



Greater Dublin Drainage Project Addendum

**Environmental Impact Assessment Report Addendum:
Volume 3A Part A of 6**

Chapter 22A Risk of Major Accidents and / or Disasters

Uisce Éireann

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22. Risk of Major Accidents and / or Disasters

22.1 Introduction

As detailed in Chapter 1A (Introduction) in Volume 2A Part A of this Environmental Impact Assessment Report (EIAR) Addendum, we have reviewed Chapter 22 (Risk of Major Accidents and / or Disasters) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application, in the light of:

- Changes to the baseline environment;
- The requirement for updated surveys; and
- Changes to the law, policy, and industry standards and guidance in the intervening period.

Table 22.1 includes a summary of the project elements which were incorporated into the planning design for the Greater Dublin Drainage Project (hereafter referred to as the Proposed Project) following direction at the Oral Hearing in 2019 and the subsequent planning conditions applied to the 2018 planning application submission. A full description is included in Chapter 4A (Description of the Proposed Project) in Volume 2A Part A of the EIAR Addendum. The remaining elements of the Proposed Project included in the 2018 planning application remain unchanged.

Table 22.1: Updated Proposed Project Elements

Updated Element	Outline Description of Updated Element
Ultraviolet (UV) Treatment	<ul style="list-style-type: none"> • UV Treatment is to be included in the treatment process at the proposed wastewater treatment plant (WwTP) in the northern section of the WwTP site. • The UV treatment system will be designed for the expected flows at the plant and will be installed on the final effluent line. UV treatment will be in operation 24 hours a day, 365 days a year. • The UV system will consist of a minimum of three and a maximum of four treatment units located below or partially below ground level with an above-ground Motor Control Centre (MCC) (in a kiosk) along with minor maintenance and control equipment (e.g. shut-off button, frame for supporting, retracting and cleaning of UV lamps etc.).
River Mayne Culvert Extension	<ul style="list-style-type: none"> • Extension of the River Mayne Culvert on the proposed access road to the WwTP by 4m (from 21m to 25m) to cater for the full width of the future north south link road.

This EIAR Addendum Chapter should be read in conjunction with Chapter 22 (Risk of Major Accidents and / or Disasters) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application.

The assessment of the Risk of Major Accidents and / or Disasters in this Addendum Chapter does not include the proposed Regional Biosolids Storage Facility (RBSF). The RBSF assessment is contained in Section 15A (Risk Management) in Volume 4A Part A of this EIAR Addendum.

22.2 Risk of Major Accidents and / or Disasters

This Section of Chapter 22 (Risk of Major Accidents and / or Disasters) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application was reviewed in order to determine if there have been any updates to the legislation and / or guidance governing the assessment of the risk of major accidents and / or disasters in the intervening period.

In 2022, the Environmental Protection Agency (EPA) published an updated set of Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (hereafter referred to as the updated EPA Guidelines) (EPA 2022). The updated EPA Guidelines have been considered as part of this Addendum Chapter and have been determined to have no material impact on the previous assessment completed as part of the 2018 planning application. The updated EPA Guidelines elaborate on risk assessment under Section 3.7.3:

'To address unforeseen or unplanned effects the Directive further requires that the EIAR takes account of the vulnerability of the project to risk of major accidents and / or disasters relevant to the project concerned and that the EIAR therefore explicitly addresses this issue. The extent to which

the effects of major accidents and / or disasters are examined in the EIAR should be guided by an assessment of the likelihood of their occurrence (risk)'.

In 2020, the Institute of Environmental Management and Assessment (IEMA) published, Major Accidents and Disasters in EIA: A Primer (hereafter referred to as the IEMA Primer) (IEMA 2020). The following definitions from the IEMA Primer have been considered in this Addendum Chapter but have been determined to have no material impact on the previous assessment completed as part of the 2018 planning application:

- Accident – something that happens by chance or without expectation;
- Disaster – a natural hazard (e.g. earthquake) or a man-made / external hazard (e.g. act of terrorism) with the potential to cause an event or situation that meets the definition of a major accident;
- Major Accident – events that threaten immediate or delayed serious environmental effects to human health, welfare and / or the environment and require the use of resources beyond those of the client or its appointed representatives to manage. Whilst malicious intent is not accidental, the outcome (e.g. train derailment) may be the same and therefore many mitigation measures will apply to both deliberate and accidental events;
- Risk –the likelihood of an impact occurring, combined with the effect or consequence(s) of the impact on a receptor if it does occur;
- Risk event – an identified, unplanned event, which is considered relevant to the Proposed Scheme and has the potential to result in a major accident and / or disaster, subject to assessment of its potential to result in a significant adverse effect on an environmental receptor;
- Vulnerability – describes the potential for harm as a result of an event, for example due to sensitivity or value of receptors. In the context of the EIA Directive, the term refers to ‘exposure and resilience’ of the Proposed Scheme to the risk of a major accident and / or disaster. Vulnerability is influenced by sensitivity, adaptive capacity and magnitude of impact; and
- Significant environmental effect (in relation to a major accident and / or disaster assessment) – includes the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.

