18 Major Accidents and Disasters

18.1 Introduction

18.1.1 The 2014 revision to the Environmental Impact Assessment (EIA) Directive (European Parliament, 2014)1 introduced the requirement for an assessment of the risk of major accidents and disasters (MADs) into the scope of an EIA. As explained in the recital of the EIA Directive:

> "In order to ensure a high level of protection of the environment, precautionary actions need to be taken for certain projects which, because of their vulnerability to major accidents, and/or natural disasters (such as flooding, sea level rise, or earthquakes) are likely to have significant adverse effects on the environment. For such projects, it is important to consider their vulnerability (exposure and resilience) to major accidents and/or disasters, the risk of those accidents and/or disasters occurring and the implications for the likelihood of significant adverse effects on the environment."

18.1.2 Article 3 of the EIA Directive (European Parliament, 2014) requires that the vulnerability of a project to "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" is assessed.

18.1.3 In Annex IV of the EIA Directive, this requirement is extended to cover "… (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters) …". Annex IV point 8 of the EIA Directive requires 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".

18.1.4 Additionally, section 15 (3) of the Dublin Airport (Passenger Capacity) Act 2026 requires "The identification, description and assessment of the effects of the proposal concerned on the factors referred to in subsection (2) shall include the identification, description and assessment of expected effects deriving from any vulnerability of the proposal to a risk of major accident or disaster which are relevant."

18.1.5 As detailed in Chapter 4: Proposed Order, the Proposed Order seeks to amend the existing passenger capacity conditions by increasing the passenger capacity limit from 32 million passengers per annum (mppa) to 40 mppa. The Proposed Order does not relate to or authorise any physical development, airport infrastructure works, changes to the airport layout or aircraft-noise operating restrictions. Any increase in airport activity associated with the Proposed Order would be accommodated using existing airport infrastructure.

18.1.6 However, the increase in airport activity associated with higher passenger numbers such as additional flights and increased traffic numbers has the potential to influence the risk profile for major accidents and disasters through changes in aircraft activity and associated operational characteristics due to impact on the likelihood of such incidents occurring. Accordingly, an assessment has been undertaken to determine whether the 2029 Proposed Operation, compared with the 2029 Permitted Operation, would alter the likelihood or consequences of major accidents and disasters, or the associated likely significant environmental effects. Existing assessments undertaken under other regulatory regimes, including Seveso designations, have been taken into account where relevant.

18.1.7 The chapter covers the following matters:

- Whether the 2029 Proposed Operation, compared with the 2029 Permitted Operation, materially alters the risk of major accidents and disasters arising from existing or reasonably foreseeable on-

[1] European Parliament, Directive 2014/52/EU, "Amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private projects on the Environment", 16 April 2014 Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32014L0052

site and off-site hazards following the Department of Housing, Local Government and Heritage (DHLGH) (2021) Guidelines2.

- Whether the 2029 Proposed Operation, compared with the 2029 Permitted Operation, materially alters the potential for airport operations to give rise to a major accident.
- The likely significant environmental effects arising from any such major accident or disaster resulting from the risks to human health, cultural heritage or the environment.

18.1.8 This chapter was prepared by Jason Ferns, BEng (Hons), MSc, PhD, AMIChemE, MIAQM, MIEnvSc, an Air Quality Consultant in AECOM's Environment and Energy team with over two years' experience in Major Accidents and Disasters. The chapter was reviewed by Angela Graham, BSc, MSc, MICWM, MIIRSM, a Technical Director in AECOM's Environment, Health and Safety team with over 30 years' experience in EHS permitting and compliance projects.

18.2 Legislation, Policy and Guidance

18.2.1 The assessment presented in this chapter has had regard to the relevant legislation, policy and guidance set out below.

18.2.2 In accordance with Commission Regulation (EU) No 139/2014, including Implementing Rule ADR.OPS.B.005 (Aerodrome Emergency Planning), Dublin Airport has developed and implemented an Aerodrome Emergency Plan. The Plan addresses a range of emergency scenarios commensurate with the nature and scale of aircraft operations and other activities undertaken at the airport and sets out the arrangements for coordination with the relevant emergency services and other statutory agencies. A confidential copy of the Aerodrome Emergency Plan (Aerodrome Manual – Part E: Emergency Response) has been made available to the Minister as Appendix 18-1.

Legislation

18.2.3 Relevant legislation to this chapter is as follows:

- Dublin Airport (Passenger Capacity) Act 2026[3]
- European Parliament Seveso-III Directive (2012/18/EU) is the latest iteration of the Seveso system, which was adopted in 2012. It establishes a framework for the control of major accident hazards and aims to prevent and mitigate the consequences of such accidents. Seveso designations refer to a system of classifying industrial facilities based on the potential risks they pose in terms of major accidents including due to the onsite storage of hazardous substances[4].
- European Parliament, EIA Directive 2011/92/EU (as amended by Directive 2014/52/EU)[5]
- Act No.10/2005 - Safety, Health and Welfare at Work Act (HSWA) (ISB, 2005). Including associated amendments6
- S.I. No. 231/2021 - Safety, Health and Welfare at Work (Chemical Agents) (Amendment) Regulations (ISB, 2021a) [7]

[2] DHLGH (2021 updated June 2025). A Framework for Major Emergency Management – Guide to Risk Assessment in Emergency Management. Available at: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/collections/a-framework-for-major-emergency-management/
3 Dublin Airport (Passenger Capacity) Act 2026. Available at: https://www.irishstatutebook.ie/eli/1993/act/29/enacted/en/html
[4] European Parliament (2012). Directive 2012/18/EU, Control of Major-Accident Hazards Involving Dangerous Substances, Amending and Subsequently Repealing Council Directive 96/82/EC. Available at: https://eur-lex.europa.eu/eli/dir/2012/18/oj/eng
5 European Parliament, Directive 2014/52/EU, "Amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private projects on the Environment", 16 April 2014 Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32014L0052
6 Health and Safety at Work Act (10/2005. Available at: https://www.irishstatutebook.ie/eli/2005/act/10/enacted/en/print
[7] Irish Statute Book (ISB) (2021). S.I. No. 231/2021 - Safety, Health and Welfare at Work (Chemical Agents) (Amendment) Regulations. Available at: https://www.irishstatutebook.ie/eli/2021/si/231

- S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations (ISB, 2021b)[8]
- S.I. No. 255/2023 - Safety, Health and Welfare at Work (General Application) (Amendment) Regulations[9]
- Act No. 10/1972 (as amended by Act No. 21/1979) - Dangerous Substances Act[10]
- S.I. No. 272/2008 - European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations (CLP) [11]
- Commission Regulation (EU) 139/2014 "Regulations laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council" (Feb 2014)[12]
- Irish Aviation Act 1993[13]
- S.I No754/2007 – European Communities (Safety of Third Country Aircraft Using Community Airports) Regulations 2007[14]

