assessment is based on the EPA 'Guidance on Assessing and Costing

Environmental Liabilities' document[7], which recommends that the identification of environmental liabilities /risks should focus on unplanned, but possible and plausible events. In accordance with best practice, and as set out in Section 3.3 of the guidance, the following steps were taken as part of the site-specific risk assessment:

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

Risk Identification

15.34 Risks have been reviewed through the identification of reasonably foreseeable risks in consultation with relevant contributors to this EIAR (refer to Statements of Authority in **Chapters 4** to **14** of this EIAR). The identification of risks has focused on non-standard but plausible incidents that could occur at or as a result of the Proposed Development during construction, operation and decommissioning.

15.35 In accordance with the European Commission (2017) Guidance on Environmental Impact Assessment Reports[8], risks are identified in respect of the projects:

- Potential to cause accidents and/or disasters; and
- Vulnerability to potential disaster/accident.

Risk Classification

Classification of Likelihood

15.36 After identifying 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 15-1 defines the likelihood ratings that have been applied.

15.37 The approach adopted has assumed a 'risk likelihood' where one or more aspects of the likelihood description are met.

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7 EPA (2014) Guidance on assessing and costing environmental liabilities. Available at https://www.epa.ie/publications/compliance-enforcement/licensees/reporting/financial-provisions/EPA_OEE-Guidance-and-Assessing-WEB.pdf

8 European Commission. (2017). Environmental Impact Assessment of Projects – Guidance on the preparation of Environmental Impact Assessment Reports https://op.europa.eu/en/publication-detail/-/publication/2b399830-cb4b-11e7-a5d5-01aa75ed71a1

Table 15-1
Classification of Likelihood (Source: DoEHLG, 2010)

Ranking	Likelihood	Description
1	**Extremely Unlikely**	May occur only in exceptional circumstances; once every 500
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 organisation's 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.

Classification of Consequence

15.38 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 of the impact if the event occurs has been assigned as described in Table 15-2.

15.39 The consequence of a risk to/from 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.

Table 15-2
Classification of Impact (Source: DoEHLG, 2010)

Ranking	Likelihood	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
		Social	Minor localised disruption to community services or infrastructure (<6 hours).
2	**Limited**	Life, Health, Welfare	• 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.
		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	Community functioning poorly, minimal services available
		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.

Risk Evaluation

15.40 Once classified, the likelihood and consequence ratings have been multiplied to establish a 'risk score' to support the evaluation of risks by means of a risk matrix.

15.41 The risk matrix derived from the DoEHLG "Guide to Risk Assessment in Major Emergency Management" (and as outlined in Table 16.3) indicates the critical nature of each risk. This risk matrix has therefore been applied to evaluate each of the risks associated with the Proposed Development. The risk matrix is colour coded to provide a broad indication of the critical nature of each risk:

- The red zone represents 'high risk scenarios';
- The amber zone represents 'medium risk scenarios'; and
- The green zone represents 'low risk scenarios

15.42 The use of Table 16-3 is intended as a framework for the objective assessment of predicted impacts based on informed judgements regarding their likelihood and potential consequences. The supporting text in this chapter provides clarity in instances where a predicted impact is deemed to be significant or not.

Table 15-3
Matrix for determining significance of effect. (Source DoEHLG 2010)

		Consequence				
		1 Minor	2 Limited	3 Serious	4 Very Serious	5 Catastrophic
Likelihood	5 Very Likely	Low	Medium	High	High	High
	4 Likely	Low	Medium	Medium	High	High
	3 Unlikely	Low	Low	Medium	Medium	High
	2 Very Unlikely	Low	Low	Low	Medium	Medium
	1 Extremely Unlikely	Low	Low	Low	Low	Low
		Normal Emergency		Major Emergency		

15.43 The HSE has prepared Major Emergency Plans for areas of the State in in accordance with the requirements set out in Section 4.4.1 of the National Framework for Major Emergency Management (2006). The application site is covered by the HSE Southeast (Area 5) Emergency Plan, which covers South Tipperary[9]. The Emergency Plan identifies the relevant roles and responsibilities of the HSE in relation to major emergency types and the planned procedure in case of such events. The hazard categories include Natural, Transportation, Technological and Civil. The hazard categories, types and subtypes, and their potential relevance to the Proposed Development, are listed below in Table 15-4.

Table 15-4
HSE Emergency Plan hazard types (HSE, 2022)

Category	Type	Subtype	Relevance to the Proposed Development
Natural Hazards			
Meteorological	**Storm / Gale**	Both coastal and inland areas can be affected by high winds	Poor driving conditions, Damage to/loss of infrastructure, Flooding, Falling trees,
	Heavy Snow	Blizzards – poor visibility	Poor driving conditions

[9] https://www.hse.ie/eng/services/list/3/emergencymanangement/area-mep/

		Icy roads / impassable roads	Poor driving conditions
		Hypothermia	Public health risk
		Freezing of supply network	Lack of road grit
	Severe Cold and Frost or extremes of temperature	Icy roads / impassable roads	Poor driving conditions
		Hypothermia	Public health risk
		Freezing of supply network	Lack of road grit
	Thunder and lightning **Dense and persistent fog**	Road traffic collisions	Damage to/loss of infrastructure Poor driving conditions
	Heat wave / drought	Heat	Public health risk Water shortage
Hydrological	**Flooding / heavy rain**	Coastal / inland	Potential for flooding via nearby River Anner May lead to flooding in low lying areas or areas with poor drainage
Geological	**Landslide**	Landslide	Not Applicable, site comprised of reworked and regraded soils and subsoils, with a concrete cover to facilitate the current land use at the site
	Forest / wilderness fire **Air pollution**	Fire	Damage to plant
Transportation hazards			
Aviation	**Aircraft collision / loss**	Mid air and land	Not applicable, no additional height of built development, no radar equipment
Roads	**Multiple road traffic collisions**	Roads	Accidents/injuries on public roads via which staff and materials access/egress the factory site.
	Hazmat		Fuel transport to / from application site
	Bridges		Not Applicable
Water	**Inland waterways**	Pleasure craft / cruises	Not applicable
	Coastal	Car ferry / passenger ferries	Not applicable, no coastline in vicinity