In addition, a ‘Significant’ impact resulting from major accidents and / or disasters is identified if it meets the criteria for ‘Significant’, ‘Very Significant’ or ‘Profound’ under the updated EPA Guidelines (EPA 2022). This does not result in any changes to the assessment completed for the 2018 application, as the definitions of impact in the previous Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2017) remained unchanged in the updated EPA Guidelines. The same approach was therefore applied at that time.

22.3 Methodology

22.3.1 Scope and Context

This Section of Chapter 22 (Risk of Major Accidents and / or Disasters) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application was reviewed in order to determine if there have been any updates to the legislation and / or guidance governing the scope and context of the assessment of the risk of major accidents and / or disasters in the intervening period.

Following this review, there are no changes required to the information presented in this Section of the EIAR in the 2018 planning application.

22.3.2 Guidelines and Reference Material

This Section of Chapter 22 (Risk of Major Accidents and / or Disasters) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application was reviewed in order to determine if there have been any updates to the legislation and / or guidance governing the assessment of the risk of major accidents and / or disasters in the intervening period.

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The following updated guidelines and reference materials have been considered as part of this Addendum Chapter:

- Updated EPA Guidelines (EPA 2022);
- IEMA Primer (IEMA 2020); and
- National Risk Assessment 2023 (Government of Ireland 2023).

The IEMA Primer discusses major accidents in relation to Seveso sites, which are governed by Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major accident hazards involving dangerous substances, amending and subsequently repealing Council Directive (hereafter referred to as the Seveso III Directive). S.I. No. 209/2015 – Chemical Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (hereafter referred to as the COMAH Regulations) transposed the Seveso III Directive into Irish law. The Seveso III Directive and the COMAH Regulations outline the legal obligations for operators of industrial establishments where dangerous substances are stored. These establishments are referred to as Seveso sites and are classified as Upper Tier or Lower Tier establishments. A review of these sites in the vicinity of the Proposed Project was carried out as part of this Addendum Chapter, as outlined in Section 22.4. There are no other material differences within these updated guidelines and reference materials in relation to the assessment completed as part of the 2018 planning application, and therefore, have no material impact on the previous assessment.

In addition to the above, the following updated Uisce Éireann procedures were considered as part of this Addendum Chapter. There are no material changes within these procedures in relation to the assessment completed as part of the 2018 planning application, and therefore, have no material impact on the previous assessment:

- HSQE-PR-025 – Uisce Éireann Emergency Preparedness and Response Procedure (Uisce Éireann 2020); and
- HSQE-SOP-036 – Uisce Éireann Crisis Response Plan (Uisce Éireann 2018).

22.3.3 Risk Assessment Methodology

The updated EPA Guidelines (EPA 2022) were considered as part of the risk classification for this Addendum Chapter but have been determined to have no material impact on the previous assessment completed as part of the 2018 planning application. There are no other changes to this Section of the EIAR in the 2018 planning application.

22.4 Predicted Impacts

The updated Proposed Project elements, as outlined in Section 22.1, and changes to the baseline environment and updates to guidance and legislation, have been considered against the previous risk register included in the 2018 planning application (Table 22.4 in Chapter 22 (Risk of Major Accidents and / or Disasters) in Volume 3 Part A of the EIAR submitted with the original 2018 planning application).

There are no changes required to the risk evaluation / ratings provided for the risk IDs identified in Table 22.4 of the EIAR in the 2018 planning application.

A new risk category has been added as a result of this Addendum assessment, as outlined in Table 22.2. The addition of this risk category recognises and responds to developments in climate-related legislation, policy and knowledge base, which have emerged and evolved since the submission of the original planning application in 2018. This category evaluates the risk of extreme weather events (including events resulting from climate change) on the Proposed Project.

