

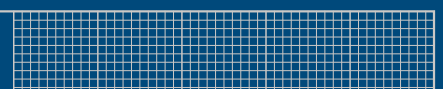


ElAR Volume 3: Offshore Infrastructure Assessment Chapters Chapter 19: Major Accidents and Disasters

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Dublin Array Offshore Wind Farm

Environmental Impact Assessment Report

Volume 3, Chapter 19: Major Accidents and Disasters

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Glossary

Term	Definition
Allision	The act of striking or colliding with a stationary object, such as a vessel hitting a wind turbine.
Array Area	That part of the maritime area specified by MAC Reference 2022-MAC-003 and 004 within which it is proposed to locate the wind turbine generators (WTGs) and Offshore Substation Platform (OSP).
Cumulative Effects Assessment (CEA)	The assessment of potential cumulative effects that may arise when effects arising from Dublin Array act cumulatively with impacts from other projects considered in the assessment.
Construction Traffic Management Plan (CTMP)	A detailed plan outlining how traffic will be managed during the construction phase of a project to minimize disruption and ensure safety. It includes measures for abnormal load delivery management, contractor requirements, signage, site traffic management, on-site safety protocols, designated parking areas, and vehicle cleaning procedures.
Disaster	Events that result in significant harm to human health, the environment, or infrastructure due to natural hazards or human-made incidents.
EIA	Assessment of the likely significant effects of a proposed project on the environment. The EIA will be carried out by An Bord Pleanála in this instance.
EIAR	As defined in the Planning and Development Act 2000, as amended: "environmental impact assessment report" means a report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive.
Extreme Weather	Severe or unusual weather conditions that deviate significantly from historical averages or typical patterns for a given location. This includes events such as heatwaves, storms, heavy rainfall, flooding, droughts, and extreme cold, which can pose risks to human health, infrastructure, and the environment.
Geophysical Survey	A method of collecting data about the physical properties of the seabed to identify potential UXO.
Hazard Group	A classification of hazards with similar potential consequences.
Horizontal Directional Drilling (HDD)	A trenchless method of installing underground pipes, conduits, and cables.
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.
Notice to Mariners	Official publications issued by maritime authorities to provide updates on navigation hazards, changes to nautical charts, new regulations, or other important maritime safety information.
Pathway	The route through which a hazard can affect a receptor.
Receptor	An entity (e.g. human, wildlife, environment) that can be affected by a hazard.
Residual Effects	The remaining impacts after mitigation measures have been implemented.

Term	Definition
Risk Assessment	The process of identifying, evaluating, and estimating the levels of risk involved in a situation.
Risk Matrix	A tool used to assess and categorise risks based on their likelihood of occurrence and the severity of their potential consequences.
Travel Plan	A strategic plan designed to manage travel demand and promote sustainable transport options. It includes measures such as car share ratios, monitoring and reporting compliance with targets, and encouraging the use of public transportation and other sustainable travel methods.
Unexploded Ordnance (UXO)	Explosive weapons that did not explode when they were employed and still pose a risk of detonation.
Vulnerability	The susceptibility of a project to risks of major accidents and/or disasters.

Acronyms

Term	Definition
ABP	An Bord Pleanála
CEMP	Construction Environment Management Plan
COMAH	Control Of Major Accident Hazards
CTMP	Construction Traffic Management Plan
DCC	Dublin City Council
DLRCC	Dún Laoghaire-Rathdown County Council
DoEHLG	Department of the Environment, Heritage and Local Government
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERCoP	Emergency Response Cooperation Plans
FMMS	Fisheries Management and Mitigation Strategy
HAS	Health and Safety Authority
HDD	Horizontal Directional Drilling
IAA	Irish Aviation Authority
IEMA	Institute of Environmental Management and Assessment
IRCG	The Irish Coast Guard
MSO	Marine Survey Office
NIS	Natura Impact Statement
NMOSCP	The National Maritime Oil & HNS Spill Contingency Plan (2020)
NoTM	Notice to Mariners
NRA	National Risk Assessment
O&M	Operations and Maintenance
OSS	Onshore Substation
OES	Onshore Electrical System
PSDP	Project Supervisor for the Design Process
SEVESO	The SEVESO Directives: SEVESO II (96/82/EC) and SEVESO III (2012/18/EU)
TCC	Temporary Construction Compound
TP	Travel Plan

Term	Definition
TJB	Transition Joint Bay
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator

19 Major Accidents and Disasters

19.1 Introduction

19.1.1 This chapter of the Applicant's Environmental Impact Assessment Report (EIAR) presents the results of the assessment of likely significant adverse effects on the environment arising from the vulnerability of Dublin Array to risks of major accidents and/or disasters and the risks of Dublin Array causing major accidents and/or disasters.

19.1.2 The assessment is carried out in compliance with the Environmental Impact Assessment (EIA) Directive as amended which states the need to assess:

'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 natural disasters which are relevant to the project concerned'.

19.1.3 Based on the requirements of the EIA Directive, this chapter seeks to determine:

- The relevant major accidents and/or natural disasters, if any, that Dublin Array could be vulnerable to, including flooding, fire, dangerous substances, catastrophic events and explosions;
- 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.

19.1.4 This chapter describes the scope, relevant legislation, assessment methodology, and the baseline conditions of the Dublin Array and its surroundings. It considers major accidents or natural disasters that have the potential to affect Dublin Array and consequently have potential impacts on the environment; the mitigation measures required to prevent, reduce, or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

19.1.5 This chapter examines the potential effects arising from the construction, operation, and decommissioning of Dublin Array development, encompassing both onshore and offshore infrastructure, given that receptors may be impacted by activities related to any aspect of Dublin Array.

- 19.1.7 The project description is set out in Volume 2, Chapter 6: Project Description (hereafter referred to as the Project Description Chapter).
- 19.1.8 The chapter is part of the wider EIAR and should be read in conjunction with the following chapters:
- ▲ Volume 3 Offshore Infrastructure: Chapter 1 Marine Geology, Oceanography, and Physical Processes, Chapter 2: Marine Water and Sediment Quality, Chapter 3: Benthic Subtidal and Intertidal Ecology, Chapter 4: Fish and Shellfish Ecology, Chapter 5: Marine Mammals, Chapter 9: Commercial Fisheries, Chapter 10: Shipping and Navigation, Chapter 11: Marine Infrastructure and Other Users, Chapter 12: Aviation and Radar, Chapter 18: Climate Change; and
 - ▲ Volume 5 Onshore Infrastructure: Chapter 3: Land, Soils and Geology, Chapter 4: Water (Hydrology, Hydrogeology and Flood Risk), and Chapter 6: Traffic and Transport.
- 19.1.9 The scope and methodology for the Major Accidents and Disasters chapter is primarily based on the provisions of the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU), the Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, and guidance contained in the Institute of Environmental Management and Assessment (IEMA) Major Accidents and Disasters in EIA: A Primer (IEMA, 2020).

19.2 Regulatory background

- 19.2.1 In addition to legislation, policy and guidance relevant to offshore renewables and protection of the marine environment captured within Volume 2, Chapter 2: Consents, Legislation, Policy and Guidance, the risk assessment methodology applied in this chapter is based on relevant legislation, guidance, plans, and reference materials outlined below. For more detailed information on specific legislation or guidance relevant to particular topics, please refer to the respective specialist chapters.