Guidance

18.2.4 Relevant guidance to this chapter is as follows:

- Guide to Risk Assessment in Major Emergency Management (Department of the Housing, Local Government and Heritage, (DHLGH)), 2021[15]
- Environmental Protection Agency (EPA), Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022 (hereafter referred to as 'the EPA Guidelines')[16]
- European Commission guidance on the Environmental impact Assessment of Projects[17]
- Institute of Sustainability and Environmental Professionals (formerly IEMA), Major Accidents and Disasters in EIA: A Primer[18]
- CER Directive 2022/2557 on the resilience of critical entities, EU (Resilience of Critical Entities) Regulations 2024, S.I. 559 of 2024[19]

[8] Irish Statute Book (ISB) (2021). S.I. No. 528/2021 - Safety, Health and Welfare at Work (Construction) (Amendment) Regulations. Available at: https://www.irishstatutebook.ie/eli/2021/si/528/made/en/print#:~:text=No.-,528%2F2021%20%2D%20Safety%2C%20Health%20and%20Welfare%20at%20Work%20(,Construction)%20(Amendment)%20Regulations%202021&text=%E2%80%9CIris%20Oifigi%C3%BAil%E2%80%9D%20of%2015th%20October%2C%202021
[9] Irish Statute Book (ISB) (2023). S.I. No. 255/2023 - Safety, Health and Welfare at Work (General Application) (Amendment) Regulations (ISB, 2023). Available at: https://www.irishstatutebook.ie/eli/2023/si/255/made/en/print
[10] Irish Statute Book (ISB) (1972). Act No. 10/1972 (as amended by Act No. 21/1979) - Dangerous Substances Act. Available at: https://www.irishstatutebook.ie/eli/1972/act/10/enacted/en/html
[11] Irish Statute Book (ISB) (2008). S.I. No. 272/2008 - European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations (CLP). Available at: https://www.irishstatutebook.ie/eli/2008/si/272/made/en/print
12 European Regulations 139/2014 "Regulations laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council" (Feb 2014)" available at: https://eur-lex.europa.eu/eli/reg/2014/139/oj/eng
[13] Irish Aviation Act 1993, available at: https://www.irishstatutebook.ie/eli/1993/act/29/enacted/en/html
14 Irish Statute Book (2007) – European Communities (Safety of Third Country Aircraft Using Community Airports) Regulations 2007Available at: https://www.irishstatutebook.ie/eli/2007/si/754/made/en/print
[15] DHLGH (2021 updated June 2025). A Framework for Major Emergency Management – Guide to Risk Assessment in Emergency Management. Available at: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/collections/a-framework-for-major-emergency-management/
[16] Environmental Protection Agency (EPA) (2022). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf
17 European Commission: Directorate-General for Environment, COWI, Milieu, Lantieri, A., Lukacova, Z. et al., Environmental impact assessment of projects – Guidance on the preparation of the environmental impact assessment report (Directive 2011/92/EU as amended by 2014/52/EU), Publications Office, 2017. Available at: https://op.europa.eu/en/publication-detail/-/publication/2b399830-cb4b-11e7-a5d5-01aa75ed71a1
[18] ISEP (2020) https://www.isepglobal.org/content/major-accidents-and-disasters-in-eia-an-iema-primer-october-2020/
[19] CER Directive 2022/2557 on the resilience of critical entities, EU (Resilience of Critical Entities) Regulations 2024, S.I. 559 of 2024 Available at: https://www.irishstatutebook.ie/eli/2024/si/559/

- Department of Defence National Strategy on the Resilience of Critical Entities 2026–2029[20]

18.3 Assessment Methodology

18.3.1 The Principal Assessment presented in this chapter compares the 2029 Permitted Operation (32 mppa) and the 2029 Proposed Operation (40 mppa) in accordance with the project-wide assessment framework described in Chapter 5: Methodology.

Overall Approach

18.3.2 The assessment has been undertaken as follows:

- Identification of the baseline conditions, including the receiving environment and the sensitivity of relevant receptors;
- Identification and assessment of the potential risk of or vulnerability to the effects of major accidents and disasters arising from the 2029 Proposed Operation, compared with the 2029 Permitted Operation, including the magnitude of change and the significance of any effects;
- Identification and consideration of mitigation measures, where required; and
- Assessment of residual effects following the implementation of mitigation measures, where applicable.

18.3.3 The assessment has been informed by the Department of Housing, Local Government and Heritage Guidelines[15], which advocate the following risk assessment process:

- Establish the context by describing the characteristics of the area to which the assessment relates, as these influence both the likelihood and potential consequences of a major accident or disaster;
- Identify hazards through a review of the relevant existing and potential sources of hazard;
- Assess risk by considering the likelihood and potential consequences associated with the identified hazards; and

Evaluate and record risks using the risk matrix presented in Table 18-3, applying the impact and likelihood criteria set out in

[20] Department of Defence, National Strategy on the Resilience of Critical Entities 2026–2029. https://www.gov.ie/en/department-of-defence/publications/national-strategy-on-the-resilience-of-critical-entities-20262029/

- Table 18-1 (Impact of Risk) and Table 18-2 (Likelihood of Risk Occurring).

Study Area

18.3.4 There is no prescribed study area for the assessment of major accidents and disasters (MADs) within relevant legislation, guidance or recognised assessment methodologies. For the purposes of this assessment, the study area comprises the Dublin Airport Site, as described in Chapter 2: Site and Surroundings and illustrated on Figure 2-1, together with a 1km buffer surrounding the site.

18.3.5 The 1km buffer has been selected as a proportionate study area for the assessment, having regard to the nature of the 2029 Proposed Operation, the types of major accident and disaster hazards reasonably associated with airport operations, and the likely spatial extent of consequences arising from credible scenarios. The scenarios considered, including fire, explosion, hazardous material release, collision and failure of critical infrastructure, would be expected principally to give rise to effects within the Airport Site and its immediate surroundings. On that basis, a 1km buffer is considered sufficient to identify offsite facilities, infrastructure and other potential sources of risk that could credibly affect the Dublin Airport Site, while also capturing the principal built and natural environmental receptors that could reasonably be affected by a major accident or disaster arising from the 2029 Proposed Operation.

18.3.6 The study area is not applied as an absolute limit and, where a credible pathway for effects beyond 1km is identified, this is considered within the assessment.

Establishing the Baseline Environment

18.3.7 The baseline environment is described in Section 18.4 and includes details about the proposed airport operations, as well as its location and the identified receptors.