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Table 22.2: Rating of Major Accidents and Disasters in the Absence of Mitigation (New Risk Category)

Risk ID	Event	Proposed Project Element	Likelihood	Rating	Consequence	Rating
Construction Phase						
Addendum A (new)	Extreme Weather Events (including events resulting from Climate Change) – Risk of extreme weather events such as prolonged flooding resulting in sediment load runoff during construction, storm damage, snowstorm, wildfire etc.	Throughout	Unlikely	3	Limited: Potential fatality and injuries. Localised displacement of a small number of people and short duration and localised effects.	2
Operational Phase						
Addendum B (new)	Extreme Weather Events (including those brought on by Climate Change) – Risk of extreme weather events such as prolonged flooding resulting in sediment load runoff, storm damage, snowstorm, wildfire etc.	Throughout	Unlikely	3	Limited: Potential fatality and injuries. Potential for localised damage to infrastructure, localised displacement of a small number of people and short duration and localised effects.	2

The results of the Addendum evaluation have been applied to Table 22.3 and demonstrate that the new risk IDs fall within the 'Low risk' or 'Green zone' and are not required to be carried forward for further assessment. However, the embedded design measures that minimise the vulnerability of the Proposed Project to extreme weather events are discussed in Section 22.5.1, and out of an abundance of caution, additional mitigation has been recommended in Section 22.5.3.

Table 22.3: Evaluation of Levels of Significance in the Absence of Mitigation (New Risk Category)

Likelihood	5 – V. Likely					
	4 – Likely					
	3 – Unlikely		[Addendum A] [Addendum B]			
	2 – V. Unlikely					
	1 – Ext. Unlikely					
		1 – Minor	2 – Limited	3 – Serious	4 – V. Serious	5 – Catastrophic
Consequence of Impact						

As discussed in Section 22.3.2, the latest Health and Safety Authority (HSA) list of Upper Tier (HSA 2023a) and Lower Tier (HSA 2023b) Seveso Sites in the vicinity of the Proposed Project were checked on 31 July 2023. There were no Seveso Sites, for which the Proposed Project would fall within their consultation distance and are therefore not considered further (please refer to Section 15A of Volume 4A Part A of this EIAR Addendum for the updated RBSF assessment).

22.5 Mitigation Measures

As outlined in Section 22.4, the new risk category does not fall within the 'Amber' ('Medium risk') or 'Red' ('High risk') zones in Table 22.3, and was therefore not required to be carried forward for further assessment. However, out of an abundance of caution, additional mitigation measures have been recommended in Section 22.5.3.

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It is noted that for Risk ID 'F' (i.e. 'Discharge of untreated wastewater during Commissioning and Operational Phase'), there has been an update to the modeling for this scenario, included as part of Chapter 8A (Marine Water Quality) in Volume 3A Part A of this EIAR Addendum.

During the Oral Hearing in March 2019, it was outlined that with consideration of all of the embedded measures mitigation in the design of the Proposed Project and the additional mitigation measures outlined in this Section of the 2018 planning application, the risk of a discharge of untreated sewage to the marine environment as a result of total failure of the proposed WwTP would not occur.

Following the Oral Hearing, the 'Post-Mitigation Likelihood' for Risk ID 'F' ('Discharge of untreated wastewater during Commissioning and Operational Phase') was reduced from 'Unlikely' to 'Very Unlikely'. A risk category that is classified as 'Very Unlikely' is 'not expected to occur', as per A Guide to Risk Assessment in Major Emergency Management (Department of Environment, Heritage and Local Government 2010).

However, the amendment to the risk category likelihood does not change the outcome of the assessment, as Risk ID 'F' still does not present a sufficient combination of risk and consequence that would lead to significant residual impacts or environmental effects.

The reduction to the risk category likelihood in respect of untreated sewage discharge does not require any changes to the previously proposed mitigation measures. As there were no new risks identified as part of this Addendum assessment, and on the basis that the previously proposed mitigation measures remain up-to-date and valid, there are no other changes to the information presented in this Section of the EIAR in the 2018 planning application.

22.5.1 Mitigation Measures Embedded in the Proposed Project Design

As outlined in this Section of the EIAR in the 2018 planning application, Regulation 15 of S.I. No. 291/2013 - Safety, Health and Welfare at Work (Construction) Regulations 2013 places a duty on designers carrying out work related to the design of a project to take account of the General Principles of Prevention as listed in Schedule 3 of the Safety, Health and Welfare at Work Act 2005. S.I. No. 291/2013 - Safety, Health and Welfare at Work (Construction) Regulations 2013 has been amended by S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021.

In addition, S.I. No. 299/2007 - Safety, Health and Welfare at Work (General Application) Regulations 2007, which were outlined in this Section of the EIAR in the 2018 planning application, have been amended by S.I. No. 619/2021 – Safety, Health and Welfare at Work (General Application) (Amendment) (No.2) Regulations 2021.