Technological Hazards			
Industrial accidents	**Explosions**		Damage to infrastructure, personal injuries / fatalities, air pollution
	Petrochemical fires		Damage to infrastructure, personal injuries / fatalities, air pollution
	Industrial fires	Biomass source	Damage to infrastructure, personal injuries / fatalities, air pollution
	Gas emission	Gas leak	Personal injuries / fatalities
	Fluid / fuel emission	Accidental leak	Damage to infrastructure, personal injuries / fatalities, ground/water pollution
Explosions	**Domestic**		Not Applicable, commercial development
	Bomb		Not Applicable, not a terrorist target
	LPG		LPG Tank Fire
	Pipeline	Gas Pipeline	Damage to infrastructure, personal injuries / fatalities, air pollution
Fires			Air Pollution
Building Collapse			Damage to/loss of infrastructure
Hazardous Substances	**Biological**	Accident at site	Ground/Water/Air pollution
		Transportation accident	Ground/Water/Air pollution
	Radiological	Weapons	Not Applicable, none to be stored at site
		Leak / weapons	Not Applicable, none to be stored at site
		“dirty bomb”	Not Applicable, none to be stored at site
		Industrial Accident	Damage to infrastructure Personal injuries / fatalities
		Health Facilities	Not Applicable
Pollution / Contamination	**Air / Water Pollution**		Fire
			Sediment lade water run off
			Fuel / hydrocarbon spill / leak
Civil Hazards			
Major Crowd Safety	**Movement, Crushing**	Pop concerts, sports, events, firework displays, air shows	Not Applicable
Loss of Critical Infrastructure	**Energy and Power Supply**	Electricity	Operational issues
		Natural gas	Operational issues
		Fuel Oil	Operational issues

		Communications	Operational issues
Food Situation Crisis		Food contamination or drought	Not Applicable
Water Supply		Shortage / contamination, freezing or flooding	Operational issues
Epidemics and pandemic		Communicable diseases	May cause operational issues (staff)
Animal Disease		Foot & Mouth, Avian Influenza	May cause operational issues (staff)
Terrorism	**Bombs Chemical, Biological, Radiological, Nuclear and high yield Explosives (CBRNE) disruption**	Car bombs	Not Applicable, not a terrorist target
		Bombs in buildings	Not Applicable, not a terrorist target
		Fire bombing	Not Applicable, not a terrorist target
			Not Applicable, not a terrorist target
		Bomb scares	Not Applicable, not a terrorist target

POTENTIAL FOR MAJOR ACCIDENTS AND NATURAL DISASTERS

15.44 The recitals to the EU Directive 2014/52/EU which amends Directive 2011/92/EU states the following in relation to vulnerability of a project to natural disaster:

> *"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."*

15.45 The following section considers the current situation at the application site, its vulnerability to major accidents and natural disasters, and the potential of those inherent conditions to contribute to major accidents or disasters which pose a risk to the environment. Should a major accident or natural disaster occur, the potential sources of pollution onsite during the construction, operational and demolition phases of the Proposed Development are limited to the chemicals used during the MDF production process. The primary sources with the potential to cause significant environmental

pollution and associated negative effects on human health and the environment include the bulk storage of hydrocarbons, chemicals and wastes.

15.46 Materials currently used and stored on the factory site and that will continue to be used are listed in **Table 16-1.** The volume and type of chemical stored on site means that it is not regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations (SEVESO sites), therefore no significant effects associated with major industrial accidents involving dangerous substances are anticipated. Gas explosions, petrochemical fires and fires from fuel emissions, leakages and spillages could occur causing personal injury, structural damage and forest fires. Fuels and chemicals currently used on site, and which will continue to be used during construction and operation, will be carefully managed as described in **Chapters 2** and **7** of this EIAR. New technology proposes in-built mitigation for example fire protection technology. These measures will ensure that there will be no significant effect in terms of vulnerability to these events, or of any potential accidents arising as a result of the proposed development.

Table 15-5
Materials currently used and stored on the factory site

Material or Substance	Volume on Site
Resins for adhesion (Urea Formaldehyde, Melamine Urea Formaldehyde)	50,000 tonnes
Waxes (Paraffin and Montan)	4,500 tonnes
Urea	2,000 tonnes
Fire Retardants	1,500 tonnes
Colorants (water based)	25 tonnes
Fuels / Heating Media	**Annual Usage**
Wood Biomass	111,000 tonnes (wet)
Natural Gas	33,000 MWh*
Liquified Petroleum Gas (LPG)	100,000 litres
Thermal Fluid for heat transfer	Minimal – closed loop
Gas Oil (diesel oil)	245,000 litres
Utilities Substances	**Annual Usage**
Hydrochloric acid	150 tonnes
Sodium Hydroxide	4,000 litres