Assessment of Effects

18.3.8 A risk assessment is set out in Table 18-4, and includes consideration of:

- Vulnerability of the Dublin Airport Site to disasters
- Vulnerability of the Dublin Airport Site from on-site hazards
- Vulnerability of the Dublin Airport Site from off-site hazards
- Vulnerability of off-site receptors during operation

The risk assessment considers each category of hazard, including disasters, on-site and off-site hazards, and hazards associated with airport operations. For each identified hazard, the likelihood of occurrence has been assessed using the criteria set out in Table 18-2, supported by available evidence where appropriate, and the potential consequences have been evaluated using the impact criteria presented in

18.3.9 Table 18-1.

Table 18-1: Impact of Risk

Ranking	Category	Consequence of Impact	Description
1	Minor	Life, Health, Welfare	Small number of people affected; no fatalities and small number of minor injuries with first aid treatment
		Environment	No contamination, localised effects
		Infrastructure	<0.5M Euros
		Social	Minor localised disruption to community services (<6 hours)
2	Limited	Life, Health, Welfare	Single fatality: limited number of people affected; a few serious injuries with hospitalisation and medical treatment required Localised displacement of a small number of people for 6-24 hours Personal support satisfied through local arrangements
		Environment	Simple contamination, localised effects of short duration
		Infrastructure	0.5-3M Euros
		Social	Normal community functioning with some inconvenience
3	Serious	Life, Health, Welfare	Significant number of people in affected area impacted with multiple fatalities (<5), multiple serious or extensive injuries (20), significant hospitalisation Large number of people displaced for 6-24 hours or possibly beyond; up to 500 evacuated External resources required for personal support.
		Environment	Simple contamination, widespread effects, or extended duration
		Infrastructure	3-10M Euros
		Social	Community only partially functioning, some services available
4	Very Serious	Life, Health, Welfare	5 to 50 fatalities, up to 100 serious injuries, up to 2,000 evacuated
		Environment	Heavy contamination, localised effects, or extended duration
		Infrastructure	10-25M Euros
		Social	Community functioning poorly, minimal services available
5	Catastrophic	Life, Health, Welfare	Large numbers of people impacted with significant numbers of fatalities (>50), injuries in the hundreds, more than 2,000 evacuated
		Environment	Very heavy contamination, widespread effects of extended duration
		Infrastructure	>25M Euros
		Social	Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period Community unable to function without significant support

Table 18-2: Likelihood of Risk Occurring

Ranking	Category	Description
1	Extremely Unlikely	May occur only in exceptional circumstances; once every 500 or more years
2	Very Unlikely	Is not expected to occur; and/or no recorded incidents or anecdotal evidence; and/or very few incidents in associated organisations, facilities or communicates; and/or little opportunity, reason or means to occur; may occur once every 100-500 years
3	Unlikely	May occur at some time; and/or few, infrequent, random recorded incidents, or little anecdotal evidence; some incidents in associated or comparable organisations worldwide; some opportunity, reason or means to occur; may occur once per 10-100 years
4	Likely	Likely to or may occur; regular recorded incidents and strong anecdotal evidence and will probably occur once per 1-10 years
5	Very Likely	Very likely to occur; high level of recorded incidents and/or strong anecdotal evidence, will probably occur more than once a year

Significance Criteria

18.3.10 In accordance with the Guide to Risk Assessment in Major Emergency Management[21], the evaluated major accidents and/or disasters risk events were compared to a risk matrix to determine the level of significance (likelihood x consequence of impact = significance). These are grouped according to three categories as per Table 18-3.

- **High risk** – events that have an evaluation score 15 to 25 indicated by the red zone.
- **Medium risk** – events that have an evaluation score 8 to 12 indicated by the amber zone.
- **Low risk** – events that have an evaluation score 1 to 6 indicated by the green zone.

Table 18-3: Level of Significance

		Consequence of Impact				
Likelihood		1. Minor	2. Limited	3. Serious	4. V. Serious	5. Catastrophic
	5. V. Likely	5	10	15	20	25
	4. Likely	4	8	12	16	20
	3. Unlikely	3	6	9	12	15
	2. V. Unlikely	2	4	6	8	10
	1. Ext. Unlikely	1	2	3	4	5

18.3.11 Where mitigation measures have been identified, their effectiveness in reducing the potential consequences of the identified hazard has been taken into account. A residual consequence has then

[21] DHLGH (2021 updated June 2025). A Framework for Major Emergency Management – Guide to Risk Assessment in Emergency Management. Available at: https://www.gov.ie/en/department-of-housing-local-government-and-heritage/collections/a-framework-for-major-emergency-management/

been determined, which, when combined with the likelihood of occurrence, provides the residual risk rating (Likelihood × Residual Consequence = Residual Risk).

18.3.12 For the purposes of this assessment, residual risk ratings within the medium or high-risk categories (scores of 8 or greater) are considered to have the potential to give rise to likely significant environmental effects and are therefore treated as significant for EIA purposes. Residual risk ratings within the low-risk category (scores of 1 to 6) are considered not significant.

Application of the Assessment Framework

18.3.13 In accordance with the assessment framework described in Chapter 5: Methodology, the Principal Assessment compares the 2029 Permitted Operation (32 mppa) with the 2029 Proposed Operation (40 mppa). Both operational conditions are assessed for the same future year and against the same Future Receiving Environment and other baseline assumptions. The comparison therefore identifies the change in the risk of major accidents and disasters, and in the vulnerability of the airport and relevant receptors to their effects, associated with the Proposed Order relative to the Permitted Operation. This comparison provides the basis for identifying likely significant effects, determining any additional mitigation measures and assessing residual effects.

18.3.14 Current and historic information is used to establish the existing hazard environment, relevant receptors and the operational and regulatory controls already in place at Dublin Airport. The assessment of the Proposed Order is undertaken separately through the comparison of the 2029 Permitted Operation and 2029 Proposed Operation. Where changes in passenger throughput, aircraft activity or associated vehicle movements could influence the likelihood or consequences of a major accident or disaster scenario, those changes are reflected in the assessment of the two 2029 operational conditions. Hazards and controls that are not materially influenced by those changes are treated consistently across both scenarios. The use of current or historic information to describe the existing hazard environment therefore does not understate the change in risk associated with the Proposed Order.

18.3.15 No Supporting Assessments have been undertaken for this topic. The Principal Assessment provides a sufficient basis for identifying and determining the likely significant effects of the Proposed Order in relation to major accidents and disasters. As described above, the effects of changes in passenger throughput and associated airport activity are assessed directly through the comparison of the two 2029 operational conditions, while hazards that are not influenced by those changes are treated consistently across both scenarios. Additional comparisons with historic or current operational conditions would therefore not materially assist interpretation of the assessment findings.