National Marine Planning Framework

- 19.2.2 The National Marine Planning Framework (NMPF) typically addresses various aspects of marine planning, including environmental considerations and risk management. In the context of marine planning, major accidents and disasters has potential to encompass a range of events, such as oil spills, maritime collisions, or industrial accidents involving offshore installations.
- 19.2.3 Section 19 of the NMPF (Safety at Sea) states that safety at sea and navigational safety are key considerations in the assessment of proposals for the development or expansion of port facilities, or development of infrastructure in or adjacent to the maritime area.
- 19.2.4 There are five policies related to Safety at Sea, which are detailed in Annex A.

Legislation

- 19.2.5 The EIA Directive (2011/92/EU), as amended by Directive 2014/52/EU, and transposed into Irish law primarily through S.I. No. 600/2001 - Planning and Development Regulations 2001 (as amended), requires that EIAR's identify, describe, and assess significant direct and indirect effects on key receptors, including population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage, and landscape. This includes the *'vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned.'*
- 19.2.6 Recital 14 of Directive 2014/52/EU highlights the need to integrate disaster risk prevention into project planning, particularly for infrastructure projects. This requires assessment procedures that evaluate the disaster risks and their potential environmental impacts.
- 19.2.7 Recital 15 of the Directive outlines that for projects which are vulnerable to major accidents and disasters or are likely to have a significant adverse effect on the environment, it is important to consider the following:
- 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.
- 19.2.8 Directive 2012/18/EU (SEVESO III), transposed into Irish law under S.I. No. 209 of 2015, mandates that projects involving hazardous substances must assess all major accident hazards. This includes identifying potential significant environmental effects from these hazards due to the vulnerability of the project.
- 19.2.9 Paragraph 8 of Annex IV of the EIA Directive sets out that the EIAR should include relevant information from risk assessments carried out under EU or national legislation. This should describe expected significant adverse effects on the environment from major accidents or disasters and outline preventive or mitigation measures, alongside the project's preparedness and response mechanisms.

Planning policy and development control

- 19.2.10 The Dún Laoghaire-Rathdown County Council (DLRCC) Development Plan further highlights how consideration will be given to Directive 2012/18/EU when assessing planning applications.

Guidelines and technical standards

19.2.11 In addition to the guidance detailed in Volume 2, Chapter 2: Consents, Legislation, Policy and Guidance, a number of guidance documents have been produced that further outline what should be included when assessing the project in relation to major accidents and disasters as set out in legislation. These include:

- Department of Environment, Heritage and Local Government (2010) A Guide to Risk Assessment in Major Emergency Management;
- Environmental Protect Agency (2014) Guidance on Assessing and Costing Environmental Liabilities;
- Government of Ireland (2020) A National Risk Assessment for Ireland; and
- Major Accidents and Disasters in EIA: A Primer (Institute of Environmental Management and Assessment 2020).

19.2.12 A summary of these guidance documents can be found in Annex A.

19.3 Consultation

19.3.1 The following consultees were consulted as part of the scoping process, all of whom have a role in the prevention of major accidents and disasters:

- Dún Laoghaire-Rathdown County Council (DLRCC);
- Dublin City Council;
- Fingal County Council;
- Health and Safety Authority (HSA);
- Irish Aviation Authority (IAA);
- Irish Lights;
- Marine Survey Office (MSO);
- The Irish Coast Guard (IRCG); and
- Wicklow County Council.

19.3.2 Consultation was conducted as part of the assessments for shipping, navigation, and aviation. For shipping and navigation, key concerns included the risk of vessel collisions with Dublin Array and the potential for increased collisions between vessels due to the presence of Dublin Array. These issues are assessed in Volume 2, Chapter 10: Shipping and Navigation. Additionally, consultation regarding lighting and marking for maritime safety is also included in this chapter.

19.3.3 For aviation, military, and communications, the primary concerns involved collision risks, lighting and marking, and potential impacts on Department of Defence operations. These issues are assessed in Volume 2, Chapter 12: Aviation and Radar.

19.3.4 Feedback from the HSA during Scoping of the EIA is summarised in Table 1.

Table 1 Summary of consultation relating to major accidents and disasters

Date	Consultation type	Consultation and key issues raised	Section where provision is addressed
17 th November 2020	EIA Scoping 2020	The HSA raised that the proposed development (defined as a construction project in accordance with the 2013 Safety Health and Welfare at Work (Construction) Regulations) requires a competent Project Supervisor for the Design Process (PSDP) to be appointed to co-ordinate the safety aspects of the design.	This is addressed in the preventative and avoidance mitigation measures for Dublin Array and is addressed in section 19.5.

19.4 Methodology

Study area

19.4.1 The study area for the assessment encompasses both the offshore and onshore infrastructure.

19.4.2 The offshore infrastructure includes the turbine foundations, subsea inter-array electricity cables connecting the wind turbine generators (WTGs) to an offshore substation platform (OSP), and offshore electricity export cables connecting the OSP to the onshore electrical system. The onshore electrical system (OES) involves necessary onshore works such as a landfall/transition joint bay (TJB) at Shanganagh, underground electricity transmission cables, an onshore substation (OSS), and underground electricity cable circuits connecting the OSS to the existing EirGrid substation at Carrickmines. Additionally, the Operations and Maintenance (O&M) Base will be located at Dún Laoghaire Harbour, supporting both the wind farm's operation and the management of its construction. A detailed description of Dublin Array is presented in the Project Description Chapter.

19.4.3 The extent of the study area varies depending on the specific hazard group and the relevant EIAR assessment topic. For instance, the study relevant to shipping and navigation hazards has been extended to align with study area defined in Chapter 10: Shipping and Navigation. Similarly, other topic specific hazards will follow the relevant boundaries for their respective assessments. This approach ensures the assessment is comprehensive and takes into account the varying spatial impacts of different hazards across both the onshore and offshore components of Dublin Array.

Baseline characterisation

19.4.4 In line with the EIA Directive, the baseline characterisation has been informed by a detailed review of the baseline data from all relevant chapters in this EIAR, in particular:

- ▲ Volume 3, Chapter 9: Commercial Fisheries; Chapter 10: Shipping and Navigation; Chapter 11: Infrastructure and Other Users; Chapter 12 Aviation and Radar; Chapter 18: Climate Change; and
- ▲ Volume 5, Chapter 3: Land, Soils and Geology; Chapter 4: Water (Hydrology, Hydrogeology and Flood Risk); and Chapter 6: Traffic and Transportation.

19.4.5 The baseline data collated from these chapters has been used to inform this assessment.

Future baseline

19.4.6 Including an assessment of Dublin Array against a realistic projection of future baseline conditions provides a comprehensive understanding of the potential impacts of the proposed development.

19.4.7 The EIA Regulations require that *‘a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without development as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge’* is included within the EIAR.

19.4.8 Future baselines are included in the chapters listed in paragraph 19.4.4 where relevant.

Data limitations

19.4.9 The data sources used in this chapter are based on the existing studies, datasets and limitations presented within the chapters listed in paragraph 19.4.4.

Scope of the assessment

19.4.10 The assessment of major accidents and disasters effects in this report is guided by the principles outlined in the ‘Major Accidents and Disasters in EIA: A Primer’ (IEMA, 2020). This document, which reflects the up-to-date requirements of the EIA Directive as transposed in Ireland, has been used here where helpful and appropriate. The approach taken emphasises the examination of low-probability but high-impact events, such as major spills, explosions, fires, and similar incidents. It includes an assessment of the vulnerability of Dublin Array to major accidents and disasters as well as an assessment of the risk that it could give rise to such events.