Sodium Chloride (salt)	132 tonnes
"Betz" products (Biocides, Corrosion Inhibitors, Scale removers)	15,500 litres
Wastewater Treatment Chemicals	**Annual Usage**
Aluminium chloride (flocculant)	450 tonnes
Polymers (for sludge dewatering)	10 tonnes
Polymers (coagulant)	5 tonnes
Anti Foams	10 tonnes
Nutrifeed (nutrient)	55 tonnes
Sodium Hypochlorite 15%	1 tonne
Hydrated lime	200 tonnes
Maintenance Materials	**Annual Usage**
Oils (lubricating, hydraulic)	68,000 litres
Degreaser	1,600 litres
Water	**Annual Usage**
Potable Water (Mains)	15,000 M^3
Process/Fire Water (River Anner)	421,374 M^3
Others	**Annual Usage**
Laboratory Chemicals (toluene, acetone, COD reagent, acids, bases)	610 litres

Environment Management System

1.46.1 Medite's operations have an Environment Management System Manual (ISO 14001:2015) in place which purpose is to gain a high-level understanding of all relevant internal and external issues that impact or have the potential to impact, positively or negatively, the ability of the EMS to achieve its intended outcomes, refer to **Appendix 2.2** for the contents of the EMS.

1.46.2 The scope of the EMS is the activities and products of the company. The scope of the EMS is also the external processes associated with the company over which it can exert a degree of control or influence. These processes/activities are:

- Raw Material Inwards and Storage

- Debarker and chipper
- Refiner
- Dryer
- Fibre handling
- Press
- Sander, Saw, Packaging, Dispatch
- Boilers
- Yard, Chemical Storage, Waste Storage Area, Waste Transport
- Air Conditioning Units
- Engineering and maintenance activities
- Offices, Canteens, Toilets.

1.46.3 The spatial boundaries are as per the boundaries of the Facility.

1.46.4 The organisational personnel structures are as per EM 5.3 – Organisational roles, responsibilities and authorities of the Environmental Manual.

1.46.5 The EMS is available to interested parties on request. Its implementation will reduce the vulnerability of the proposed development to major accidents and disasters. Its implementation will also reduce the potential for major accidents or disasters to arise as a result of the propose development.

Dust Control

1.46.6 The applicant measures and monitors, on a regular basis, the key characteristics of its operations and activities that can have a significant impact on the environment, as detailed in EM 8.1 – Operational planning and control. The Operations Manager is responsible for ensuring effective procedures are in place and maintained regarding the EMS's Documented Information. and information as required by compliance obligations, such as EPA licensing, at intervals as required.

1.46.7 Environmental measuring and monitoring is carried out by suitable testing equipment/facilities in accordance with approved environmental procedures. The results of environmental measuring and monitoring are recorded on the appropriate environmental records, refer to Chapter 8 for monitoring details.

15.47 Facility's environmental performance is reported on a quarterly basis to the EPA.

Fire Control

15.48 Evacuation procedures, in case of fire or leak, are detailed in the Health and Safety Emergency response procedures.

15.49 Major incident handling is covered by the ERT Plan and training,

15.50 Chemical Spill response procedures are covered in Health and Safety Emergency response procedures.

Natural disasters

15.51 There is limited potential for significant natural disasters to occur at Proposed Development as Ireland does not suffer from extreme temperatures like that of many countries at a similar latitude due to the dominant influence of the Gulf Stream. This provides Ireland with a mild temperate climate, even in the context of climate change trends that are becoming increasingly obvious. The risk of natural disasters such as earthquakes are also very low. Potential accidents/natural disasters that may occur are considered to be as follows:

- Flooding;
- Fire;
- Major incidents involving dangerous substances; and
- Other potential catastrophic events.

Flooding (Meteorological and Hydrological)

15.52 The risk of flooding is addressed in **Chapter 7: Water**, which concludes that the Medite Facility lies within Flood Zone C, and thus currently has a low probability of flooding. Therefore the risk of flooding as a result of the Proposed Development is low. In the event of extreme weather conditions, the existing surface water drainage system will continue to manage and treat storm water to avoid significant impact on the Proposed Development's infrastructure.

15.53 Chapter 7 of this EIAR provides details of the nearest documented flood events to the application site, which are both noted as recurring events within 0.4km of it. Flooding at these two locations is recorded as being caused by an increase in run-off from the adjacent lands leading to flooding of the roads after heavy rainfall, often rendering them partially impassable. It is not expected that flooding at these locations will affect the Medite facility.

15.54 An emergency response plan is set out within the Construction Environmental Management Plan (CEMP) included in **Appendix 2.1** found in Volume III of this EIAR. Proposed mitigation measures for flood risk are set out in Chapter 7: Water.

Fire

15.55 In the event that electrical equipment catches fire at the Proposed Development, and is confined to the Proposed Development, there is potential for a localised impact on air quality due to additional CO_2 being released from the burning of material.

15.56 In the event that electrical equipment catches fire at the Proposed Development and spreads to the surrounding agricultural areas there is potential for impact on human health and safety, air quality, water quality, biodiversity, soils, material assets, archaeological or architectural heritage and landscape and visual receptors. The magnitude of these consequences has potential to be significant, resulting in potential injury or fatality, property damage, infrastructure damage, loss of agricultural lands and damage to ecosystems. Inbuilt mitigation to industrial processes are incorporated to avoid fire risks, such as the use of fire retardants as one of the raw material inputs.

15.57 However, in the unlikely event that a fire should occur, health and safety management procedures will be in place to ensure that a potential fire would be extinguished well in advance of spreading sufficiently to cause this extent of damage. Fire safety equipment is located throughout the facility and emergency supply of water for firefighting purposes is possible through use of the River Anner.

15.58 A risk assessment and firewater management plan for the facility is contained as **Appendix 2.3** of this EIAR. Evacuation procedures, in case of fire or leak, are detailed in the Emergency Response Plan.