Limitations and Assumptions

18.3.16 There are inherent limitations in the availability of data to support the assessment of major accidents and disasters, as such events are, by their nature, rare and may have no directly relevant historical precedent. Where empirical data are limited, the assessment therefore uses reasonable worst-case assumptions. For the purposes of this assessment, a reasonable worst case is the most severe outcome that remains credible on the basis of the identified hazard, the characteristics of the airport operation and infrastructure, and the available evidence. It does not represent the most extreme outcome that could be conceived irrespective of likelihood or supporting evidence. Rather, it represents a severe but realistic scenario that could reasonably arise and is appropriate for testing the potential consequences and the adequacy of existing controls and mitigation.

18.4 Current Receiving Environment

18.4.1 This section describes the existing major accident and disaster hazards relevant to the assessment, including on-site and off-site sources of hazard that may influence airport operations. A general description of the Proposed Order is provided in Chapter 4: Proposed Order.

Determination of Sensitive Receptors

18.4.2 The Dublin Airport Site and its surroundings are described in Chapter 2: Site and Surroundings. The aspects of the receiving environment relevant to the assessment of major accidents and disasters are summarised below.

The Airport

18.4.3 The Dublin Airport Site comprises the existing operational areas of Dublin Airport that support passenger processing, aircraft operations and associated airport activities. These include the airfield and runway system, terminal buildings, aprons, aircraft stands, airport operational buildings, landside transport infrastructure, car parks and associated airport facilities.

Immediate Surroundings

18.4.4 The immediate surroundings of Dublin Airport comprise a predominantly rural landscape characterised by agricultural land divided by hedgerows, drainage ditches and local roads. Land adjoining the airport boundary includes both land within the airport boundary that is leased for agricultural use and land in third-party ownership.

18.4.5 Recreational land uses are also present in the vicinity of the airport, including Corrstown Golf Club (approximately 2km to the north-west), Forrest Little Golf Club (adjacent to the airport boundary), St Margaret's Golf and Country Club (approximately 4km to the west) and Silloge Golf Course (approximately 3km to the south).

Residential, Commercial and Industrial Receptors

18.4.6 Residential development surrounding the airport includes the town of Swords approximately 2km to the north, the village of St Margaret's approximately 1km to the west and more dispersed rural dwellings along Dunbro Lane and the R108. The northern suburbs of Dublin extend to within 2km of the boundary and the coastal settlements of Malahide and Portmarnock are located approximately 4km to the east of the airport.

18.4.7 Commercial and industrial development is concentrated to the south and south-west of the airport, including Dublin Airport Logistics Park, Williamsville Industrial Estate and Horizon Business Park. The fuel farm facility, on Corballis Road South operated by CLH Aviation Ireland Ltd. on behalf of daa is a lower tier Control of Major Accident Hazards Regulations (COMAH) site.

Transport Receptors

18.4.8 Dublin Airport is located to the north of Dublin City, as shown on Figure 2-1. The airport is bounded by a strategic road network, including the M1 to the east, the M50 to the south and the N2 to the west. The principal airport access is from the R132 via the Airport Roundabout, which connects directly to Junction 2 of the M1. Secondary access points are provided from Corballis Road South and Castlemoate Road.

Environmental Receptors

18.4.9 There are no designated sites within 5km of the Airport – the closest is Malahide Estuary Special Area of Conservation (SAC) and Special Protection Area (SPA) 5km to the north.

18.4.10 The Cuckoo Stream rises within the airport boundary and forms part of the airport drainage network before flowing eastwards into the Mayne River, which ultimately discharges to Baldoyle Bay SAC and SPA approximately 7km to the east. Although the Cuckoo Stream is heavily modified, it forms an important hydrological pathway linking airport operations with downstream designated sites.

18.4.11 Other watercourses connected to the airport drainage catchments include the Forrest Little Stream, Kealy's Stream, Ward River and Santry River. These watercourses ultimately discharge to the European sites at Baldoyle Bay, Malahide Estuary and Dublin Bay, providing potential pathways for indirect environmental effects.

18.4.12 No designated sensitive landscapes occur within Dublin Airport or immediately adjoining the airport boundary. The nearest Highly Sensitive Landscapes identified in the Fingal Development Plan are located approximately 4km from the airport.

Potential Sources of Disasters

18.4.13 There are several categories of weather-related hazard with the potential to cause a natural disaster:

- Extreme rainfall events and subsequent flooding;
- Strong winds, tornadoes;
- High temperatures, heat waves and drought;
- Snow and ice; and
- Lightning.

18.4.14 The frequency and severity of severe weather events have increased in recent years. The National Risk Assessment[22] identifies Storm Betty and Storm Babet, both of which affected Ireland in 2023, as examples of significant storm events. More recently, the 2025 Met Éireann Annual Climate Statement [23] reports that five named storms directly affected Ireland during 2025.

18.4.15 Met Éireann, Weather Statement for Winter 2025[24] confirmed that Storm Éowyn brought extreme winds across the country during January 2025, with widespread disruption and power outages.

18.4.16 Certain geological hazards may also cause natural disasters including:

- Ground instability;
- Landslides; and
- Ground collapse and sinkholes.

18.4.17 However, according to Geological Survey Ireland[25] Dublin Airport is not susceptible to ground instability and landslides.

18.4.18 Additional geological hazards are seismic hazards including:

- Earthquakes; and
- Tremors.

18.4.19 Data from the Irish National Seismic Network[26] indicate that earthquakes in Ireland are rare and of minor strength. Since 1980, the largest earthquakes have had a magnitude of three in Richter scale, which can be felt by people but rarely cause any damage, and none have occurred near Dublin Airport. Space weather may also cause natural disasters including:

- Geomagnetic storms;
- Radiation storms; and
- Solar flares.

18.4.20 The European Space Agency Space Weather Effects report[27] notes that space-based telecommunications, broadcasting, weather services and navigation, power distribution and terrestrial communications, can be affected by space weather. National Aeronautics and Space Administration (NASA)[28] identify that these effects occur due to activity on the surface of the sun, which peaks around every 11 years.