19.4.11 Unlike other topic chapters in the EIAR that address the potential for ‘likely significant effects’ of the proposed development on the environment, this chapter focuses on risk events with low likelihood of occurrence but potentially severe consequences for the environment, human health, infrastructure, and cultural heritage.

19.4.12 The assessment process begins with the identification of potential major accidents or disasters arising from the development, or the developments vulnerability to major accidents or hazards. Subsequently, an evaluation is conducted to gauge the likelihood of risk events occurring, assess the potential for significant effects, and determine the necessity for implementing additional mitigation measures.

Identification of major accidents and hazards

19.4.13 The IEMA Major Accidents and Disasters Primer, sets out the following terms:

- ▲ Disaster – may be a natural hazard (e.g. earthquake) or a man-made/external hazard (e.g. severe storms or extreme weather events) 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 may be the same and therefore many mitigation measures will apply to both deliberate and accidental events.

19.4.14 These definitions have been used when identifying the potential major accidents and disasters relevant to Dublin Array. These are split into two main categories: firstly, those events (natural or man-made) originating external to Dublin Array, but which could impact upon it (included in Table 2). Secondly potential major accidents and disasters originating from Dublin Array which could occur throughout the project lifecycle (included in Table 3). Individual hazards are grouped into high-level hazard groups which have the same potential consequence, as advised in the Primer (IEMA, 2020). Hazard groups were scoped in depending on whether there was a receptor that may experience an impact (in consultation with relevant discipline leads) and whether there was a pathway identified between a hazard group and the receptor.

Screening and scoping process

19.4.15 The approach set out in the Primer (IEMA, 2020) includes three stages: Screening, scoping and assessment (Figure 1). The screening stage of the process identifies if a development has a vulnerability to major accidents and/or disasters and considers whether such a development could lead to a significant effect. It suggests considering whether the development itself is a hazard, if it interacts with external hazards, and if it would increase the risk of significant effects in case of an external disaster. These high-level questions help to identify potential vulnerabilities without needing detailed evidence initially. This screening methodology was applied to the proposed development.

19.4.16 The scoping stage aims to identify potential accidents and hazards for further assessment. This involves considering the project's location, type, context, constraints, and likely receptors (IEMA, 2020). According to IEMA (2020), major accidents and/or disasters can be scoped out if there is no source-pathway-receptor linkage or if all potential incidents are covered by design measures or legislation. In cases of uncertainty, the receptor should be included. The focus is typically on low likelihood but high consequence events, while low impact events like minor spills would not be scoped in as these are usually considered in other EIAR chapters as known impacts with specific mitigation measures (IEMA, 2020).

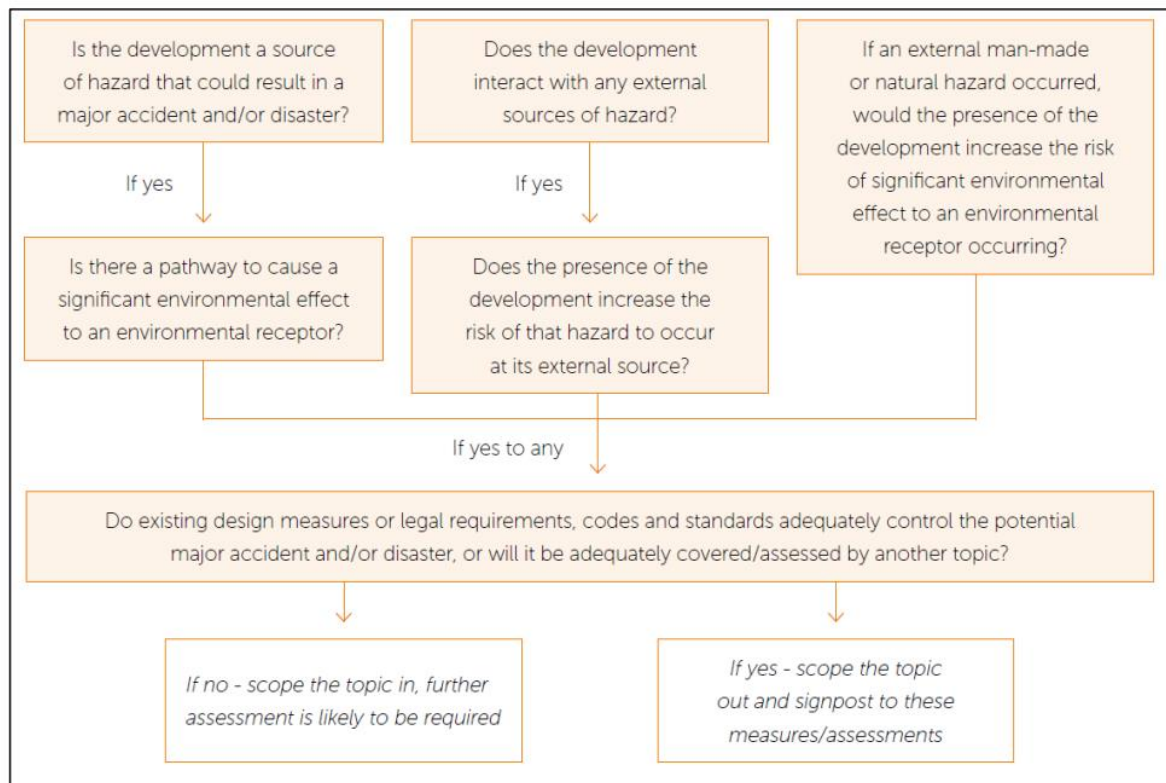


Figure 1 Screening and scoping decision process (IEMA, 2020)

19.4.17 Dublin Array itself could be a source of hazard, potentially leading to major accidents or disasters, such as vessel collisions with the project's infrastructure. Dublin Array's location on the coast, with both onshore and offshore components, makes it vulnerable to natural hazards like extreme weather events and storm surges. Additionally, in the event of an external major accident or disaster, the presence of the development could increase the risk of significant effects to environmental receptors. This may be evidenced for example by difficulties in accessing vessels during an extreme weather event, which could further compound environmental risks or risks to human life.

19.4.18 Therefore, due to the nature and location of Dublin Array, it has been determined that it is vulnerable to major accidents and/or disasters or could increase vulnerability elsewhere, necessitating further assessment.

19.4.19 Table 2 identifies and scopes in/out potential hazards to which Dublin Array itself may be vulnerable, (i.e. risks from potential hazards/risks). Table 3 identifies and scopes in/out potential hazards occurring as a result of Dublin Array (on a range of environmental, human and material receptors).