15.59 The Emergency Response Plan includes emergency response procedures for initial actions in the event of a fire. Records are kept for testing of fire alarms and drills and maintenance/inspection of fixed and portable firefighting equipment. Information is provided to employees on fire safety and fire prevention, including risks of and control measures to prevent fire outbreak, evacuation procedures and those responsible for their implementation, and the use of firefighting equipment, in line with HSA guidance.

Major Accidents Involving Dangerous Substances

15.60 Major industrial accidents involving dangerous substances pose a significant risk to human health and to the environment both on and off the site of the accident. The Health and Safety Authority (HSA) of Ireland list all upper and lower tier SEVESO establishments throughout Ireland. The Proposed Development site is, at its nearest, 8km from any site regulated under the Control of Major Accident Hazards Involving Dangerous Substances Regulations i.e. SEVESO site, and is not therefore considered to fall within a 'reasonable consultation distance' of such a site as per section 8.3.6 of the Tipperary County Development Plan.

15.61 Raw and auxiliary materials and substances used on site- such as Melamine Urea Formaldehyde- have the potential to cause injury if spilt. Use of these substances and treatment of waste from the production is strictly controlled by robust environmental standards set and licenced by the Environmental Protection Agency (EPA) and therefore accidents are extremely unlikely.

Other Potential Catastrophic Events

15.62 A review of Table 16.4 enables an evaluation of other potential catastrophic events that could reasonably be considered for the application site/Proposed Development. Risks associated with potential heat extremes (such as hypothermia or dehydration) as well as health risks arising from diseases/epidemics pose a potential risk to the workforce associated with the proposals as a whole. All persons who have control to any extent over the Proposed Development have duties to ensure, so far as reasonably practicable, that the facility does not pose a risk to those working there or to anyone not employed there but who may be affected by activities on the site. The rights and obligations of employers and employees are set out in domestic legislation (in particular the Safety, Health and Welfare at Work Act 2005 (as amended)), which require to be followed in the event of such circumstances. Also in the event of operational failures, the employer will have duties in relation to the protection of staff.

15.63 Table 16.4 highlights the potential for traffic accidents associated with the Proposed Development to cause catastrophic events if not managed correctly. Overall, the completed Proposed Development will generate up to 10 additional trips per day/ 20 two-way movements and up to an additional one trip per hour/ two two-way movements. The delivery vehicle trips in HGVs will continue to utilise the same distribution as existing, with all vehicles utilising the L2506 south of the factory site and an approximate 60% travelling west along the N24 and approximately 40% travelling east along the N24.

15.64 Chapter 14: Traffic of this EIAR states that these levels would remain well within the design capacity of the local road network and no significant effects on road safety are anticipated. A **Construction Traffic Management Plan** will be submitted to and agreed with the Planning Authority in

consultation with the Transport Infrastructure Ireland, prior to the commencement of development. With the implementation of such a plan, containing measures such as scheduling of deliveries, and deployment of banksmen for the movement of HGVs the risk for catastrophic events from traffic accidents is considered very low.

15.65 In relation to the risk of explosions, it has been noted in Chapter 11: Material Assets that mapping information obtained from Gas Networks Ireland indicates that there is a medium pressure distribution gas pipe present within the application site (see **Appendix 11-3**). Mapping indicates the gas network as running along the L2506 and the unnamed public road, both to the south of the application site. The pipe enters the plant from the south and currently the gas being piped into the factory is used for one of the thermal fluid heaters in the existing Production Line 1.

15.66 The natural gas-fired Thermal Fluid Heater is to be retained as a backup energy source. All works relating to the gas infrastructure will be undertaken in close consultation with Gas Networks Ireland to ensure safety at the plant and of the pipeline.

15.67 In terms of crowd safety and terrorism risks, it is not considered that the application site is likely to attract significant numbers of visitors, nor is it considered to be a target for any political or other activists.

Health and Safety

15.68 During construction of the Proposed Development, all staff will be made aware of the existing Health and Safety measures already required at site and they will be required to also adhere to the Health & Safety Authority's 'Guidelines on the Procurement, Design and Management Requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013' which are currently followed on site. This will encompass the use of all necessary Personal Protective Equipment and adherence to the applicant's Health and Safety Plan. An Emergency Response Plan (ERP) will be implemented and adhered to on site. The ERP provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. Please see Chapter 2 Project Description and **Appendix 2.1** CEMP for details.

Conclusion Regarding Vulnerability

15.69 Considering the information set out above, it is assessed that the overall vulnerability of the proposed development to major accidents and disasters is low/

RISK ASSESSMENT

15.70 This section provides a breakdown of the possible risks associated with the Proposed Development for the construction, operation and decommissioning phases. These risks have been assessed in accordance with the relevant classification as outlined in Table 15-1 and Table 15-2.

15.71 As outlined earlier, the consequence rating assigned to each potential risk assumes the unlikely event that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster.

Likely Significant Effects

Do-Nothing Scenario

15.72 In the event that the Proposed Development does not proceed, the current biomass boilers would likely break down in the next few years. In the short term, this would lead to at least one of the production lines being shut down. In the medium and long term, this would cause significant revenue losses and would likely lead to job redundancies. Additionally, without the change to new biomass boilers, the estimated saving of 2951 tCO2e/yr would not be made.

Assessment of Effects During Construction

15.73 A risk register has been developed which contains all potentially relevant risks identified during the construction phase of the Proposed Development. Six risks (a – f) specific to the construction of the Proposed Development have been identified and are presented in Table 15-6.