In accordance with the requirements outlined in this Section of the EIAR in the 2018 planning application, the Proposed Project design team established a consistent and appropriate means of assessing the risks that may arise from design decisions and in applying the General Principles of Prevention listed in the Safety, Health and Welfare at Work Act 2005, proposed mitigation measures that are to be embedded into the design and operational activities, through Design Risk Assessments. In considering the amendments to the regulations outlined in this EIAR Addendum, this risk assessment remains valid and robust.

[Embedded Mitigation by Design for Tunnelling Works](#)

There are no updates required to this Section of the EIAR in the 2018 planning application. The potential for subsidence as a result of tunnelling works will be mitigated by design and appropriate construction methodologies.

[Embedded Mitigation for a Total Failure Event at the Proposed Wastewater Treatment Plant](#)

There are no updates required to this Section of the EIAR in the 2018 planning application. The embedded measures included in the design of the proposed WwTP protecting the Proposed Project against total or partial failure remain robust.

[Embedded Mitigation for a Failure of Sludge Treatment at the Proposed Wastewater Treatment Plant](#)

There are no updates required to this Section of the EIAR in the 2018 planning application. The embedded measures included in the design of the proposed WwTP protecting the Proposed Project against total or partial failure of the sludge treatment stream remain robust.

[Embedded Mitigation by Design for Pipelines](#)

There are no updates required to this Section of the EIAR in the 2018 planning application. The embedded measures included in the design of the proposed pipelines protecting against impacts resulting from leaks or bursts remain robust.

[Conclusion](#)

As outlined in Chapter 22 (Risk of Major Accidents and / or Disasters) in the 2018 planning application, as supplemented by this Addendum Chapter, the design of the Proposed Project complies with the appropriate building regulations and standards. All critical infrastructure will be appropriately housed and covered from the elements. The embedded design measures outlined in the EIAR in the 2018 planning application, in relation to total or partial failure events, will protect the Proposed Project infrastructure against power outages resulting from storm events.

Additionally, the location of the Proposed Project was subject to a flood risk assessment (FRA), which has been revised as part of this Addendum and included as a standalone document in the planning remittal. The original FRA and the Revised FRA determined that the above-ground structures (proposed WwTP and Abbotstown pumping station) will be located in Flood Zone C (low risk zone), which is considered an appropriate zone for the siting of 'highly vulnerable development (including essential infrastructure)', as per the Department of the Environmental, Heritage and Local Government (DEHLG) and the Office of Public Works (OPW) Planning System and Flood Risk Management Guidelines for Planning Authorities (hereafter referred to as the FRM Guidelines) (DEHLG and OPW 2009). The below-ground structures (i.e. pipelines) are not considered to be vulnerable to flooding. However, the construction methodologies selected (i.e. trenchless methodologies at watercourse crossing locations which are more prone to flooding), mitigation outlined in the EIAR in the 2018 planning application, as supplemented by this EIAR Addendum, and the design of the proposed pipelines will ensure that flood risk is not considered significant.

22.5.2 Traffic Management Plans

There are no updates required to this Section of the EIAR in the 2018 planning application. The risk of major accidents and / or disasters (MANDs), resulting from a road traffic accident associated with the Proposed Project, will continue to be reduced by the development and implementation of Traffic Management Plans, as outlined in the EIAR in the 2018 planning application.

22.5.3 Environmental Incident Response Plan

The implementation of an Environmental Incident Response Plan by the appointed contractor / operator of the facility, as outlined in the EIAR in the 2018 planning application will continue to reduce the risk of MANDs.

Although the assessment of the new risk category in this Addendum Chapter did not require the category to be brought forward for additional consideration, out of an abundance of caution, the appointed contractor will pay due consideration to the impacts of extreme weather events during the Construction Phase as part of their Environmental Incident Response Plan.

The appointed contractor will utilise available meteorological forecast data from Met Éireann or other approved providers of meteorological data to inform short to medium-term program management, environmental control and impact mitigation measures. A Construction Phase Severe Weather Management Plan (this will be prepared by the appointed contractor having regard to the Construction Environmental Management Plan (CEMP) included in the 2018 planning application, as supplemented by the Addendum to the CEMP included

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in this Addendum pack) will be considered in order to ensure mechanisms are in place should this impact arise. The documents will contain plans and mitigation to prevent future impacts due to increasingly severe weather events.