[22] Government of Ireland (2024). A National Risk Assessment for Ireland 2024. Available at: https://www.gov.ie/en/department-of-the-taoiseach/policy-information/national-risk-assessment-2024-overview-of-strategic-risks/
[23] Met Éireann, Annual Climate Statement for 2025, 2025, https://www.met.ie/annual-climate-statement-for-2025
[24] Met Éireann, Weather Statement for Winter 2025, https://www.met.ie/climate/past-weather-statements
[25] GSI, Geohazards, 2024, https://www.gsi.ie/en-ie/data-and-maps/Pages/Geohazards.aspx#landslides
[26] INSN, Catalogue of Local Earthquakes, 2026 https://www.insn.ie/confirmed/
[27] European Space Agency, Space Weather Effects, 2018, https://www.esa.int/ESA_Multimedia/Images/2018/01/Space_weather_effects
[28] National Aeronautics and Space Administration (NASA), 2021, https://www.nasa.gov/feature/goddard/2021/five-questions-about-space-weather-and-its-effects-on-earth-answered

18.4.21 Other hazards that could cause natural disasters include:

- Wildfires;
- Sea level rise; and
- Tsunamis.

18.4.22 According to Met Éireann's Annual Climate Statement for 2025[29], Spring and Summer were the warmest seasons on record for Ireland. Further, all mean air temperatures across Ireland were above their annual Long-Term Average (LTA), resulting in 2025 being the warmest year on record.

18.4.23 All available sunshine totals were also above their LTA in 2025. Met Éireann calculates that the percentage of annual sunshine values ranged from 118% (annual sunshine total of 1,662.5 hours) at Casement Aerodrome, County Dublin to 119% (annual sunshine total of 1,600.2 hours) at Shannon Airport, County Clare, with the number of dull days in the country ranging from 26 days at Knock Airport, County Mayo to 105 days at Valentia Observatory, County Kerry. Moreover, Dublin Airport recorded its sunniest May since 2020.

18.4.24 According to University College Cork (UCC)[30], wildfires are commonly associated with periods of dry weather and may be started accidentally or because of controlled burns which become uncontrolled. Setting fire to vegetation is prohibited between March 1st and August 31st each year but wildfires can occur at other times of year – for example there were large gorse fires in the Dublin Mountains and Wicklow Mountains in February 2019. As indicated in Chapter 13: Climate, hotter, drier summers associated with climate change are predicted and may increase the risk of wildfires breaking out.

18.4.25 Sea level rise is not likely to affect Dublin Airport which is located away from the coast. According to GSI, the Irish coast is vulnerable to tsunami from distant earthquakes and submarine landslides. For example, the Lisbon earthquakes of 1755 and 1761 caused tsunamis that reached Ireland. GSI believes that the likely worst-case tsunamis around Ireland would be similar to the level of coastal flooding seen during storm surges, although they would occur much more quickly leaving little time to react[31].

Potential Sources of On-site Hazards

18.4.26 There are two main on-site sources of hazards at the Dublin Airport Site. These are aircraft movements, including taxiing, take-offs and landings, and operation of the fuel farm facility, on Corballis Road South operated by CLH Aviation Ireland Ltd. on behalf of daa. Aviation is widely recognised as a very safe form of travel by comparison with other modes and is highly regulated to ensure safety. This is supported by the historical record as the Bureau of Aircraft Accident Archives (BAA)[32] lists only two crashes at Dublin Airport, both in the 1960s.

18.4.27 Additionally, there are hazards such as collision risk associated with the movement of vehicles which use the landside transport infrastructure, car parks and associated airport facilities.

18.4.28 The Exolum fuel farm facility, located within the Dublin Airport Site, is a known hazard regulated by the Health and Safety Authority as a lower tier Seveso establishment[33]. This requires the operator of the fuel farm to operate the site in accordance with a major accident prevention policy which includes raising the alarm via sirens and using local radio to advise on what action to take in the event of a major accident. Exolum are also required to notify the regulator of any accidents that occur.

18.4.29 There are no other Seveso establishments in the study radius. The next closest Seveso location is SK Biotek in Swords over 3km to the north. This is a lower tier establishment regulated for storage and manufacturing of pharmaceutical products as well as the substances associated with the manufacturing process.

[29] Met Éireann, Annual Climate Statement for 2025, 2025, https://www.met.ie/annual-climate-statement-for-2025
[30] University College Cork, 2021, Wildfires in Ireland, Available at: https://www.ucc.ie/en/flares/thescienceofwildfires/
[31] GSI, Tsunami Hazard and Response, 2024 https://www.gsi.ie/en-ie/programmes-and-projects/geohazards/activities/Pages/Tsunami-Hazard-and-Response.aspx
[32] Bureau of Aircraft Accidents Archives, Accident Archives, 2024, https://www.baaa-acro.com/crash-archives
[33] Health and Safety Authority (HSA), Lower Tier Establishments in Dublin/Louth, 2024 https://www.hsa.ie/irish/irl%20-%20Sectors/Seveso_11/List_of_Establishments/Lower_Tier_Establishments_by_Region1/Lower_Tier_Establishments_in_Dublin_Louth/

Current Design and Management Measures

18.4.30 Safety is a fundamental consideration in the design, operation and management of Dublin Airport. The airport has been designed and is operated in accordance with applicable international and national aviation safety requirements, which provide protection against major accidents and disasters where relevant. The design and operation of airports are subject to standards and recommended practices established by the International Civil Aviation Organization (ICAO), the specialised agency of the United Nations responsible for developing global aviation standards relating to safety, security, efficiency and environmental protection. Accordingly, Dublin Airport operates within an internationally recognised aviation safety framework.

18.4.31 Key embedded mitigation measures for safety include:

- Dublin Airport operates under a formal Safety Management System (SMS) which is managed by daa. The SMS complies with European Union Aviation Safety Agency (EASA) and International Civil Aviation Organization (ICAO) standards to monitor and mitigate airside and operational risk. A confidential copy of the SMS has been made available to the Minister as Appendix 18-2.
- An Emergency Response Plan (ERP) forms part of the SMS. This is a comprehensive, operational-level document outlining specific roles, set of actions and timeframes to respond to unexpected situations, disruptions or potential disruptions.
- Dublin Airport is subject to comprehensive fire risk assessment. Fire prevention and control systems are designed to relevant industrial standards.

18.4.32 In terms of security and protection from terrorist and civil unrest events, the mitigation and management arrangements include:

- Dublin Airport has its own branch of Airport Police Service which is mandated to provide aviation and general policing at the Dublin Airport Site. These are supported by Garda Armed Support Units (ASU) both on-foot in the terminal building and via vehicles outside and surrounding the perimeter to counter rising threats of terrorist attacks in Europe.
- Dublin Airport has its own Fire and Rescue Service which provides emergency cover to the entire airport site and its roadways and lands.