Table 15-6
Risk Register - Construction Phase

Risk ID	Potential Risk	Potential Cause
Potential Vulnerability to disaster risk		
A	Severe Weather Risk to construction activity on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
B	Flooding	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
Potential to cause accidents and / or disaster		
C	Traffic Incident Collisions onsite and offsite with vehicles involved in construction of Proposed Development	Driver negligence or failure of vehicular operations on factory site roads. Traffic Management Plan not implemented
D	Contamination Discharge or spillage of fuel, chemical solvents into watercourse or percolated to groundwater	Fuel spillage during delivery to the proposed development site. Failure of fuel storage tank or tanks in plant and machinery and vehicles. Drainage and seepage water resulting from accidental leakages
E	Industrial Accident Fire, gas explosion	Equipment or infrastructure failure; Electrical problems; and Employee negligence.
F	Loss of Critical Infrastructure	Damage to utility supplies

Assessment of Effect During Operation

15.74 Five risks specific to the operation of the proposed development have been identified and are presented in Table 15-7.

Table 15-7
Risk Register – Operational Phase

Risk ID	Potential Risk	Potential Cause
Potential Vulnerability to disaster risk		
G	Contamination Discharge or spillage of fuel or chemical Solvents into watercourse or percolated to groundwater	A vehicular incident on the public road involving fuel or raw material transportation in the operational phase. Drainage and seepage water resulting from accidental leakages
Potential to cause accidents and / or disasters.		
H	Industrial Accident – Fire / Gas Explosion	Equipment or infrastructure failure; Electrical problems; and Employee negligence.
I	Collapse/ damage to structures	Earthquakes; and Vehicular collisions due to driver negligence on public roads.
J	Traffic Incident Collisions onsite and offsite with vehicles involved in operation of Proposed Development	Driver negligence or failure of vehicular operations on factory site roads. Traffic Management not implemented.
K	Loss of Critical Infrastructure	Loss of utility supplies

Assessment of Effect During Decommissioning

15.75 Six risks specific to the decommissioning of the proposed development have been identified and are presented in Table 15-8.

Table 15-8
Risk Scores

Risk ID	Potential Risk	Potential Cause
Potential Vulnerability to disaster risk		
L	Severe Weather Risk to decommissioning activity on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
M	Flooding of site High levels of surface water on site	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds
Potential to cause accidents and / or disasters.		
N	Traffic Incident Collisions onsite and offsite with vehicles involved in decommissioning of the Proposed Development	Driver negligence or failure of vehicular operations on factory site roads. Traffic Management not implemented
O	Contamination Discharge or spillage of fuel, chemical solvents into watercourse or percolated to	Fuel spillage during delivery to the proposed development site. Failure of fuel storage tank or tanks in

	groundwater	plant and machinery and vehicles. Drainage and seepage water resulting from accidental leakages
P	Industrial Accident - Fire/Gas explosion	Petrochemical Fires causing personal injury, structural damage and forest fires.
Q	Loss of Critical Infrastructure	Damage to utility supplies

15.76 These risks have been assessed in accordance with the relevant classification (Refer to Table 15-1 and Table 15-2). The resulting risk analysis is also provided.

15.77 The risk register is based upon possible risks associated with the Proposed Development. As outlined previously, the consequence rating assigned to each potential risk assumes that all proposed mitigation measures and safety procedures have failed to prevent the major accident and/or disaster.

15.78 Table 16-8 sets out a reasoned 'Risk Score' for each potential risk, which is a factor of the allocated 'Risk Likelihood' based on the definitions set out in Table 16-1 and the allocated 'Risk Consequence' as defined in Table 16-2. The ultimate 'Risk Score' value is intended to provide a clear means of referencing the identified risks within the colour coded matrix presented in Table 16-10.