The appointed contractor's Environmental Management System (EMS) will consider all measures deemed necessary to manage extreme weather events and will, as a minimum, cover training of personnel and prevention and monitoring arrangements. Mitigation will be as follows:

- Construction method statements will consider extreme weather events where risks have been identified;
- Emergency preparedness and contingency procedures will be put in place for an extreme weather event on the construction site or within the supply chain;
- The appointed contractor will schedule concrete curing to avoid peak temperatures;
- The appointed contractor will consider increased dust suppression measures in hot and dry conditions;
- The appointed contractor will have a health and safety plan in place that takes into consideration dust-related air quality concerns; and
- The appointed contractor will use short to medium range weather forecasting to inform short to medium term programme management, environmental control, and impact adaptation measures. The appointed contractor will register with the flood warning service in areas of flood risk.

Uisce Éireann and the site operator will maintain the Severe Weather Management Plan during the Operational Phase to ensure that critical infrastructure is protected during operation from the impacts of severe weather.

22.5.4 Odour Management Plan

There are no updates required to this Section of the EIAR in the 2018 planning application. The implementation of an Odour Management Plan, as outlined in the EIAR in the 2018 planning application will reduce the risk of MANDs resulting from the release of odours associated with the Proposed Project.

22.5.5 Surface Water Management Plan

There are no updates required to this Section of the EIAR in the 2018 planning application. The implementation of a Surface Water Management Plan, as outlined in the EIAR in the 2018 planning application, and as supplemented by the Addendum to the Surface Water Management Plan included in this Addendum pack, will continue to reduce the risk of MANDs resulting from the potential release of pollutants associated with the Proposed Project to watercourses.

22.5.6 Vessel Management Plan

There are no updates required to this Section of the EIAR in the 2018 planning application. The risk of MANDs resulting from potential marine accidents will be reduced by the implementation of the Proposed Project Vessel Management Plan, as outlined in the EIAR in the 2018 planning application, and as supplemented by the Addendum to the Vessel Management Plan (Appendix A10.2 in Volume 3A Part B of this EIAR Addendum).

22.6 Residual Impacts

The updates to the Proposed Project elements, as outlined in Section 22.1, and changes to the baseline environment, were assessed. An additional risk category was included in this Addendum Chapter but did not present a sufficient combination of risk and consequence that would lead to significant residual impacts or environmental effects.

There are no further changes to the information presented in this Section of the EIAR in the 2018 planning application.

22.7 Monitoring

The Environmental Incident Response Plan outlined in this Section of the EIAR in the 2018 planning application will continue to be a live document that undergoes monitoring, review and update throughout the lifetime of the Proposed Project. As outlined in Section 22.5.3, this will now include a Severe Weather Management Plan for the Construction and Operational Phases, which will also be a live document that will be subject to monitoring, review and update throughout the lifetime of the Proposed Project. All activities on-site will continue to be monitored to ensure that risk does not increase over time on the site.

22.8 Conclusion

This Addendum Chapter has considered all updates to elements of the Proposed Project, the current baseline for Seveso sites, and updates to guidance and reference material since the 2018 planning application submission.

Following consideration, one additional risk category was included but was assessed not to present a sufficient combination of risk and consequence that would lead to significant residual impacts or environmental effects. Out of an abundance of caution, a Severe Weather Management Plan will be developed and implemented as part of the Environmental Incident Response Plan for the Construction and Operational Phases.

There were no other material changes to the risk assessment and its outcomes as a result of any of the updates discussed in this Addendum Chapter.

22.9 References

Department of Environment, Heritage and Local Government (2010). A Guide to Risk Assessment in Major Emergency Management

EPA (2017). Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

EPA (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports

Government of Ireland (2023). National Risk Assessment 2023

HSA (2022a). List of Upper Tier Establishments. January 2023.

HSA (2022b). List of Lower Tier Establishments. January 2023.

IEMA (2020). Major Accidents and Disasters in EIA: A Primer

DEHLG and OPW (2009). Planning System and Flood Risk Management Guidelines for Planning Authorities

Uisce Éireann (2018). HSQE-SOP-036 – Irish Water Crisis Response Plan. September 2018.

Uisce Éireann (2020). HSQE-PR-025 – Irish Water Emergency Preparedness and Response Procedure. November 2020.

Directives and Legislation

Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EU

Safety, Health and Welfare at Work Act 2005

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S.I. No. 299/2007 - Safety, Health and Welfare at Work (General Application) Regulations 2007

S.I. No. 291/2013 - Safety, Health and Welfare at Work (Construction) Regulations 2013

S.I. No. 209/2015 – Chemical Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015

S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021

S.I. No. 619/2021 – Safety, Health and Welfare at Work (General Application) (Amendment) (No.2) Regulations 2021