18.4.33 To mitigate against the accidental release of fuel and lubricants into receiving waters Dublin Airport has implemented pollution prevention control measures including:

- The pollution control system operates with a runoff management approach, in accordance with Sustainable Drainage Systems (SuDS) principles;
- Source control; collection of de-icing and anti-icing chemicals by Glycol Recovery Vehicles (GRVs);
- Site Control; oil interceptors, which are in position throughout the site to remove hydrocarbons which may be present in the surface water runoff; and
- Regional control: through Pollution Control Facilities (PCF) which include monitoring points, flow diversion structures/chambers, contaminated surface water storage tanks and pumped discharge to sewer. Total Organic Carbon (TOC) monitoring is in place to determine whether the flows from the upstream airfield network are clean or contaminated. These flows are then diverted appropriately.

18.4.34 To mitigate against flood risk, there are existing underground attenuation facilities along the Cuckoo Stream downstream of the Cuckoo culvert, which provides the main facility for attenuating flows from the Cuckoo Stream sub-catchment. There are also ‘local’ attenuation facilities for various aprons and the other stormwater catchments. Attenuation is designed to contain the 1% Annual Exceedance Probability (AEP) storm event, with a discharge rate reduced to greenfield in many catchments.

18.4.35 The above design and management measures remain unchanged.

18.5 Future Receiving Environment

18.5.1 This section considers the evolution of the MADs baseline from the current receiving environment to the Principal Assessment year of 2029.

18.5.2 As described in Chapter 5: Methodology, this provides the future baseline against which the 2029 Proposed Operation is assessed in the Principal Assessment. The Future Receiving Environment in 2029 is expected to be broadly similar to the Current Receiving Environment as no physical development, airport infrastructure or changes to airport layout are proposed. Notwithstanding this, climate change is projected to continue, although the Proposed Order will not increase the risk of climate change, and is therefore considered as part of the future baseline. Climate change projections indicate that the Dublin Airport Site may experience changes in weather patterns, including an increased frequency and intensity of extreme weather events and an increased risk of fluvial flooding (caused by rivers and streams overflowing their banks) and pluvial flooding (caused by heavy rainfall)[34]. Further information on projected climate change and its implications for the Dublin Airport Site is provided in Chapter 13: Climate and its supporting appendices.

18.6 Assessment of Likely Significant Effects

18.6.1 This section presents the assessment of likely significant effects arising from major accidents and disasters (MAD). The assessment comprises an initial screening of the principal MAD hazards, presented in Table 18-4, followed by detailed assessment in Table 18-5 of those hazards identified as requiring further consideration.

18.6.2 Table 18-4 presents the initial screening of the principal MAD hazards by comparing the 2029 Permitted Operation and the 2029 Proposed Operation to identify whether the Proposed Order has the potential to materially alter the risk of major accidents and disasters.

[34] FCC, Dublin Airport Local Area Plan, 2022, https://www.fingal.ie/sites/default/files/2020-01/appendix-6-dublin-airprot-lap-strategic-fra-and-swmp.pdf

Table 18-4: Screening of Major Accident and Disaster Hazards – 2029 Permitted Operation and 2029 Proposed Operation

Risk	2029 Permitted Operation (32 mppa)	2029 Proposed Operation (40 mppa)	Effect of the Proposed Order	Screened into Further Assessment
VULNERABILITY OF DUBLIN AIRPORT SITE TO NATURAL DISASTERS				
Extreme Rainfall causing Flooding	Known incidences of extreme rainfall https://www.met.ie/climate/weather-extreme-records .Mitigation is existing drainage at Dublin Airport, design of the Underpass, warnings of storms, etc.	No change to site infrastructure and mitigations therefore risk of this occurring remains the same	No change	N
Strong winds or tornadoes causing foreign object debris	Known incidences of extreme wind speeds https://www.met.ie/climate/weather-extreme-records. Mitigation is existing aviation safety measures to protect taxiways and runways	No change to site infrastructure and mitigations therefore risk of this occurring remains the same	No change	N
Vulnerability to high temperatures, heatwaves and drought	Known incidences of extreme temperatures especially in 2022. https://www.met.ie/climate/weather-extreme-records. Mitigation is health and safety measures at site to avoid risks to workers and users of Dublin Airport	No change to site infrastructure and mitigations therefore risk of this occurring remains the same	No change	N
Snow and Ice hazards	Known incidences especially in 2018. https://www.met.ie/climate/weather-extreme-records. Mitigation is existing aviation safety measures to protect taxiways and runways such as use of de-icer.	No change to site infrastructure and mitigations therefore risk of this occurring remains the same	No change	N
Seismic hazards, e.g., earthquakes, tremors causing physical damage	Site is not located within an area at risk of high seismic activity	No change	No change	N
Space weather (e.g., geomagnetic storms, radiation storms and solar flares) causing increased radiation and disruption in telecommunications	No specific risk as the Site is not vulnerable to the effects of space weather	No change	No change	N
Wildfires causing physical damage or disrupting Dublin Airport operations	Site is not located within an area at risk of wildfires	No change	No change	N
Sea level rise, tsunamis causing physical damage or disrupting Dublin Airport operations	Site is not located within an area at risk of sea level rise or tsunamis	No change	No change	N
VULNERABILITY OF DUBLIN AIRPORT SITE FROM ON-SITE HAZARDS				

Risk	2029 Permitted Operation (32 mppa)	2029 Proposed Operation (40 mppa)	Effect of the Proposed Order	Screened into Further Assessment
Fire and/or explosion at the operational site causing physical damage and threat to life.	This is an existing risk; however, the design of the Dublin Airport Site was subject to strict guidance from ICAO including the requirements for fire safety and emergency planning. Dublin Airport therefore meets internationally recognised levels of safety.	Proposed Order will increase the number of passengers to 40 mppa which could raise the likelihood of a fire occurring and the potential for injury/death in the event of a major incident.	Slight increase in exposure but existing fire and safety systems will be maintained. Emergency plans and evacuation procedures would be reviewed to ensure they remained adequate.	Y
Ground instability causing physical damage	Site is not located within an area at risk of ground instability	No change	No change	N
Major leaks and spillages at the Site resulting in contamination or release of hazardous substances	This is an existing risk. Mitigation is design of the Dublin Airport and the existing pollution prevention and control measures for dealing with other major leaks and spillages.	Proposed Order will increase the number of vehicles and aircraft in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of a major spill or leak occurring and impacting sensitive receptors.	Slight increase in exposure but existing pollution prevention and control systems maintained	Y
Impacts on road safety due to an increase in traffic movements associated with the Proposed Order	This is an existing risk, and the mitigation is appropriate traffic assessments have been completed, design and safety measures have been implemented in accordance with ICAO and highways standards at site to avoid risks of road accidents.	Proposed Order will increase the number of vehicles using the internal airport roads or external highways in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of a road accident occurring due to greater volumes of road traffic.	Slight increase in exposure but existing safety and traffic systems will be maintained.	Y
Aircraft accidents	This is an existing risk. Mitigation is appropriate air traffic assessments have been completed, design and safety measures in accordance with ICAO have been implemented at site to avoid risks of aircraft accidents.	Proposed Order will increase the number of aircraft movements in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of an air traffic accident/incident occurring due to greater number of flights	Slight increase in exposure but existing safety and air traffic control systems will be maintained	Y
Emergency response activities implemented on the Site impacting on sensitive receptors	This is an existing risk. Mitigation is design of the Dublin Airport and the existing pollution prevention and control measures for dealing with other major leaks and spillages.	Proposed Order will increase the number of vehicles and aircraft in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of a major spill or leak occurring and impacting sensitive receptors.	Slight increase in exposure but existing pollution prevention and control systems maintained	Y
Fire at a neighbouring site causing physical damage or impacting the operation of Dublin Airport.	This is an existing risk. Biggest risk would be from the fuel storage facility nearby, but this is regulated under the Seveso Directive to ensure safety. Such facilities are required by law to	No change to Dublin Airport infrastructure therefore risk of this occurring remains the same	No change	N