Table 15-9 Assessment of Effect- Summary

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
Construction Phase								
A	**Severe Weather**	Extreme weather periods of heavy rainfall, taking into account climate change and strong winds	Illness or loss of life; Sedimentation of nearby watercourse; Damage to, or depletion of aquatic habitats and species.	2	The risk of severe weather with potential to damage the plant is unlikely when considering the weather conditions recorded over the last 30 years within the area.	1	The risk of severe weather conditions during the construction phase will result in a minor consequence in that 'small number of people would be affected' (given low workforce numbers involved and low number of immediate neighbours) should a severe weather occur, with 'no fatalities and a small number of minor injuries with first aid treatment'. Potential localised contamination Minor localised disruption to community services or infrastructure (<6 hours).	2
B	**Flooding**	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds	Illness or loss of life; Sedimentation of nearby watercourse Damage to, or depletion of aquatic habitats and species.	2	The risk of flooding is considered unlikely when taking into account the flooding assessment in Chapter 7 of the EIAR.	1	The risk of flooding during the construction phase will result in a minor consequence in that 'small number of people would be affected' (given low workforce numbers involved and low number of immediate neighbours) should a severe weather occur, with 'no fatalities and a small number of minor injuries with first aid treatment'	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							Potential localised contamination Minor localised disruption to community services or infrastructure (<6 hours)	
C	**Traffic Incident**	Driver negligence or failure of vehicular operations on site roads. Traffic Management not implemented or not adhered	Injury or loss of life.	2	Additional vehicles permitted on the factory site as part of the construction phase. As such, it can be determined that there is some 'opportunity, reason or means' for a vehicle collision to occur on site, 'at some time.' A very unlikely risk is predicted given the low speeds involved.	1	A minor consequence is predicted. Having regard to the limited area and lack of opportunity for speed, a 'small number of people would be affected' should a vehicular collision occur, with 'no fatalities and small number of minor injuries with first aid treatment.' No wider disruption to communities	2
D	**Contamination**	Fuel or raw material spillage during delivery to site. Failure of fuel storage tank or tanks in plant and machinery and vehicles.	Damage to, or depletion of aquatic habitats and species. Soil/water contamination, human health pathway	2	Very few incidents have been recorded in associated organisations, facilities or communities	2	The risk of a fuel spillage or impact on surround drainage during the construction will result in a limited consequence in that there would be 'a limited number of people affected' (given low workforce numbers involved and low number of immediate neighbours) with 'localised effects of short duration' Potential for localised contamination of environment (e.g. watercourses), localised effects of short duration.	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
							Unlikely to be wider impact to community services	
E	**Industrial Accident - Fire/Gas Explosion Fuel spillage/storage Electrical problems; and Employee negligence**	Equipment or infrastructure failure;	Illness or loss of life Damage to, or depletion of habitats and species; and Impacts on ambient air quality.	2	Considered very unlikely due to in-built design with fire safety etc.	3	Should a fire/explosion occur at the application site, this is likely to have a significant effect as a large number of people could be displaced and there could be fatalities. There could be localised contamination	6
F	**Loss of Critical Infrastructure**	Damage to utility services	Disruption to community	2	Very unlikely to occur, little works required to existing utilities	2	If it occurred it would likely be a limited impact, normal community functioning with some inconvenience	4
Operational Phase								
G	**Contamination**	A vehicular incident, refuelling transportation in the operational phase.	Damage to, or depletion of aquatic habitats and species. Release of suspended solids to surface watercourses and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water	2	Classed very unlikely as very few incidents in associated organisations, facilities or communities	2	The risk of a fuel spillage or impact on surrounding drainage during the operational stage will result in a limited consequence in that there would be 'a limited number of people affected' (given low workforce numbers involved and low number of immediate neighbours) with 'localised effects of short duration'. Localised contamination possible	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
			quality and fish stocks of downstream water bodies.					
H	**Industrial Accident - Fire/Gas explosion**	Equipment or infrastructure failure; Fuel spillage/storage Electrical problems; and Employee negligence	Illness or loss of life; Damage to, or depletion of habitats and species; and Impacts on ambient air quality.	2	Considered very unlikely due to in-built design with fire safety etc..	3	Should a fire/explosion occur at the proposed development site, a serious consequence in that there could be a large number of people displaced and there could be fatalities. Localised contamination possible	6
I	**Collapse/ damage to structures**	Earthquakes Extreme weather conditions such as flooding and storms. Vehicular collisions due to driver negligence	Injury or loss of life. Sedimentation of nearby watercourse; Damage to, or depletion of aquatic habitats and species;	1	According to the Irish National Seismic Network (INSN), earthquakes measuring ~2 on the Richter Scale are "normal" in terms of seismicity in Ireland. These are known as microearthquakes; they are not commonly felt by people and are generally recorded only on local seismographs. As such, buildings in Ireland are extremely unlikely to be damaged or collapse due to seismic activity.	1	The risk of infrastructure collapse or damage to structures could result in a minor consequence in that 'small number of people would be affected, with 'no fatalities and a small number of minor (given low workforce numbers involved and low number of immediate neighbours) injuries with first aid treatment' Potential localised contamination Unlikely to be wider impact to community services	1

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
					Extreme weather conditions may cause sedimentation of nearby watercourse and damage to, or depletion of aquatic habitats and species. Having regard to public speed limits within the site, it is not predicted that any collision of vehicles and any infrastructure would result in significant damage/collapse.			
J	**Traffic Incident**	Driver negligence or failure of vehicular operations on site roads. Traffic Management not Implemented.	Injury or loss of life.	2	Additional vehicles will be permitted on the factory site as part of the operation phase (delivering biomass). As such, it can be determined that there is some 'opportunity, reason or means' for a vehicle collision to occur on site, 'at some time.' A very unlikely risk is predicted given the low speeds involved.	1	A minor consequence is predicted. Having regard to relatively small site area and lack of potential to gain speed on-site speed limits and, a 'small number of people would be affected' should a vehicular collision occur, with 'no fatalities and small number of minor injuries with first aid treatment.' Unlikely to cause widespread community disruption	2
K	**Loss of Critical Infrastructure**	Equipment or infrastructure failure;	Disturbance to users	1	The proposed development will largely be self sufficient in terms of utilities when operational, therefore its	2	Potential for a limited impact, normal community functioning but with some inconvenience	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		Electrical problems; and Employee negligence Earthquake; and Extreme weather conditions such as flooding and storms.			impact on outside infrastructure is extremely low			
Decommissioning Phase								
L	**Severe Weather**	Extreme weather- periods of heavy rainfall, taking into account climate change and strong winds	Illness or loss of life; Sedimentation of nearby watercourse Damage to, or depletion of aquatic habitats and species;	2	The risk of severe weather is unlikely when considering the assessment in Chapter 7 and weather conditions recorded over the last 30 years within the area.	1	The risk of severe weather conditions during the construction phase will result in a minor consequence in that 'small number of people would be affected' (given low workforce numbers involved and low number of immediate neighbours) should a severe weather occur, with 'no fatalities and a small number of minor injuries with first aid treatment'. Potential localised contamination Minor localised disruption to community services or infrastructure (<6 hours).	2
M	**Flooding**	Extreme weather- periods of heavy rainfall, taking into account climate	Illness or loss of life; Sedimentation of nearby watercourse;	2	The risk of flooding is considered unlikely when taking into account the assessment in Chapter 7 of the EIAR.	1	The risk of flooding during the construction phase will result in a minor consequence in that 'small number of people would be affected' (given low workforce	2