Table 2 Identification of potential existing accidents and disasters that may impact on Dublin Array

Hazard group	Project phase* ¹			Scoped out	Reasoning
	C	O	D		
Offshore					
Collision risk – shipping and navigation	✓	✓	✓		Dublin Array faces potential collision and allision risks related to existing navigation and shipping activities throughout its construction, operation, and decommissioning phases. The risk of vessels colliding or allision with structures/other vessels in the offshore wind farm area is addressed in Volume 2, Chapter 10: Shipping and Navigation, and Volume 4, Appendix 4.3.10-1 Dublin Array Offshore Wind Farm Navigation Risk Assessment. Although Dublin Array incorporates measures to minimise the risks, vessels will frequently navigate through the offshore Array and ECC. Consequently, there remains a potential source-pathway-receptor linkage, and there is still a risk that a collision could result in a major accident or disaster, including potential risks to life.
Collision risk – aviation	✓	✓	✓		There is the potential for collision risk from existing aviation to affect the project during all phases. Military and civilian fixed wing aircraft will be made aware of the location of Dublin Array as all structures will be marked and lit in accordance with the measures included in Volume 2, Chapter 12: Aviation and Radar), including compliance with IAA requirements on lighting and implementation of a lighting and marking plan (see Volume 7, Lighting and Marking Plan).
Snagging risk – commercial fisheries	✓	✓	✓		There is a potential for snagging of fishing gear on proposed development infrastructure from existing commercial fisheries during all stages of the project. Snagging refers to the fishing gear becoming caught or entangled on the infrastructure associated with Dublin Array. This could damage the fishing gear or interfere with the operation of commercial fisheries in the area. It is a potential hazard that could disrupt normal fishing activities or cause losses for those in the industry. Volume 3, Chapter 9: Commercial Fisheries details the plans and mitigations to minimise potential hazards, such as the Fisheries Management and Mitigation Strategy (FMMS), and continuous liaison with the fisheries industry through a Fisheries Liaison Officer (FLO).
Risk of accident – oil and gas infrastructure				✓	Volume 3, Chapter 11: Marine Infrastructure and Other Users has details of all infrastructure potentially affected by Dublin Array. As set out in the chapter there is no identified source, pathway

¹ C (construction), O (operation), D (decommissioning)

Hazard group	Project phase*1			Scoped out	Reasoning
	C	O	D		
					and receptor linkage to oil and gas infrastructure in the area and therefore no potential for a major accident or disaster arising from oil or gas infrastructure.
Risk of accident – cables and pipelines				✓	Volume 3, Chapter 11: Marine Infrastructure and Other Users has details of all infrastructure potentially affected by Dublin Array. There is no identified source, pathway and receptor linkage to other cables and pipeline infrastructure in the area and therefore no potential for a major accident or disaster.
Extreme weather	✓	✓	✓		There is potential for extreme weather events, such as strong winds, lightning and storms, to impact all phase of Dublin Array.
Onshore					
Extreme weather	✓	✓	✓		There is potential for extreme weather events, such as strong winds, lightning, and storms to impact all stages of Dublin Array. These events may result in a temporary shutdown of the wind turbine generators, impacting on the generation capacity of the proposed development.
Flooding and storm surge	✓	✓	✓		The landfall, and onshore substation are located within Flood Zone C, low risk of flooding. Some sections of the onshore ECR are located within Flood Zone A and B and a small area at the north-western boundary of the O&M Base is within Flood Zone A (although no development is proposed within this area). Whilst areas at risk of flooding have been avoided where possible there is the potential for rainfall to lead to flooding of the area surrounding the onshore infrastructure.
Collision risk with existing road users on the public road network				✓	The implementation of comprehensive traffic management measures, including the Construction Traffic Management Plan (CTMP) and the outline Travel Plan (TP), will effectively mitigate potential risks. These measures include abnormal load delivery management, contractor requirements, clear signage, site traffic management, on-site safety protocols, designated parking areas, and vehicle cleaning procedures. Additionally, the use of trenchless techniques for key road crossings and the careful design of construction access routes to avoid residential areas further reduce the likelihood of collisions. Given these extensive preventative measures, the collision risk with existing road users on the public road network is considered to be minimal and can be scoped out of further detailed assessment (see Volume 5, Chapter 6: Traffic and Transport for further details).

Table 3 Identification of potential accidents and disasters originating from Dublin Array

Hazard group	Project phase*2			Scoped out	Reasoning
	C	O	D		
Offshore					
Risk of accident or pollution from cable installation and removal activities	✓		✓		Potential hazards during construction from cable installation and decommissioning include damage to existing seabed infrastructure (underwater structures like pipelines, cables, and foundations for offshore infrastructure) from vessel anchoring and trenching, potential fuel/chemical or oil spills from vessels, from subsea equipment. Disturbed sediments can harm marine habitats, while increased vessel traffic raises the risk of collisions. Improper cable installation may also lead to faults or repairs, causing further disruption. The assessment of potential accidents and disasters associated with cable installation/removal should be cross-referenced with the Project Description Chapter for construction methods, Volume 3, Chapter 1: Marine Geology, Oceanography, and Physical Processes for seabed disturbance impacts, Chapter 2: Marine Water and Sediment Quality for pollution risks Chapter 5: Marine Mammals for effects on marine habitats, Chapter 10: Shipping and Navigation for vessel collision risks, and Volume 7 Planning Stage Plans.
Unexploded Ordnance (UXO)	✓				During the construction phase there is potential for Unexploded Ordnance (UXO) to be encountered, e.g. during piling or cable laying operations. A procedure will be established to manage the discovery of UXO during construction, ensuring immediate cessation of work, securing the area, notifying relevant authorities, and engaging specialist Explosive Ordnance Disposal (EOD) teams for safe assessment and removal. This process prioritises the safety of personnel, protection of the environment, and compliance with regulatory requirements.
Physical impacts to other marine vessels (collision, allision)	✓	✓	✓		During all phases there is a potential risk of collision or allision involving marine vessels and the offshore infrastructure of Dublin Array. The risk of vessel collision is addressed in Volume 3, Chapter 10: Shipping and Navigation, and Volume 4, Appendix 4.3.10-1: Dublin Array Offshore Wind Farm Navigation Risk Assessment. Although measures have been included in the Project to reduce this risk, a source-pathway-receptor linkage persists, and the potential for a collision, including environmental risk and risk to or loss of life, remains.

² C (construction), O (operation), D (decommissioning)

Hazard group	Project phase*2			Scoped out	Reasoning
	C	O	D		
Pollution of the marine environment (from vessels)	✓	✓	✓		Throughout all phases, there is a risk of marine environmental pollution arising from the vessels associated with Dublin Array. Vessels consume and store fuels, oils, and lubricants that pose a risk to the marine environment in the event of a major spill or fire.
Pollution of the marine environment (WTG & OSP structures)	✓	✓	✓		Potential for marine environmental pollution due to the presence of Dublin Array offshore structures. Each WTG and the OSP will contain oils and fluids such as lubricants, hydraulics, and coolants. Fuels and oils will be stored in impenetrable bunds within designated areas to contain the products and spills. Pipes and tanks holding hazardous substances will be double-skinned (see Volume 7 Project Environmental Management Plan).
Fire at WTG/offshore substation platform	✓	✓	✓		Throughout all phases, there is a potential risk of fire occurring at the WTG or the OSP.
Snagging risk (commercial fisheries)	✓	✓	✓		During all stages of Dublin Array there is potential for snagging of fishing gear on, a risk to commercial fisheries in the area.
Collision risk (aviation)		✓			The presence of the Dublin Array poses a potential collision risk to aviation in the area.
Onshore					
Risk of accident or pollution from cable installation using trenchless technology	✓				Drilling activities at the landfall site can pose risks, including the potential for accidents or disasters. These risks may include a cliff collapse, where the ground structure becomes unstable, or liquefaction of sands, which occurs when saturated soil loses its strength and behaves like a liquid. Another potential risk is the accidental release of hydraulic fracturing fluid or other substances from the underground wellbore, a phenomenon known as a frack-out. A frack-out happens when pressure from drilling forces the fluid to escape from the wellbore, potentially causing environmental damage and other safety concerns.
Risk of accident or pollution from O&M or OES construction or operation				✓	There is the potential for an accident or disaster from the accidental release of substances from the construction activities (e.g. hydrocarbons) associated with the construction of the O&M, and OES. Design control measures set out in the following Outline Construction Environmental Management Plans (OEMP) will help to prevent this from occurring therefore hazards are not considered to be major accidents or disasters on this basis and therefore scoped out of this chapter: <ul style="list-style-type: none"> Volume 6 Appendix 6.5.2-1 Onshore Outline Construction Environment Management Plan (CEMP)