Risk	2029 Permitted Operation (32 mppa)	2029 Proposed Operation (40 mppa)	Effect of the Proposed Order	Screened into Further Assessment
	take 'all measures necessary' to prevent major accidents			
Explosion and structural collapse at neighbouring sites impacting on the operation of the Dublin Airport	This is an existing risk. Biggest risk would be from the fuel storage facility nearby, but this is regulated under the Seveso Directive to ensure safety. Such facilities are required by law to take 'all measures necessary' to prevent major accidents	No change to site infrastructure therefore risk of this occurring remains the same	No change	N
Vandalism/crime/terrorism leading to increased risk to the safety of members of public, criminal damage, theft and hijacked aircraft	This is an existing risk. Mitigation is existing aviation safety measures in line with ICAO standards and position of most of the Site in the secure, airside location	No change to site infrastructure therefore risk of this occurring remains the same	No change	N
Civil unrest or protest leading to disruption of Dublin Airport operations.	This is an existing risk. Mitigation is existing aviation safety measures in line with ICAO standards and position of most of the Site in the secure, airside location	No change to site infrastructure therefore risk of this occurring remains the same	No change	N
VULNERABILITY OF OFF-SITE RECEPTORS				
Road traffic accidents involving Dublin Airport operational traffic	This is an existing risk and the mitigation is appropriate traffic assessments have been completed, design and safety measures have been implemented in accordance with ICAO and highways standards at site to avoid risks of road accidents.	Proposed Order will increase the number of vehicles using the internal airport roads or external highways in the operational situation to allow for an uplift in passengers to 40 mppa. This could raise the likelihood of a road accident occurring due to greater volumes of road traffic.	Slight increase in exposure but existing safety and traffic systems will be maintained.	Y
Emergency response activities implemented on the Site impacting on sensitive receptors including water from fire extinguishing draining into environmentally sensitive areas and / or controlled waters	This is an existing risk. Mitigation is design of the Dublin Airport and the existing pollution prevention and control measures for dealing with other major leaks and spillages.	Proposed Order will increase the number of vehicles and aircraft in the operational situation to allow for an uplift in passengers to 40 mppa. This could raise the likelihood of a major spill or leak occurring and impacting sensitive receptors.	Slight increase in exposure but existing pollution prevention and control systems maintained	Y
Accidents resulting from the interface of existing Dublin Airport operations (under normal or emergency conditions). This could result in offsite aircraft accident	This is an existing risk. Mitigation is appropriate air traffic assessments have been completed, design and safety measures in accordance with ICAO have been implemented at site to avoid risks of aircraft accidents.	Proposed Order will increase the number of aircraft movements in the operational situation to allow for an uplift in passengers to 40 mppa. This could raise the likelihood of an air traffic accident/incident occurring due to greater number of flights	Slight increase in exposure but existing safety and air traffic control systems will be maintained	Y

18.6.3 The following sections provide further explanation of the screening outcomes presented in Table 18-4.

Vulnerability of the Airport to Disasters

18.6.4 Dublin Airport is assessed as being at risk of minor impact from natural disasters, principally flooding and high winds, or a man-made disaster such as an act of terrorism. The likelihood of such disasters occurring is assessed as likely (once in 1–10 years). The Proposed Order does not increase the risk of such disasters and have been screened out from further assessment in Table 18-3.

Vulnerability of the Airport to On-site Hazards

18.6.5 Dublin Airport is assessed as being at risk of minor impact from onsite hazards, road traffic or air traffic accidents as there will be increases to aircraft operations or operational ground traffic generated to allow for an uplift in passenger capacity to 40 mppa. The likelihood of such disasters occurring has the potential to increase for the Proposed Order.

18.6.6 Dublin Airport is assessed as being at risk of minor impact from hazards associated with the fuel storage facility neighbouring the airport building and carparks during operation. The likelihood of such disasters occurring is assessed as unlikely (once in 10–100 years). The Proposed Order does not increase the risk of such disasters and have been screened out from further assessment in Table 18-3.

Vulnerability of the Off-site Receptors to the Airport

18.6.7 The 2029 Proposed Operation will result in increased aircraft movements and associated airport activity compared with the 2029 Permitted Operation, which has the potential to alter the risk profile (likelihood increasing) for major accidents and disasters beyond the Dublin Airport Site. However, Dublin Airport operates within an established aviation safety and emergency management framework, as described in Section 18.4, which incorporates operational procedures and control measures designed to minimise the likelihood and potential consequences of major accidents and disasters. Accordingly, no additional mitigation measures are required.

Detailed Assessment of Major Accident and Disaster Hazards

18.6.8 On the basis of the screening presented in Table 18-4 and described above, those hazards identified as requiring further consideration are assessed in detail in Table 18-5.