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		change and strong winds.	Damage to, or depletion of aquatic habitats and species.				numbers involved and low number of immediate neighbours) should a severe weather occur, with 'no fatalities and a small number of minor injuries with first aid treatment' Potential localised contamination Minor localised disruption to community services or infrastructure (<6 hours)	
N	**Traffic Incident**	Driver negligence or failure of vehicular operations on site roads. Traffic Management not implemented.	Injury or loss of life.	2	Additional vehicles permitted on the factory site as part of the decommissioning phase. As such, it can be determined that there is some 'opportunity, reason or means' for a vehicle collision to occur on site, 'at some time.' A very unlikely risk is predicted given the low speeds involved.	1	A minor consequence is predicted. Having regard to relatively small site area and lack of potential to gain speed on-site speed limits and, a 'small number of people would be affected' should a vehicular collision occur, with 'no fatalities and small number of minor injuries with first aid treatment.' Unlikely to cause widespread community disruption	2
O	**Contamination**	Fuel/chemical spillage during delivery to site. Failure of fuel storage tank or tanks in plant and	Damage to, or depletion of aquatic habitats and species Release of suspended solids to surface watercourses and	2	Classed very unlikely as very few incidents in associated organisations, facilities or communities	2	The risk of a fuel spillage or impact on surrounding drainage during the operational stage will result in a limited consequence in that there would be 'a limited number of people affected' (given low workforce numbers involved and	4

Risk ID	Potential Risk	Possible Cause	Environmental Effect	Likelihood Rating	Basis of Likelihood	Consequence Rating	Basis of Consequence	Risk Score (Consequence x Likelihood)
		machinery and vehicles.	could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies				low number of immediate neighbours) with 'localised effects of short duration'. Localised contamination possible (e.g. watercourses), localised effects of short duration.	
P	**Industrial Accident-Fire/gas explosion**	Equipment or infrastructure failure; Fuel spillage/storage Electrical problems; and Employee negligence	Injury or loss of life Structural damage Forest fires Air Pollution Damage to, or depletion of habitats and species Contamination	2	Considered very unlikely due to in-built design with fire safety etc..	3	Should a fire/explosion occur at the proposed development site, a serious consequence in that there could be a large number of people displaced and there could be fatalities. Localised contamination possible	6
Q	**Loss of Critical Infrastructure**	Infrastructure failure .	Community disturbance	2	Very unlikely to occur, little works required to existing utilities	2	If it occurred it would likely be a limited impact, normal community functioning with some inconvenience	4

Table 15-10
Consolidated Risk Score

Risk ID	Potential Risk	Likelihood Rating	Consequence Rating	Risk Score
Construction Phase				
A	Severe Weather	2	1	2
B	Flooding	2	1	2
C	Traffic Incident	2	1	2
D	Contamination	2	2	4
E	Industrial Accident	2	3	6
F	Loss of Critical Infrastructure	2	2	4
Operational Phase				
G	Contamination	2	2	4
H	Industrial Accident	2	3	6
I	Collapse/ damage to structures	1	1	1
J	Traffic Incident	2	1	2
K	Loss of Critical Infrastructure	1	2	2
Decommissioning Phase				
L	Severe Weather	2	1	2
M	Flooding	2	1	2
N	Traffic Incident	2	1	2
O	Contamination	2	2	4
P	Industrial Accident	2	3	6
Q	Loss of Critical Infrastructure	2	2	4

15.79 The risk assessment for each of the potential risks identified are consolidated in Table 16.8 which provides their 'risk score.' A corresponding risk matrix is provided in Table 16.9 which is colour coded in order to provide an indication of the critical nature of each risk. As outlined earlier in the chapter, the red zone represents 'high risk' scenarios', the amber zone represents 'medium risk scenarios and the green zone represents 'low risk' scenarios. The rationale for the classification of risks in this way is based on the DoEHLG (2010) Guidance which is used as a best practice guidance framework in the absence of specialist guidelines for EIA. The DoEHLG guidance uses a similar matrix to that set out below in which 'emergencies' are classified as either 'Normal' or 'Major'. Within the so-called 'Major' emergency zone, where hazards are extremely/ very unlikely it is stated that they do not warrant specific preparedness and that preparation by emergency agencies should select a scenario of a more extreme version of a more likely event to prepare for such risk. On this basis, the risk score matrix below categorises extremely likely and unlikely events within the 'green' 'low risk scenario'.

15.80 Table 15-11 presents the potential risks identified during the construction, operation and decommissioning of the Proposed Development all or which can be classified as 'low risk scenarios.' The scenario with the highest risk score in terms of a major accident and/or natural disaster during the construction, operation and decommissioning phase of the Proposed Development is identified below.

Table 15-11
Risk Score Matrix

		Consequence				
		1 Minor	2 Limited	3 Serious	4 Very Serious	5 Catastrophic
Likelihood	5 Very Likely					
	4 Likely					
	3 Unlikely					
	2 Very Unlikely	A, B, C, J, L, M, N	D, F, G, O, Q	E, H, P		
	1 Extremely Unlikely	I	K			
		Normal Emergency		Major Emergency		

Industrial Accident-Fire/Gas Explosion During Construction, Operation and Decommissioning

15.81 The highest scoring risk identified is in relation to a potential risk of fire/explosion at the Proposed Development site. This is the only risk that is potentially elevated to 'Major emergency' status according to the methodology of the DoEHLG guidance followed. The risk of fire/explosion occurring at the Proposed Development resulting in a major accident and/or disaster was given a risk score of 6 at each stage. This indicates a scenario that is 'very unlikely' to occur, but having 'serious' consequences should it do so, representing a 'low-risk scenario' during the construction, operation and decommissioning phases.