Hazard group	Project phase*2			Scoped out	Reasoning
	C	O	D		
					<p>An assessment of the likely significant environmental effects arising from this impact is contained in:</p> <ul style="list-style-type: none"> Volume 5 Chapter 3: Land Soils and Geology; Chapter 4: Water (Hydrology, Hydrogeology and Flood Risk) <p>During the operational phase, there is a risk of the release of substances from the Onshore Substation (OSS) or O&M Base. Operational design control measures will help to prevent this from occurring. An assessment of the likely significant environmental effects arising from this impact is contained in the aforementioned chapters.</p>
Collision risk on the public road network				✓	<p>Construction Traffic control measures will be implemented to ensure adequate and safe local traffic management and access to all dwellings, business and schools will be maintained. It is considered these measures will adequately reduce the likelihood of a major accident/disaster occurring as a result of collision risk and as such this issue is scoped out. Operational collision is scoped out as there will be no operational impacts on traffic are anticipated (see Volume 5, Chapter 6: Traffic and Transport).</p>
Fire at onshore substation site	✓	✓	✓		<p>Throughout all phases, there is a potential risk of fire occurring at the onshore substation site.</p>

19.5 Assessment of effects

- 19.5.1 From identifying potential accidents and disasters relevant to the project and from application of the guidance set out in the 2020 IEMA Major Accidents and Disasters Primer. An assessment of likely significant effects was undertaken, following on from environmental assessments within individual EIAR chapters.
- 19.5.2 Once the vulnerability of Dublin Array to major accidents and/or disasters is considered and whether there is potential for significant effects as a result of these major accidents and/or disasters, the assessment stage provides further understanding on the likelihood of a risk event occurring and identifies the requirement for further mitigation. A reasonable worst-case environmental impact has been identified for all risk events with a receptor and possible pathway.
- 19.5.3 When considering the risk of an event happening the probability of an event occurring has been combined with the extent, duration, and consequence of potential impacts as a result of an event.

Project design features and avoidance and preventative measures

- 19.5.4 A number of project design features have been proposed to reduce the potential for impacts. These are set out within the respective assessment chapters listed previously. The Project Environmental Management Plan (Volume 7, Project Environmental Management Plan) is a comprehensive document that outlines the strategies and protocols for minimising and mitigating the environmental impact of the offshore infrastructure. This includes plans relating to the following:
- ▲ Environmental Vessel Management;
 - ▲ Dropped Objects;
 - ▲ Marine Pollution Contingency;
 - ▲ Marine Biosecurity; and
 - ▲ Waste Management and Disposal Arrangements.
- 19.5.5 Similarly, the Onshore CEMP (Volume 7, Construction Environmental Management Plan) outlines the protocols for managing onshore infrastructure construction phase environmental impacts.
- 19.5.6 Given the commitment to implementing the outlined measures in each respective chapter, they are regarded as integral components of the Dublin Array design. Consequently, they have been taken into account in the assessment in this chapter.

Assessment

19.5.7 In accordance with the guidelines provided by IEMA (2020), all identified hazard groups have been assessed. This assessment of susceptibility of the Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5. The assessment considered any cross-disciplinary impact and evaluated the need for any additional controls on the embedded design measures to ensure that each potential risk event is adequately managed.

Table 4 Risk matrix of potential existing accidents and disasters that may impact on the project

Hazard group	Project Phase*3			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely?	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
Offshore												
Collision risk - shipping and navigation	√	√	√	Source: Shipping vessels Pathway: interaction within the array area	Project vessels; Project infrastructure; Project personnel.	Volume 3, Chapter 10: Shipping and Navigation	Severe damage to or loss of project vessels or project infrastructure; personal injury or loss of life; loss of load/equipment; fuel release.	Yes, potential for pollution/hazards to be introduced to the marine environment and economic impact of lost vessels.	As detailed in Volume 3, Chapter 10: Shipping and Navigation; ERCoP	No	Yes	Not applicable
Collision risk - aviation	√	√	√	Source: Low-flying aircraft Pathway: interaction within the array area	Project infrastructure	Volume 3, Chapter 12: Aviation and Radar	Damage to WTG; injury or loss of life; release of pollutants from aircraft; debris in marine environment.	Yes, potential for pollution / hazards to be introduced to the marine environment and economic impact of lost aircraft.	As detailed in Volume 3, Chapter 12: Aviation and Radar	No	Yes	Not applicable
Snagging risk - commercial fisheries	√	√	√	Source: commercial fisheries Pathway: interaction within the array area	Project infrastructure subsea	Volume 3, Chapter 9: Commercial Fisheries	Damage to or severing of cable infrastructure.	No	As detailed in Volume 3, Chapter 9: Commercial Fisheries	No	Yes	Not applicable
Extreme weather	√	√	√	Source: Extreme weather events; lightning, wind, excessive heat or cold. Pathway: interaction within the array area	Project infrastructure; Project personnel; Project vessels.	Volume 3, Chapter 18: Climate Change	Failure of structure; loss of asset; injury or loss of life; electric shock; fire.	Potential for localised pollution due to damage to vessels, equipment, and release of firefighting foam.	Safe weather limits established for all maintenance activities; emergency response plan	No	Yes	Not applicable
Onshore												
Extreme weather	√	√	√	Source: Extreme weather events; lightning, wind, excessive heat or cold. Pathway: interaction within the	Project infrastructure; Project personnel.	Volume 3, Chapter 18: Climate Change	Failure of structure; loss of asset; injury or loss of life; electric shock; fire.	Potential for localised pollution due to damage to equipment and chemicals.	Safe weather limits established for all maintenance activities; CEMP	No	Yes	Not applicable

³ C (construction), O (operation), D (decommissioning)

Hazard group	Project Phase* ³			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely?	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
				landfall/TJB, O&M Base and OES.								
Flooding and storm surge	√	√	√	Source: Rainfall; storms Pathway: O&M Base and OES.	Project infrastructure	Volume 5, Chapter 4: Water (Hydrology, Hydrogeology, and Flood Risk) Volume 6, Appendix 6.5.4-2 OES Flood Risk Assessment Appendix 6.5.4-3 O&M Base Flood Risk Assessment.	Localised flooding of infrastructure	Potential for localised pollution due to run-off of sediment, pollutants or foreign materials.	As detailed in Volume 5, Chapter 4: Water (Hydrology, Hydrogeology, and Flood Risk)	No	Yes	Not applicable

Table 5 Risk matrix of potential accidents and disasters originating from the project