Table 18-5: Risk Assessment

Risk	Risk Effect (Examples)	2029 Permitted Operation (32 mppa)		2029 Proposed Operation (40 mppa)		2029 Proposed Order Evidence / Mitigation	2029 Permitted Operation			2029 Proposed Order		
		Likelihood	Unmitigated Consequence	Likelihood	Unmitigated Consequence		Residual Consequence	Residual Risk	Significance	Residual Consequence	Residual Risk	Significance
VULNERABILITY OF DUBLIN AIRPORT SITE FROM ON-SITE HAZARDS												
Fire and/or explosion at the operational site	• Fire or explosions causing physical damage and threat to life. The Proposed Order increases the number of passengers passing through the airport and increases the likelihood of injury occurring due fire/explosion.	3	3	4	3	Dublin Airport has been designed and is operated in accordance with applicable ICAO standards and regulatory requirements, including arrangements for fire safety and emergency response. These embedded safety measures minimise the likelihood and potential consequences of major accidents.	1	3	Not significant	1	4	Not significant
Major leaks and spillages at the Site resulting in contamination or release of hazardous substances	• Dublin Airport Operations causing major leaks or spillages of fuel. Proposed Order will increase the number of vehicles and aircraft in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of a major spill or leak occurring and impacting sensitive receptors.	3	3	4	3	Existing pollution prevention and control measures, together with established incident response procedures, minimise the likelihood and environmental consequences of major fuel or chemical spillages.	1	3	Not significant	1	4	Not significant
Impacts on road safety due to an increase in traffic movements associated with the Proposed Order	• Proposed Order will increase the number of vehicles using the internal airport roads or external highways in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This increases the likelihood of an accident taking place.	3	2	4	2	The airport road network has been designed and is operated in accordance with applicable highway design standards, with traffic management and road safety measures in place to minimise the risk of road traffic accidents.	1	3	Not significant	1	4	Not significant
Aircraft accidents	• Proposed Order will increase the number of aircraft movements in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This increases the likelihood of an aircraft accident taking place.	2	4	3	4	Dublin Airport operations are managed within the established aviation safety framework, including compliance with applicable ICAO standards, air traffic management procedures and operational safety requirements, which minimise the likelihood of aircraft accidents.	1	2	Not significant	1	3	Not significant
Emergency response activities implemented on the Site impacting on sensitive receptors	• Proposed Order will increase the number of vehicles and aircraft in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of a major spill or leak occurring and impacting sensitive receptors. • Water from fire extinguishing draining into environmentally sensitive areas and/ or controlled waters	2	1	3	1	No additional mitigation measures are required. Existing pollution prevention and emergency response procedures provide appropriate controls in the event of a fire or associated spill, and the principal potentially sensitive receptor, the Cuckoo Stream, is culverted within the airport.	1	2	Not significant	1	3	Not significant
VULNERABILITY OF OFF-SITE RECEPTORS												
Impacts on road safety caused by the operational traffic of the Proposed Order	• Road traffic accidents involving Dublin Airport operational traffic • Proposed Order will increase the number of vehicles using the internal airport roads or external highways in the operational situation to allow for an uplift in passengers to 40 mppa. This could raise the likelihood of a road accident occurring due to greater volumes of road traffic.	3	2	4	2	The airport road network and associated highway infrastructure have been designed and are operated in accordance with applicable highway design standards. Existing traffic management and road safety measures minimise the likelihood of road traffic accidents involving airport-related traffic.	1	3	Not significant	1	4	Not significant
Emergency response activities implemented on the Site impacting on sensitive receptors	• Water from fire extinguishing draining into environmentally sensitive areas and / or controlled waters • Proposed Order will increase the number of vehicles and aircraft in the operational situation to allow for an uplift in passenger capacity to 40 mppa. This could raise the likelihood of a major spill or leak occurring and impacting sensitive receptors.	3	1	4	1	Existing pollution prevention and control measures, together with emergency response procedures, are in place to minimise the risk of firewater, fuel or other contaminants entering environmentally sensitive areas or controlled waters.	1	3	Not significant	1	4	Not significant
Accidents resulting from the interface of existing airport operations associated with the Proposed Order (under normal or emergency conditions)	• Operational activities causing an aircraft accident due to infringement of air space clearance zones • Increased operational movement causing electronic interference to airport radio and telecommunications systems • Collision of aircraft or airport vehicles through operation • Proposed Order will increase the number of aircraft movements in the operational situation to allow for an uplift in passenger capacity to 40mppa. This increases the likelihood of an aircraft accident taking place.	3	1	4	1	Dublin Airport operations are managed in accordance with applicable ICAO standards and established operational safety procedures, including air traffic management, aircraft separation, obstacle limitation and airside vehicle controls. These measures minimise the likelihood of aircraft accidents and other operational incidents.	1	3	Not significant	1	4	Not significant

18.6.9 In accordance with the methodology set out in Section 18.3, the highest residual risk rating following the implementation of mitigation measures is 4, which, as indicated in Table 18-3, is below the threshold for identifying likely significant effects. Accordingly, no likely significant effects arising from major accidents and disasters have been identified.

18.7 Mitigation and Monitoring

18.7.1 The assessment concludes that the Proposed Order would not give rise to any likely significant environmental effects associated with major accidents and disasters. Accordingly, no additional mitigation measures are required beyond the existing operational and regulatory controls described in Section 18.4. No monitoring measures are proposed.

18.8 Residual Effects

18.8.1 No likely significant residual environmental effects associated with major accidents and disasters have been identified following implementation of the existing operational and regulatory controls.

18.9 In-Combination and Cumulative Impacts

18.9.1 Chapter 20: In-combination and Cumulative Effects identifies no interactions that would materially alter the findings of the assessment of major accidents and disasters. Accordingly, no additional in-combination effects have been identified.

18.9.2 No other existing, or permitted developments have been identified that would materially alter the findings of the assessment of major accidents and disasters. Accordingly, no additional cumulative effects have been identified.

18.10 Indirect, Secondary and Transboundary Impacts

18.10.1 The EPA Guidelines define indirect and secondary effects as effects that are not a direct consequence of the Proposed Order and may occur away from the site or through a complex pathway. Transboundary effects are those that extend beyond the jurisdiction of Ireland.

18.10.2 The nature and spatial extent of the Proposed Order are such that no transboundary effects have been identified.

18.10.3 The potential for indirect and secondary effects has been considered as part of the assessment. No indirect or secondary effects associated with major accidents and disasters have been identified.

18.11 Conclusions

18.11.1 This chapter has assessed the potential for the 2029 Proposed Operation, compared with the 2029 Permitted Operation, to materially alter the risk of major accidents and disasters and the associated likely significant environmental effects. The assessment considered natural and man-made disasters, on-site and off-site hazards, and hazards associated with airport operations, having regard to the existing aviation safety framework, emergency planning arrangements, and relevant regulatory controls. The assessment was undertaken using the risk-based methodology described in Section 18.3, including an initial screening of potential hazards followed by a detailed assessment of those hazards requiring further consideration.

18.11.2 The assessment concludes that the Proposed Order would not materially alter the risk profile for major accidents and disasters compared with the 2029 Permitted Operation. Existing airport design, operational procedures, emergency response arrangements and regulatory controls provide an appropriate framework for managing identified hazards, and no additional mitigation measures have been identified as necessary. All assessed residual risk ratings are below the significance threshold adopted for this assessment and, accordingly, no likely significant environmental effects associated with major accidents and disasters have been identified.