15.82 However, as outlined previously, the scope of this assessment has not been based on the actual situation where the Proposed Development will be designed, built and operated in line with current best practice. Further, in accordance with Chapter 19 of the Safety, Health and Welfare at Work Acts 2005 to 2014, the Proposed Development shall be subject to a fire safety risk assessment which will assist in the identification of any major risks of fire on site. In reality, the likelihood of such an event occurring is much less, and the ready availability of fire fighting equipment including a designated fire water source means that there is emergency preparedness for such an event in the unlikely event it should occur.

MITIGATION MEASURES

15.83 As stated, the highest-risk scenario regarding the occurrence of major accidents or disasters in the construction, operation, and decommissioning phases of the Proposed Development is identified as the risk of an 'Industrial Accident - Fire/Gas Explosion'.

15.84 The design and construction of the Proposed Development adhere to the best practices outlined in this EIAR, incorporating mitigation measures to address the risk of major accidents or disasters.

15.85 The application for the Proposed Development includes an CEMP, which identifies the environmental controls to be implemented on-site. The CEMP specifies the Emergency Response Procedure to be followed in case of emergencies, encompassing contamination, health and safety, and environmental protection. It provides detailed information on all mitigation and monitoring measures to be implemented throughout the various phases of construction, operation, and decommissioning. The CEMP will undergo regular reviews through environmental audits and site inspections to ensure the effectiveness and implementation of all mitigation measures and commitments outlined in the application.

15.86 Within the CEMP, an Emergency Response Plan (ERP) is included, which outlines the procedures to be followed in the event of emergencies related to health and safety or environmental protection. The ERP delineates the required response actions and the responsibilities of all personnel during emergency situations. For further information, please refer to **Chapter 2** and **Appendix 2.1** of the EIAR.

RESIDUAL EFFECTS

15.87 Based on the approach followed by the DoEHLG (2010) which guides the state emergency's efforts in mitigating and preparing for potential risks. As with the DoEHLG guidance, an element of professional judgement has been used to inform the assessments of risk likelihoods and consequences presented in this chapter. The risks identified have all been categorised as low.

15.88 Given that the risks are identified as 'low' it can be inferred that the risk of major accidents does not represent a significant effect in the context of the proposed development. It is anticipated that the implementation and strict adherence to the mitigation and monitoring measures outlined in the CEMP, and which have not been considered in the assessment of risks, will effectively eliminate any significant residual impacts related to the construction, operation, and decommissioning of the Proposed Development.

CUMULATIVE EFFECTS

15.89 For the assessment of cumulative effects, other similar operational projects including the existing Medite facility and any other permitted or proposed and unbuilt projects in proximity to the application site have been considered where they have the potential to generate an in-combination or cumulative impact with the Proposed Development.

15.90 In the first instance, a desktop review of available data sources (satellite imagery) was undertaken to identify existing developments in the local area. Secondly, the EIA Portal was consulted to assess for the presence of large-scale proximate developments or those with specified potential for environmental effects. Finally, the respective online ePlan portals of Tipperary County Council and Waterford County Council were examined to assess for extant planning permissions which had not yet been commenced.

15.91 A number of developments within 10km of the Proposed Development where cumulative effects could arise have been set out in and the cumulative assessment have been identified and are set out in **Appendix 1-5**.

15.92 Planning ref 23/60777 relates to structure to house an existing boiler system and is not considered to represent a potential risk given it's small-scale ancillary nature.

15.93 Planning ref 23/196 relates to ancillary car park and other site landscaping works around the MSD Pharmaceutical plant (nearest Seveso site, which has been identified and considered earlier in the assessment). The planned works are not considered of a nature that could represent a cumulative risk with the proposed development.

15.94 The solar farm proposed under planning ref 23/172 is considered to be complementary to the proposed development in terms of supporting the transition of energy from fossil fuel reliance. It is not considered that there are any inherent dangers associated with solar energy projects that could lead to a cumulative risk of major accidents and disasters.

15.95 Planning ref 19600729 relates to the enhanced access/egress arrangements to a service station and oil depot to the south of the application site. Provided that the construction traffic is managed in accordance with the Construction Traffic Management Plan identified in **Chapter 14** of this EIAR, it is not considered that there is a cumulative risk of major accidents and disasters from the projects in combination.

15.96 Planning ref 22401 relates to alterations to a single dwelling within 1km south of the proposed development. It is not of a scale or nature that could give rise to a cumulative effect on major accidents and disasters.

15.97 In summary, none of the development listed give rise to cumulative effects with respect to Major Accidents and Natural Disasters.

CONCLUSION

15.98 It is assessed that the project carries no likely significant effect with respect to major accidents or disasters, nor is it vulnerable to potential disasters or accidents, including both natural and man-made incidents.

15.99 Considering the temporary nature of the construction phase, the scale of the proposed project, and the implementation of environmental protection measures from the outset, the risk of disasters (such as severe weather events) or accidents (such as fuel spills or traffic incidents) is deemed to be low.

15.100 The project design incorporates Mitigation by Avoidance. In the event of severe weather conditions, such as flooding during construction, work will be halted as per the CEMP. Please refer to **Appendix 2-1.**

15.101 As for the construction stage, the operation and decommissioning poses similar risks in terms of major accidents and disasters. As the decommissioning stage will again be limited to a temporary period of time, it is considered that there is a low risk of major accidents or disaster.