Hazard group	Project Phase* ⁴			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
Risk of accident or pollution from cable installation using trenchless technology	√			Source: Cable installation activities Pathway: Vessel anchoring, towed equipment, installation tools	Third party assets; existing infrastructure	Volume 2, Chapter 6: Project Description, Offshore Cable Installation	Accidental release chemicals, fluids, or sewage from pipelines into marine environment.	Yes, potential for pollution to be introduced to the marine environment.	Cable routing to avoid works in proximity to third party subsea infrastructure where possible; Separation distance from third party assets agreed with asset owners/operators;	No	Yes	Not applicable

⁴ C (construction), O (operation), D (decommissioning)

Hazard group	Project Phase*4			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
									Method of crossing of third-party assets agreed with asset owners/operators; Position of third-party assets confirmed through interrogation of up-to-date geophysical survey data. Monitoring of weather and tidal conditions and observation of appropriate safe working limits.			
UXO	√			Source: Undetected UXO Pathway: Cable or foundation installation	Project personnel; members of the public; other marine users; marine mammals; fish and shellfish; benthic ecology	Volume 2, Chapter 6: Project Description, Unexploded Ordnance (UXO) Identification and Clearance	Injury or loss of life from uncontrolled explosion; injury and disturbance to marine mammals, fish, shellfish, and benthic ecology from controlled or uncontrolled explosion	Yes, potential for explosion/ noise to cause injury or death to marine life.	UXO risk assessment and survey undertaken including review of geophysical data to inform final routing and installation of cable and HDD; Avoidance of magnetic anomalies; Controlled detonation or disposal of UXO if found.	No	Yes	Not applicable
Physical impacts (collision, allision)	√	√	√	Source: Project vehicles/ infrastructure Pathway: Interaction within the array area	Other vessels	Volume 3, Chapter 10: Shipping and Navigation	Severe damage to or loss of project vessels or project infrastructure; personal injury or loss of life; loss of load/equipment; fuel release.	Yes, potential for pollution/ hazards to be introduced to the marine environment and economic impact of lost vessels.	As detailed in Volume 3, Chapter 10: Shipping and Navigation; Notice to Mariners (NoTM) issued providing details of structures; lighting of structures as agreed with Irish Lights. Temporary use of guard vessels if lighting not active. Admiralty Chart updated. ERCoP	No	Yes	Not applicable
Pollution of the marine environment (from vessels)	√	√	√	Source: Project infrastructure Pathway: Irish Sea	Marine mammals; fish and shellfish; benthic ecology; water quality	Volume 3, Chapter 2: Marine Water and Sediment Quality, Chapter 3: Benthic	Pollution in the marine environment.	Yes, potential for pollution to be introduced to the	As detailed in Emergency Response Plan and Pollution Prevention and Control Plan. Appropriate health	No	Yes	Not applicable

Hazard group	Project Phase*4			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
						Subtidal and Intertidal Ecology, Chapter 4: Fish and Shellfish Ecology, Chapter 5: Marine Mammals		marine environment.	and safety including IMO conventions and HSA requirements, and suitable vessel certification in line with MSO requirements.			
Pollution of the marine environment (WTG & OSP structures)	√	√	√	Source: Project infrastructure Pathway: Irish Sea	Marine mammals; fish and shellfish; benthic ecology; water quality	Volume 3, Chapter 2: Marine Water and Sediment Quality, Chapter 3: Benthic Subtidal and Intertidal Ecology, Chapter 4: Fish and Shellfish Ecology, Chapter 5: Marine Mammals	Pollution in the marine environment.	Yes, potential for pollution to be introduced to the marine environment.	As detailed in Emergency Response Plan and Pollution Prevention and Control Plan. Appropriate health and safety including IMO conventions and HAS requirements.	No	Yes	Not applicable
Fire at WTG/offshore substation platform	√	√	√	Source: Project infrastructure Pathway: Project surroundings	Project personnel; other marine users	Volume 2, Chapter 6: Project Description	Injury or loss of life; localised pollution.	Yes, potential for localised pollution due to damage to vessels/ equipment and release of firefighting foam.	Rescue equipment to be readily available, Emergency response plan to be in place prior to work activity, Selection of equipment appropriate to task. Inspection and maintenance plan.	No	Yes	Not applicable
Snagging risk (commercial fisheries)	√	√	√	Source: Subsea project infrastructure Pathway: Irish Sea	Commercial fishing vehicles	Volume 3, Chapter 9: Commercial Fisheries	Injury; loss or damage to equipment.	No	As detailed in Chapter 9: Commercial Fisheries. Review of geophysical, topographical and geotechnical data to inform final design and routing; Seabed mobility study and Ground Model; Completion of cable burial risk assessment and cable burial plan; use of secondary cable protection as indicated by cable burial risk assessment; monitoring of cable route.	No	Yes	Not applicable

Hazard group	Project Phase*4			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
Collision risk (aviation)		✓		Source: Low-flying aircraft Pathway: interaction within the array area	Project infrastructure	Volume 3, Chapter 12: Aviation and Radar	Injury or loss of life; release of pollutants from aircraft; debris in marine environment.	Yes, potential for pollution/ hazards to be introduced to the marine environment and economic impact of lost aircraft.	As detailed in Chapter 12: Aviation and Radar; a maximum turbine blade height of 309.6 m amsl is below minimum flight height of aircraft on approach and departure to Dublin and Weston airports determined by assessment of Instrument Flight Procedures and consultation with IAA. Volume 4, Appendix 5.3.12-2 of the EIAR states that the location and proximity of the Dublin Array WTGs will have no major operational impact on visual flight rule operations to the Kish Tower helipad. ERCoP	No	Yes	Not applicable
Risk of accident or pollution from landfall HDD	✓			Source: HDD activities Pathway: ground vibration, drilling muds, liquefaction of intertidal sands, cliff collapse	Project personnel; members of the public; intertidal habitat; other marine users	Volume 5, Chapter 3: Land, Soils and Geology, and Chapter 4: Water (Hydrology, Hydrogeology, and Flood Risk)	Loss of habitat; personal injury or death; damage to ecosystem; loss of water quality	Yes, potential for pollution to be introduced to the marine environment.	Geotechnical investigations, depth of drill, assessment of vibration levels. Vibration to be monitored, staff and the public to be excluded from the cable corridor during drilling operations. Pre-construction geotechnical investigations to assess ground conditions and design of the drill route to avoid potential issues. Monitoring of drilling pressures.	No	Yes	Not applicable
Fire at onshore substation or O&M Base	✓	✓	✓	Source: Project infrastructure Pathway: Project surroundings	Project personnel.	Volume 2, Chapter 6: Project Description	Injury or loss of life; localised pollution.	Yes, potential for localised pollution due to	A fire detection and alarm system will be specified during the detailed design of the onshore	No	Yes	Not applicable

Hazard group	Project Phase*4			Source and/ or pathway	Receptor	Source Document	Reasonable worst case consequence if event did occur	Are cross disciplinary impacts likely	Design measures adopted	Could this reasonably lead to a major accident and/or natural disaster with existing mitigation in place?	Is the reasonable worst consequence managed to an acceptable level with existing measures in place?	If no, what secondary mitigation is required to reach an acceptable level?
	C	O	D									
								damage to equipment.	infrastructure. A Fire Safety Certificate will be applied for in advance of construction.			

19.6 Mitigation measures

- 19.6.1 The assessments provided in the matrices in Table 2 and Table 3 have concluded that with the implementation of the measures included in the project, Dublin Array's vulnerability to risks of major accidents and/or disasters, and the potential for accidents and disasters originating from Dublin Array, will not result in significant adverse effects on the environment. Therefore, no further measures are proposed.

19.7 Cumulative, transboundary and interrelated effects assessment

- 19.7.1 As it has been concluded that Dublin Array will not reasonably lead to a major accident or disaster after consideration of the designed in measures adopted, no assessment of cumulative, inter-related or transboundary effects has been undertaken.

19.8 Conclusion

- 19.8.1 This chapter has assessed the vulnerability of and potential for the Dublin Array to be impacted or cause major accidents and/or disasters in line with the requirements of the EIA Directive as amended and as transposed in Ireland. The chapter has also been informed by the guidance provided in the IEMA Primer (IEMA, 2020), where appropriate. It was found that all reasonable worst-case consequences will be managed to an acceptable level with existing control measures in place.
- 19.8.2 As no reasonable major accidents and disasters risk events were identified, no cumulative, transboundary or interrelated effects assessment was required.
- 19.8.3 A comprehensive list of the measures to which the Applicant has committed to implementing and upon which the assessment of residual effects presented throughout the EIAR has been based, is included in Volume 8, Chapter 2: Schedule of Commitments.

19.9 References

- European Commission (2017) 'Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report', <https://op.europa.eu/en/publication-detail/-/publication/2b399830-cb4b-11e7-a5d5-01aa75ed71a1> [Accessed: March 2024]
- Environmental Protection Agency (2022) 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports', https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf [Accessed: March 2024]
- Department of the Environment, Heritage & Local Government (2010) 'A Guide to Risk Assessment in Major Emergency Management' [Downloaded: March 2024]
- Environmental Protection Agency (2014) 'Guidance on Assessing and Costing Environmental Liabilities', https://www.epa.ie/publications/compliance--enforcement/licensees/reporting/financial-provisions/EPA_OEE-Guidance-and-Assessing-WEB.pdf [Accessed: March 2024]
- Government of Ireland (2020) 'A National Risk Assessment for Ireland', <https://www.gov.ie/en/press-release/5e685-national-risk-assessment-for-ireland-2020/> [Accessed: March 2024]
- Department of Housing, Local Government and Heritage (2019) 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' <https://www.gov.ie/en/publication/53aee9-guidelines-for-planning-authorities-and-an-bord-pleanala-on-carrying/> [Accessed: March 2024]
- Environmental Working Group of the Offshore Renewable Energy Steering Group and the Department of Communications, Climate Action and Environment (2017) 'Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects' <https://www.gov.ie/en/publication/3d6efb-guidance-documents-for-offshore-renewable-energy-developers/> [Accessed March 2024]
- Institute of Environmental Management and Assessment (2020) 'Major Accidents and Disasters in EIA: A Primer', <https://www.iema.net/resources/reading-room/2020/09/28/major-accidents-and-disasters-in-eia-an-iema-primer> [Accessed March 2024]

Annex A – Legislation and policy context

Policy/legislation	Key provisions	Section where provision is addressed
Statutory		
Legislation		
National Marine Planning Framework	<p>Safety at Sea Policy 1 states that: Proposals for installation, operation, and decommissioning of offshore wind farms must demonstrate how they will:</p> <ul style="list-style-type: none"> Minimise navigational risk between commercial vessels arising from an increase in the density of vessels in maritime space as a result of wind farm layout; and Allow for recreational vessels within the offshore wind farm (including consideration of turbine height) or redirect recreational vessels, minimising navigational risk arising between recreational and commercial vessels. <p>Safety at Sea Policy 3 states that: All proposals for temporary or permanent fixed infrastructure in the maritime area must ensure navigational marking in accordance with appropriate international standards and ensure inclusion in relevant charts where applicable.</p> <p>Safety at Sea Policy 5 states that: Proposals must identify their potential impact, if any, on Maritime Emergency Response (Search and Rescue (SAR), Maritime Casualty and Pollution Response) operations. Where a proposal may have a significant impact on these operations it must demonstrate how it will, in order of preference:</p> <ol style="list-style-type: none"> avoid, minimise, mitigate 	<p>Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.</p> <p>Navigational risk and mitigation are discussed in more detail in Volume 3, Chapter 10: Shipping and Navigation.</p>

Policy/legislation	Key provisions	Section where provision is addressed
	adverse impacts, or d) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding, supported by parties responsible for maritime SAR.	
Directive 2014/52/EU of the European Parliament and of The Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. The EIA Directive.	<p>Recital 14 states: the implementation, review, and further development of Union initiatives, take into consideration disaster risk prevention and management concerns as well as the United Nations Hyogo Framework for Action Programme (2005-2015) adopted on 22 January 2005, which stresses the need to put in place procedures for assessment of the disaster risk implications of major infrastructure projects.</p> <p>Recital 15 states: 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.</p> <p>Article 3 states: the environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:</p> <ul style="list-style-type: none"> (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; 	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of Dublin Array to existing major accidents or disasters is included in Table 5 and the projects potential to induce accidents or disasters is included in Table 5.

Policy/legislation	Key provisions	Section where provision is addressed
	<p>(c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape; (e) the interaction between the factors referred to in points (a) to (d).</p> <p>2. The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned.’;</p> <p>Annex IV point 5(d) states: A description of the likely significant effects of the project on the environment resulting from, inter alia:</p> <p>(d) the risks to human health, cultural heritage, or the environment (for example due to accidents or disasters)</p> <p>Annex IV point 8 states: 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. [...] <i>Where appropriate, this description should include [...] details of the preparedness for and proposed response to such emergencies.</i></p>	
Directive 2012/18/EU of the European Parliament and the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (The Seveso III Directive)	Recital 6 states: Major accidents can have consequences beyond frontiers, and the ecological and economic costs of an accident are borne not only by the establishment affected, but also by the Member States concerned. It is therefore necessary to establish and apply safety and risk-reduction measures to prevent possible accidents, to reduce the risk of accidents occurring and to minimise the effects if they do occur, thereby making it possible to ensure a high level of protection throughout the Union.	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.

Policy/legislation	Key provisions	Section where provision is addressed
	Recital 14 states: In order to reduce the risk of domino effects, where establishments are sited in such a way or so close together as to increase the likelihood of major accidents, or aggravate their consequences, operators should cooperate in the exchange of appropriate information and in informing the public, including neighbouring establishments that could be affected.	
S.I. No. 209/2015 - Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (The COMAH Regulations).	<p>Part 2 7. (1) (a) states:</p> <p>Every operator shall take all necessary measures—</p> <p>(a) to prevent major accidents occurring and to limit the consequences of any such major accidents for human health and the environment;</p> <p>Part 2 7. (2) states:</p> <p>‘Without prejudice to the generality of paragraph (1), the matters in respect of which all necessary measures shall be taken by every operator shall include—</p> <p>(a) the identification of all major accident hazards in the establishment including an assessment of the extent and severity of the consequences of such accidents</p>	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.
The Planning and Development Regulations (2001) as amended	<p>Schedule 6 paragraph 2(h) states:</p> <p>(h) a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as the Seveso III Directive or the Nuclear Safety Directive or relevant assessments carried out pursuant to national legislation may be used for this purpose, provided that the requirements of the Environmental Impact Assessment Directive are met.</p>	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.

Policy/legislation	Key provisions	Section where provision is addressed
	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, emergencies arising from such events.	
National Maritime Oil/HNS Spill Contingency Plan (NMOSCP) 2020	A plan developed to address the potential risks and consequences associated with maritime oil spills and spills of hazardous and noxious substances. The NMOSCP mandates EIA as a crucial component of its response framework for maritime oil spills and hazardous substances incidents. It requires the identification of sensitive environmental areas, prioritises protection efforts, and outlines procedures for real-time assessment of spill impacts on ecosystems, wildlife, and habitats. Additionally, it incorporates measures for mitigation, long-term recovery, and collaboration with environmental agencies to ensure alignment with environmental protection objectives.	Volume 7 contains the Planning Stage Plans, including Appendix 1: Project Environmental Management Plan, which includes the Marine Pollution Contingency.
Planning Policy and Development Control		
Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028	<p>Policy EI17 states: It is a Policy Objective to have regard to the provisions of the Major Accidents Directive (European Council Directive 2012/110/ EU). This Directive relates to the control of major accident hazards involving dangerous substances and its objectives are to prevent major accidents and limit the consequences of such accidents.</p> <p>This policy will be implemented through the Development Management process through controls on the siting of new establishments, on modifications to existing establishments and on development in the vicinity of an establishment which, by virtue of its type or siting, is likely to increase the risk or consequences of a major accident.</p>	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of the Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5. At present, however, there are no ‘Seveso’ sites (defined within the Control of Major Accident Hazards Regulations as ‘locations where significant quantities of dangerous substances are stored’) within Dún Laoghaire-Rathdown County.

Policy/legislation	Key provisions	Section where provision is addressed
Guidelines and technical standards		
Environmental Impact Assessment of Projects- Guidance on the preparation of the Environmental Impact Assessment Report (European Union 2017)	The European Commission Guidance states that EIARs should address both natural (e.g. earthquakes) and man-made disasters (e.g. technological hazards) that could significantly impede the Project's activities and objectives and which might have adverse effects.	Both natural and man-made hazards and disasters are considered within this assessment, including those related to extreme weather, flood risk, and climate change. Further details on the vulnerability of the project to climate change are included in Volume 3, Chapter 18: Climate Change. Further details on sea level rise are included in Volume 3, Chapter 1 Marine Geology, Oceanography and Physical Processes.
Guidelines on the Information to be contained in Environmental Impact Assessment reports (Environmental Protection Agency, 2022)	Section 3.3.6 states that the amended Directive also requires the vulnerability of a project to climate change to be addressed, particularly 'the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge'.	The assessment of flooding at the landfall/TJB and O&M Base and is included in Volume 5, Chapter 4: Water (Hydrology, Hydrogeology, and Flood Risk) and Volume 6, Appendix 6.5.4-1 Water (Hydrology, Hydrogeology, and Flood Risk) Technical Baseline Report.
	Section 3.5.2 states that when describing the characteristics of a project, it should include a description of the Risk of Accidents – having regard to substances or technologies used.	
	Section 3.7.1 states that the impact assessment should contain the risks to human health, cultural heritage, or the environment (for example due to accidents or disasters).	
	Section 3.7.3 states that the EIAR should address unforeseen or unplanned effects, the Directive further requires that the EIAR takes account of the vulnerability of the project to the 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). This may be supported by general risk assessment methods or by	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of the Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.

Policy/legislation	Key provisions	Section where provision is addressed
	systematic risk assessments required under other regulations e.g. a COMAH (Control of Major Accident Hazards involving Dangerous Substances) assessment.	
Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018)	<p>The EIA must include the expected effects arising from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project. Where appropriate, the description of expected significant effects should include details of the preparedness for and proposed response to such emergencies.</p> <p>There are two key considerations, namely:</p> <ul style="list-style-type: none"> ▪ The potential of the project to cause accidents and/or disasters, including implications for human health, cultural heritage, and the environment; ▪ The vulnerability of the project to potential disasters/accidents, including the risk to the project of both natural disasters (e.g. flooding) and man-made disasters (e.g. technological disasters). 	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of the Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.
Guidance on Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) Preparation for Offshore Renewable Energy Projects (Environmental Working Group of the Offshore Renewable Energy Steering Group and the Department of Communications, Climate Action and Environment, 2017)	Appendix I states: Article 3 of the EIA Directive 2011/92/EU, as amended by 2014/52/EU sets out that the environmental impact assessment shall identify, describe, and assess the direct and indirect significant effects of a project and shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned.	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of the Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.

Policy/legislation	Key provisions	Section where provision is addressed
A Framework for Major Emergency Management Guidance Document 1: A Guide to Risk Assessment in Major Emergency Management, Department of the Environment, Heritage & Local Government, 2010	The guidance sets out best practice in regard to risk assessment for major emergency management. Part 1 provides guidance on the risk assessment process and outlines criteria for classifying the likelihood and significance of impacts.	Potential major accidents and hazards relevant to the project are identified in section 19.5. The assessment of susceptibility of the Dublin Array to existing major accidents or disasters is included in Table 4 and the projects potential to induce accidents or disasters is included in Table 5.
A National Risk Assessment for Ireland 2017, The Department of Defense	The NRA forms a critical subset of the wider strategic level 'National Risk Assessment: Overview of Strategic Risks' process undertaken by the Government Task force on Emergency Planning. It aims to capture new and emerging threats and changing trends.	This chapter comprises an assessment of the risk of major accidents and disasters relating to the vulnerability of the proposed development to such events.
Non- Statutory		
Major Accidents and Disasters in EIA: A Primer, IEMA Sept 2020	<p>'A major accident is an event (for instance, train derailment or major road traffic accident) that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage'.</p> <p>The guidance sets out that in general, major accidents and/or disasters should be considered as part of an assessment where the development has the potential to cause the loss of life, permanent injury and/or temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.</p> <p>The Primer contains a definition of a major accident which is described as 'Events that threaten immediate or delayed serious</p>	This chapter comprises an assessment of the risk of major accidents and disasters relating to the vulnerability of the proposed development to such events.

Policy/legislation	Key provisions	Section where provision is addressed
	<p>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.</p> <p>The Primer includes guidance on where the assessment of major accidents and disasters occurring can be scoped out of an EIA:</p> <p>Major accidents and/or disasters can be scoped out of the assessment if you can clearly demonstrate that:</p> <ol style="list-style-type: none"> 1. there is no source-pathway-receptor linkage of a hazard that could trigger a major accident and/or disaster or potential for the scheme to lead to a significant environmental effect; or 2. all possible major accidents and/or disasters are adequately covered elsewhere in the assessment or covered by existing design measures or compliance with legislation and best practice. <p>Events that have a high likelihood of occurring and would be of high consequence are a high risk and would be unacceptable for any development. These should already be managed or designed-out by a development. These might include, for example, an element of highway design that did not comply with standards leading to a major road traffic collision. These are therefore likely to be outside the scope of the assessment.</p> <p>At the other end of the scale, low-impact events whatever the likelihood, such as minor spills, are low risk and are unlikely to be</p>	

Policy/legislation	Key provisions	Section where provision is addressed
	considered a major accident and/or disasters risk. These events would not threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment that require the use of resources beyond those of the client or its appointed representatives to manage. These are also therefore likely to be outside the scope of the assessment.	



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